
RISK-INFORMED INSERVICE INSPECTION PROGRAM PLAN

KEWAUNEE NUCLEAR POWER PLANT, REVISION 0

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1. INTRODUCTION

The Kewaunee Nuclear Power Plant (KNPP) is currently nearing the end of its third inservice inspection (ISI) interval as defined by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Section XI Code for Inspection Program B. KNPP plans to implement a risk-informed inservice inspection (RI-ISI) program at the start of the fourth inservice inspection interval, which begins June 16, 2004. The ASME Section XI Code used during the third interval was the 1989 Edition. Pursuant to 10 CFR 50.55a(a)(3)(i), KNPP requested to use the 1998 Edition of Section XI with addenda through 2000 for the fourth inservice inspection interval.

The objective of this submittal is to request the use of a risk-informed process for the inservice inspection of Class 1 and 2 piping. The RI-ISI process used in this submittal is described in Electric Power Research Institute (EPRI) Topical Report (TR) 112657 Rev. B-A "Revised Risk-Informed Inservice Inspection Evaluation Procedure." The RI-ISI application was also conducted in a manner consistent with ASME Code Case N-578 "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B."

1.1 Relation to NRC Regulatory Guides 1.174 and 1.178

As a risk-informed application, this submittal meets the intent and principles of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis" and Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping". Further information is provided in Section 3.6.2 relative to defense-in-depth.

1.2 PSA Quality

This RI-ISI submittal used the 0101 revision of the Kewaunee Probabilistic Risk Assessment (PRA), which reflects the as-built as-operated plant as of December 2001. There have been no changes to the plant since then that would affect the analysis in the submittal.

Summary of Level 1 PRA Results: The base case core damage frequency (CDF) of the 0101 model is 4.1×10^{-5} /year. There have been no changes to the plant since then that would affect the analysis in the submittal. The largest core damage contributor, with a 54% contribution, is Loss of Offsite Power. The largest large early release contributor, with a 73% contribution, is Steam Generator Tube Rupture (SGTR).

Summary of Level 2 PRA Results: The base case large early release frequency (LERF) of the 0101 model is 4.78×10^{-6} /year, resulting in a LERF/CDF ratio of 0.12. The calculated LERF is conservative, since all SGTR core damage sequences are assumed to contribute to LERF.

PRA Model Description: A detailed Level 1 PRA of Kewaunee was performed in accordance with the methodology described in NUREG/CR-2300, "PRA Procedures Guide." The Kewaunee PRA models were developed using small event trees (primarily systemic) and large fault trees. The model represents accident and transient initiating events starting from power operation and continuing for a 24-hour mission time.

Revisions to the model are controlled by General Nuclear Procedure 01.41.01, "Probabilistic Risk Assessment Model Revisions."

WOG Peer Review: The 0101 model, with some small changes that do not affect this analysis, was reviewed in June 10-14, 2002 by a Westinghouse Owners Group PRA Peer Review Team. The team consisted of a team leader from Westinghouse, two contract PRA reviewers, and three reviewers from PRA groups at other Westinghouse power plants. In general, the review team concluded that the Kewaunee PRA could be effectively used to support applications involving risk significance determinations supported by deterministic analyses once the Facts and Observations (F&Os) noted in the report are addressed.

The F&Os from the final report are summarized below. Kewaunee received five category A (extremely important and necessary to address) and 49 category B (Necessary to address but minor impact) F&Os. A description of the category A F&Os and their applicability to this submittal follows:

1. **Long-term condensate storage tank inventory is not appropriately modeled for the loss of service water scenario.** The resolution of this issue showed that it did not have a major effect on results.
2. **Time-phasing of diesel generator run failures and different types of losses of offsite power (weather-related, plant-centered, etc.) are not modeled.** The resolution of this issue showed that it did not have a major effect on results.
3. **The bases for the time windows for human actions are not well defined.** Work is in progress on resolving this F&O. Preliminary results show that the human error probabilities (HEPs) in the model tend not to be greatly affected by the new time windows.
4. **The flooding analysis is deficient in a number of areas.** Flooding was examined separately in the consequence analysis rather than relying on the PRA flooding analysis.
5. **Operator action to close valve SI-101A or SI-101B after accumulator refill is overly conservative and perhaps should not be modeled.** The resolution of this issue showed that it did not have a major effect on results. The sequences involved were unrelated to piping failures.

Additionally, each of the 49 category B F&Os was examined for effects on piping failure rates or consequences. None of them would result in a significant increase in failure rates or consequences.

F&Os were also examined for severe global impacts that could affect results, but none were found, thus validating the reviewers decision in making them category B F&Os rather than category A F&Os.

2. PROPOSED ALTERNATIVE TO CURRENT ISI PROGRAMS

2.1 ASME Section XI

ASME Section XI Examination Categories B-F, B-J, C-F-1 and C-F-2 currently contain the requirements for the nondestructive examination (NDE) of Class 1 and 2 piping components. The alternative RI-ISI program for piping is described in EPRI TR-112657. The RI-ISI program will be substituted for the current program for Class 1 and 2 piping (Examination Categories B-F, B-J, C-F-1 and C-F-2) in accordance with 10 CFR 50.55a(a)(3)(i) by alternatively providing an acceptable level of quality and safety. Other non-related portions of the ASME Section XI Code will be unaffected. EPRI TR-112657 provides the requirements for defining the relationship between the RI-ISI program and the remaining unaffected portions of ASME Section XI.

2.2 Augmented Programs

The following augmented inspection program was considered during the RI-ISI application:

- The augmented inspection program for flow accelerated corrosion (FAC) per Generic Letter 89-08 is relied upon to manage this damage mechanism but is not otherwise affected or changed by the RI-ISI program.

3. RISK-INFORMED ISI PROCESS

The process used to develop the RI-ISI program conformed to the methodology described in EPRI TR-112657 and consisted of the following steps:

- Scope Definition
- Consequence Evaluation
- Failure Potential Assessment
- Risk Characterization
- Element and NDE Selection
- Risk Impact Assessment
- Implementation Program
- Feedback Loop

A deviation to the EPRI RI-ISI methodology has been implemented in the failure potential assessment for KNPP. Table 3-16 of EPRI TR-112657 contains criteria for assessing the potential for thermal stratification, cycling and striping (TASCS). Key attributes for horizontal or slightly sloped piping greater than 1" nominal pipe size (NPS) include:

1. Potential exists for low flow in a pipe section connected to a component allowing mixing of hot and cold fluids, or
2. Potential exists for leakage flow past a valve, including in-leakage, out-leakage and cross-leakage allowing mixing of hot and cold fluids, or

-
3. Potential exists for convective heating in dead-ended pipe sections connected to a source of hot fluid, or
 4. Potential exists for two phase (steam/water) flow, or
 5. Potential exists for turbulent penetration into a relatively colder branch pipe connected to header piping containing hot fluid with turbulent flow,

AND

$\Delta T > 50^{\circ}\text{F}$,

AND

Richardson Number > 4 (*this value predicts the potential buoyancy of a stratified flow*)

These criteria, based on meeting a high cycle fatigue endurance limit with the actual ΔT assumed equal to the greatest potential ΔT for the transient, will identify all locations where stratification is likely to occur, but allows for no assessment of severity. As such, many locations will be identified as subject to TASCs where no significant potential for thermal fatigue exists. The critical attribute missing from the existing methodology that would allow consideration of fatigue severity is a criterion that addresses the potential for fluid cycling. The impact of this additional consideration on the existing TASCs susceptibility criteria is presented below.

➤ **Turbulent penetration TASCs**

Turbulent penetration typically occurs in lines connected to piping containing hot flowing fluid. In the case of downward sloping lines that then turn horizontal, significant top-to-bottom cyclic ΔT s can develop in the horizontal sections if the horizontal section is less than about 25 pipe diameters from the reactor coolant piping. Therefore, TASCs is considered for this configuration.

For upward sloping branch lines connected to the hot fluid source that turn horizontal or in horizontal branch lines, natural convective effects combined with effects of turbulence penetration will keep the line filled with hot water. If there is no potential for in-leakage towards the hot fluid source from the outboard end of the line, this will result in a well-mixed fluid condition where significant top-to-bottom ΔT s will not occur. Therefore TASCs is not considered for these configurations. Even in fairly long lines, where some heat loss from the outside of the piping will tend to occur and some fluid stratification may be present, there is no significant potential for cycling as has been observed for the in-leakage case. The effect of TASCs will not be significant under these conditions and can be neglected.

➤ **Low flow TASCs**

In some situations, the transient startup of a system (e.g., RHR suction piping) creates the potential for fluid stratification as flow is established. In cases where no cold fluid source exists, the hot flowing fluid will fairly rapidly displace the cold fluid in stagnant lines, while fluid mixing will occur in the piping further removed from the hot source and stratified conditions will exist only briefly as the line fills with hot fluid. As such, since the

situation is transient in nature, it can be assumed that the criteria for thermal transients (TT) will govern.

➤ **Valve leakage TASCs**

Sometimes a very small leakage flow of hot water can occur outward past a valve into a line that is relatively colder, creating a significant temperature difference. However, since this is a generally a "steady-state" phenomenon with no potential for cyclic temperature changes, the effect of TASCs is not significant and can be neglected.

➤ **Convection heating TASCs**

Similarly, there sometimes exists the potential for heat transfer across a valve to an isolated section beyond the valve, resulting in fluid stratification due to natural convection. However, since there is no potential for cyclic temperature changes in this case, the effect of TASCs is not significant and can be neglected.

In summary, these additional considerations for determining the potential for thermal fatigue as a result of the effects of TASCs provide an allowance for the consideration of cycle severity in assessing the potential for TASCs effects. The above criteria have previously been submitted by EPRI for generic approval (Letters dated February 28, 2001 and March 28, 2001, P.J. O'Regan (EPRI) to Dr. B. Sheron (USNRC), "Extension of Risk-Informed Inservice Inspection Methodology").

3.1 Scope of Program

The systems included in the RI-ISI program are provided in Table 3.1. The piping and instrumentation diagrams and additional plant information including the existing plant ISI program were used to define the Class 1 and 2 piping system boundaries.

3.2 Consequence Evaluation

The consequence(s) of pressure boundary failures were evaluated and ranked based on their impact on core damage and containment performance (i.e., isolation, bypass and large early release). The consequence evaluation included an assessment of shutdown and external events. The impact on these measures due to both direct and indirect effects was considered using the guidance provided in EPRI TR-112657.

3.3 Failure Potential Assessment

Failure potential estimates were generated utilizing industry failure history, plant specific failure history, and other relevant information. These failure estimates were determined using the guidance provided in EPRI TR-112657, with the exception of the previously stated deviation.

Table 3.3 summarizes the failure potential assessment by system for each degradation mechanism that was identified as potentially operative.

3.4 Risk Characterization

In the preceding steps, each run of piping within the scope of the program was evaluated to determine its impact on core damage and containment performance (i.e., isolation, bypass and large, early release) as well as its potential for failure. Given the results of these steps, piping segments are then defined as continuous runs of piping potentially susceptible to the same type(s) of degradation and whose failure will result in similar consequence(s). Segments are then ranked based upon their risk significance as defined in EPRI TR-112657.

The results of these calculations are presented in Table 3.4.

3.5 Element and NDE Selection

In general, EPRI TR-112657 requires that 25% of the locations in the high risk region and 10% of the locations in the medium risk region be selected for inspection using appropriate NDE methods tailored to the applicable degradation mechanism. In addition, per Section 3.6.4.2 of EPRI TR-112657, if the percentage of Class 1 piping locations selected for examination falls substantially below 10%, then the basis for selection needs to be investigated.

For KNPP, the percentage of Class 1 welds selected per the RI-ISI process was 10.0% (65 of 648 welds).

As stated in TR-112657, the existing FAC augmented inspection program provides the means to effectively manage this mechanism. No additional credit was taken for any FAC augmented inspection program locations.

A brief summary is provided in the following table, and the results of the selections are presented in Table 3.5. Section 4 of EPRI TR-112657 was used as guidance in determining the examination requirements for these locations.

Unit	Class 1 Piping Welds ⁽¹⁾		Class 2 Piping Welds ⁽²⁾		All Piping Welds ⁽³⁾	
	Total	Selected	Total	Selected	Total	Selected
1	648	65	1131	51	1779	116

Notes

1. Includes all Category B-F and B-J locations.
2. Includes all Category C-F-1 and C-F-2 locations.
3. All in-scope piping components, regardless of risk classification, will continue to receive Code required pressure testing, as part of the current ASME Section XI program. VT-2 visual examinations are scheduled in accordance with the station's pressure test program that remains unaffected by the RI-ISI program.

3.5.1 Additional Examinations

The RI-ISI program in all cases will determine through an engineering evaluation the root cause of any unacceptable flaw or relevant condition found during examination. The evaluation will include the applicable service conditions and

degradation mechanisms to establish that the element(s) will still perform their intended safety function during subsequent operation. Elements not meeting this requirement will be repaired or replaced.

The evaluation will include whether other elements in the segment or additional segments are subject to the same root cause conditions. Additional examinations will be performed on those elements with the same root cause conditions or degradation mechanisms. The additional examinations will include high risk significant elements and medium risk significant elements, if needed, up to a number equivalent to the number of elements required to be inspected on the segment or segments during the current outage. If unacceptable flaws or relevant conditions are again found similar to the initial problem, the remaining elements identified as susceptible will be examined during the current outage. No additional examinations will be performed if there are no additional elements identified as being susceptible to the same root cause conditions.

3.5.2 Program Relief Requests

An attempt has been made to select RI-ISI locations for examination such that a minimum of >90% coverage (i.e., Code Case N-460 criteria) is attainable. However, some limitations will not be known until the examination is performed, since some locations may be examined for the first time by the specified techniques.

In instances where locations are found at the time of the examination that do not meet the >90% coverage requirement, the process outlined in EPRI TR-112657 will be followed.

None of the existing KNPP relief requests are being withdrawn due to the RI-ISI application.

3.6 Risk Impact Assessment

The RI-ISI program has been conducted in accordance with Regulatory Guide 1.174 and the requirements of EPRI TR-112657, and the risk from implementation of this program is expected to remain neutral or decrease when compared to that estimated from current requirements.

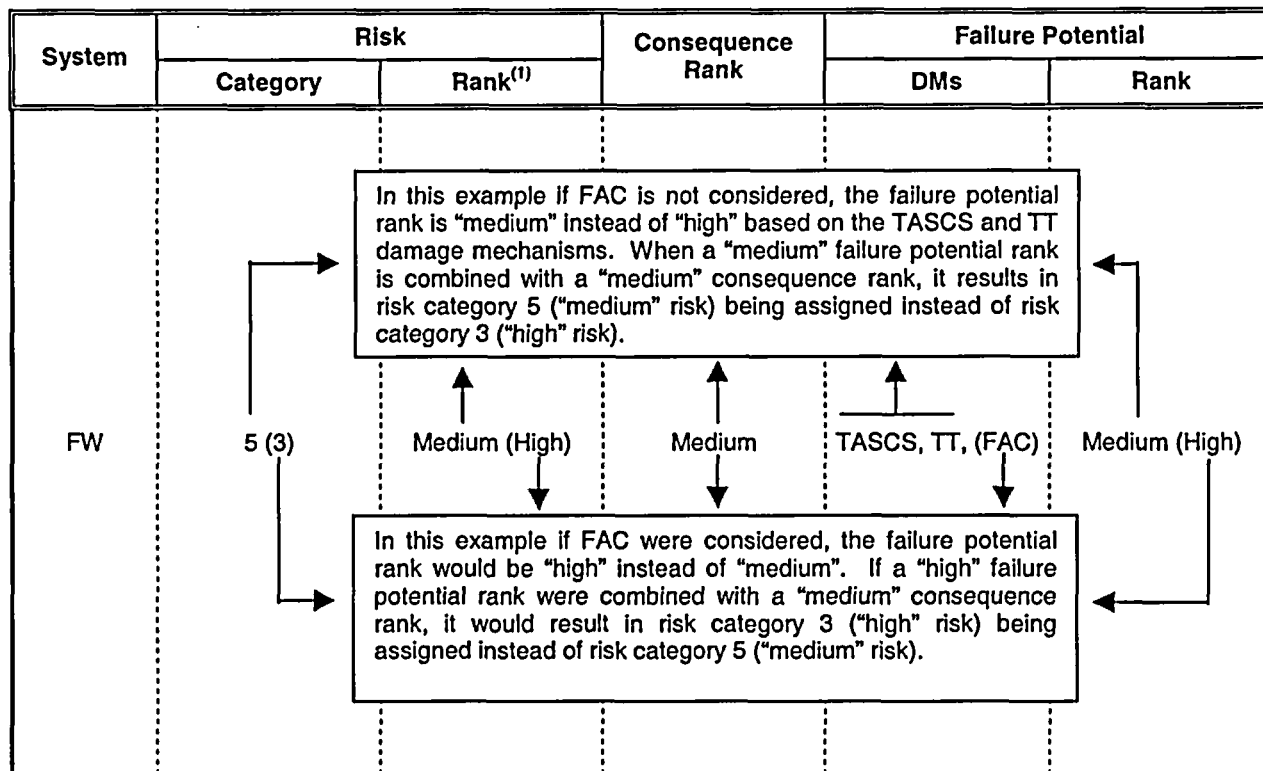
This evaluation identified the allocation of segments into High, Medium, and Low risk regions of the EPRI TR-112657 and ASME Code Case N-578 risk ranking matrix, and then determined for each of these risk classes what inspection changes are proposed for each of the locations in each segment. The changes include changing the number and location of inspections within the segment and in many cases improving the effectiveness of the inspection to account for the findings of the RI-ISI degradation mechanism assessment. For example, for locations subject to thermal fatigue, examinations will be conducted on an expanded volume and will be focused to enhance the probability of detection (POD) during the inspection process.

3.6.1 Quantitative Analysis

Limits are imposed by the EPRI methodology to ensure that the change in risk of implementing the RI-ISI program meets the requirements of Regulatory Guides 1.174 and 1.178. The EPRI criterion requires that the cumulative change in core damage frequency (CDF) and large early release frequency (LERF) be less than $1E-07$ and $1E-08$ per year per system, respectively.

Kewaunee conducted a risk impact analysis per the requirements of Section 3.7 of EPRI TR-112657. The analysis estimates the net change in risk due to the positive and negative influence of adding and removing locations from the inspection program. A risk quantification was performed using the "Simplified Risk Quantification Method" described in Section 3.7 of EPRI TR-112657. The conditional core damage probability (CCDP) and conditional large early release probability (CLERP) used for high consequence category segments was based on the highest evaluated CCDP ($1E-02$) and CLERP ($1E-03$), whereas, for medium consequence category segments, bounding estimates of CCDP ($1E-04$) and CLERP ($1E-05$) were used. The likelihood of pressure boundary failure (PBF) is determined by the presence of different degradation mechanisms and the rank is based on the relative failure probability. The basic likelihood of PBF for a piping location with no degradation mechanism present is given as x_0 and is expected to have a value less than $1E-08$. Piping locations identified as medium failure potential have a likelihood of $20x_0$. These PBF likelihoods are consistent with References 9 and 14 of EPRI TR-112657. In addition, the analysis was performed both with and without taking credit for enhanced inspection effectiveness due to an increased POD from application of the RI-ISI approach.

Table 3.6-1 presents a summary of the RI-ISI program versus the applicable ASME Section XI Code Edition program requirements and identifies on a per system basis each applicable risk category. The presence of FAC was adjusted for in the performance of the quantitative analysis by excluding its impact on the risk ranking. The exclusion of the impact of FAC on the risk ranking and therefore in the determination of the change in risk is performed, because FAC is a damage mechanism managed by a separate, independent plant augmented inspection program. The RI-ISI Program credits and relies upon this augmented plant inspection program to manage this damage mechanism. The plant FAC Program will continue to determine where and when examinations shall be performed. Hence, since the number of FAC examination locations remains the same "before" and "after" and no delta exists, there is no need to include the impact of FAC in the performance of the risk impact analysis. However, in an effort to be as informative as possible, for those systems where FAC is present, Table 3.6-1 presents the information in such a manner as to depict what the resultant risk categorization is both with and without consideration of FAC. This is accomplished by enclosing the FAC damage mechanism, as well as all other resultant corresponding changes (failure potential rank, risk category and risk rank), in parenthesis. Again, this has only been done for information purposes, and has no impact on the assessment itself. The use of this approach to depict the impact of degradation mechanisms managed by augmented inspection programs on the risk categorization is consistent with that used in the delta risk assessment for the Arkansas Nuclear One, Unit 2 (ANO-2) pilot application. An example is provided below.



Note

1. The risk rank is not included in Table 3.6-1 but it is included in Table 5-2.

As indicated in the following table, this evaluation has demonstrated that unacceptable risk impacts will not occur from implementation of the RI-ISI program, and satisfies the acceptance criteria of Regulatory Guide 1.174 and EPRI TR-112657.

Risk Impact Results

System ⁽¹⁾	$\Delta Risk_{CDF}$		$\Delta Risk_{LERF}$	
	w/ POD	w/o POD	w/ POD	w/o POD
RC	-8.80E-09	-2.80E-09	-8.80E-10	-2.80E-10
RHR	-3.47E-09	-1.46E-09	-3.47E-10	-1.46E-10
SI	-2.54E-09	-1.74E-09	-2.54E-10	-1.74E-10
CVC	-1.67E-08	-9.46E-09	-1.67E-09	-9.46E-10
MS	negligible	negligible	negligible	negligible
FW	negligible	4.00E-11	negligible	4.00E-12
ICS	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
AF	3.20E-11	4.00E-11	3.20E-12	4.00E-12
Total	-3.19E-08	-1.58E-08	-3.19E-09	-1.58E-09

Note

1. Systems are described in Table 3.1.

3.6.2 Defense-in-Depth

The intent of the inspections mandated by ASME Section XI for piping welds is to identify conditions such as flaws or indications that may be precursors to leaks or ruptures in a system's pressure boundary. Currently, the process for picking inspection locations is based upon structural discontinuity and stress analysis results. As depicted in ASME White Paper 92-01-01 Rev. 1, "Evaluation of Inservice Inspection Requirements for Class 1, Category B-J Pressure Retaining Welds," this method has been ineffective in identifying leaks or failures. EPRI TR-112657 and Code Case N-578 provide a more robust selection process founded on actual service experience with nuclear plant piping failure data.

This process has two key independent ingredients, that is, a determination of each location's susceptibility to degradation and secondly, an independent assessment of the consequence of the piping failure. These two ingredients assure defense in depth is maintained. First, by evaluating a location's susceptibility to degradation, the likelihood of finding flaws or indications that may be precursors to leak or ruptures is increased. Secondly, the consequence assessment effort has a single failure criterion. As such, no matter how unlikely a failure scenario is, it is ranked High in the consequence assessment, and at worst Medium in the risk assessment (i.e., Risk Category 4), if as a result of the failure there is no mitigative equipment available to respond to the event. In addition, the consequence assessment takes into account equipment reliability, and less credit is given to less reliable equipment.

All locations within the Class 1 and 2 pressure boundaries will continue to receive a system pressure test and visual VT-2 examination as currently required by the Code regardless of its risk classification.

4. IMPLEMENTATION AND MONITORING PROGRAM

Upon approval of the RI-ISI program, procedures that comply with the guidelines described in EPRI TR-112657 will be prepared to implement and monitor the program. The new program will be integrated into the fourth inservice inspection interval. No changes to the Technical Specifications or Updated Safety Analysis Report are necessary for program implementation.

The applicable aspects of the ASME Code not affected by this change will be retained, such as inspection methods, acceptance guidelines, pressure testing, corrective measures, documentation requirements, and quality control requirements. Existing ASME Section XI program implementing procedures will be retained and modified to address the RI-ISI process, as appropriate.

The monitoring and corrective action program will contain the following elements:

- A. Identify
- B. Characterize
- C. (1) Evaluate, determine the cause and extent of the condition identified
(2) Evaluate, develop a corrective action plan or plans
- D. Decide
- E. Implement
- F. Monitor
- G. Trend

The RI-ISI program is a living program requiring feedback of new relevant information to ensure the appropriate identification of high safety significant piping locations. As a minimum, risk ranking of piping segments will be reviewed and adjusted on an ASME period basis. In addition, significant changes may require more frequent adjustment as directed by NRC Bulletin or Generic Letter requirements, or by industry and plant specific feedback.

5. PROPOSED ISI PROGRAM PLAN CHANGE

Prior to the development of the RI-ISI program, piping weld selections were determined for the upcoming fourth interval per ASME Section XI requirements. As allowed by 10 CFR 50, the Class 1 (Examination Categories B-F and B-J) piping weld selections were determined per the requirements of the 1974 Edition through Summer 1975 Addenda of ASME Code Section XI. For Class 2 (Examination Categories C-F-1 and C-F-2), the piping weld selections were determined per the requirements of the 1998 Edition through 2000 Addenda of ASME Code Section XI. A comparison between the RI-ISI program and ASME Section XI Code program requirements for in-scope piping is provided in Tables 5-1 and 5-2. Table 5-1 provides a summary comparison by risk region. Table 5-2 provides the same comparison information, but in a more detailed manner by risk category, similar to the format used in Table 3.6-1.

KNPP is implementing the RI-ISI program at the start of the first period of its fourth inspection interval. As such, 100% of the required RI-ISI program inspections will be completed in the fourth interval. Examinations shall be performed during the interval such that the period examination percentage requirements of ASME Section XI, paragraphs IWB-2412 and IWC-2412 are met.

6. REFERENCES/DOCUMENTATION

EPRI TR-112657, "Revised Risk-Informed Inservice Inspection Evaluation Procedure", Rev. B-A

ASME Code Case N-578, "Risk-Informed Requirements for Class 1, 2, and 3 Piping, Method B, Section XI, Division 1"

Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis"

Regulatory Guide 1.178, "An Approach for Plant-Specific Risk-Informed Decisionmaking Inservice Inspection of Piping"

Supporting Onsite Documentation

Structural Integrity Calculation/File No. NMC-01-340, "Degradation Mechanism Evaluation for the Kewaunee Nuclear Power Plant (KNPP)", Revision 2, dated July 11, 2003

Structural Integrity Calculation/File No. NMC-01-341, "Risk-Informed Inservice Inspection Consequence Evaluation of Class 1 & 2 Piping – Kewaunee", Revision 3

Structural Integrity Calculation/File No. NMC-01-342, "Risk Ranking Summary, Matrix and Report for the Kewaunee Nuclear Power Plant", Revision 0

Structural Integrity Calculation/File No. NMC-01-343, "Risk Impact Analysis for the Kewaunee Nuclear Power Plant", Revision 0

Structural Integrity Calculation/File No. NMC-01-345, "Risk-Informed Inservice Inspection Service History Review ", dated March 21, 2003

Structural Integrity File No. NMC-01-103-2, Record of Conversation No. ROC-006, "Minutes of the Element Selection Meeting for the Risk-Informed ISI Project at the Kewaunee Nuclear Power Plant", Revision 0, dated February 6, 2003

Table 3.1		
System Selection and Segment / Element Definition		
System Description	Number of Segments	Number of Elements
RC – Reactor Coolant	36	270
RHR – Residual Heat Removal	60	363
SI – Safety Injection	67	538
CVC – Chemical and Volume Control	20	213
MS – Main Steam	20	76
FW – Feedwater	12	51
ICS – Internal Containment Spray	19	121
AF – Auxiliary Feedwater	14	147
Totals	248	1779

Table 3.3											
Unit 1 - Failure Potential Assessment Summary											
System ⁽¹⁾	Thermal Fatigue		Stress Corrosion Cracking				Localized Corrosion			Flow Sensitive	
	TASCS	TT	IGSCC	TGSCC	ECSCC	PWSCC	MIC	PIT	CC	E-C	FAC
RC	X	X									
RHR	X										
SI		X	X			X					
CVC	X	X									
MS											
FW	X										X
ICS											
AF	X	X									

Note

1. Systems are described in Table 3.1.

Table 3.4

Number of Segments by Risk Category With and Without Impact of FAC

System ⁽¹⁾	High Risk Region						Medium Risk Region				Low Risk Region			
	Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without	With	Without
RC			7	7			29	29						
RHR			2	2			19	19	2	2	32	32	5	5
SI			3	3			25	25	7	7	32	32		
CVC			2	2			6	6	1	1	7	7	4	4
MS											20	20		
FW					1 ⁽²⁾	0			4	4	7	8		
ICS							11	11			6	6	2	2
AF							2	2	2	2	10	10		
Total			14	14	1	0	92	92	16	16	114	115	11	11

Notes

1. Systems are described in Table 3.1.
2. This segment becomes Category 6 after FAC is removed from consideration due to no other damage mechanism being present.

Table 3.5

Number of Elements Selected for Inspection by Risk Category Excluding Impact of FAC

System ⁽¹⁾	High Risk Region						Medium Risk Region				Low Risk Region			
	Category 1		Category 2		Category 3		Category 4		Category 5		Category 6		Category 7	
	Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected	Total	Selected
RC			22	6			248	25	0	0	0	0	0	0
RHR			8	2			107	11	6	1	221	0	21	0
SI			4	3			317	32	10	1	207	0	0	0
CVC			35	9			88	9	5	1	76	0	9	0
MS			0	0			0	0	0	0	76	0	0	0
FW			0	0			0	0	16	2	35	0	0	0
ICS			0	0			88	9	0	0	16	0	17	0
AF			0	0			33	4	6	1	108	0	0	0
Total			69	20			881	90	43	6	739	0	47	0

Notes

1. Systems are described in Table 3.1.

Table 3.6-1

Risk Impact Analysis Results

System ⁽¹⁾	Category	Consequence Rank	Failure Potential		Inspections			CDF Impact ⁽⁴⁾		LERF Impact ⁽⁴⁾	
			DMs	Rank	SXI ^(2 and 3)	RI-ISI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
RC	2	High	TASCS, TT	Medium	1	2	1	-3.00E-09	-1.00E-09	-3.00E-10	-1.00E-10
RC	2	High	TASCS	Medium	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
RC	2	High	TT	Medium	2	3	1	-4.20E-09	-1.00E-09	-4.20E-10	-1.00E-10
RC	4	High	None	Low	29	25	-4	2.00E-10	2.00E-10	2.00E-11	2.00E-11
RC Total								-8.80E-09	-2.80E-09	-8.80E-10	-2.80E-10
RHR	2	High	TASCS	Medium	1	2	1	-3.00E-09	-1.00E-09	-3.00E-10	-1.00E-10
RHR	4	High	None	Low	2	11	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
RHR	5a	Medium	TASCS	Medium	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
RHR	6a	Medium	None	Low	11	0	-11	negligible	negligible	negligible	negligible
RHR	6b	Low	TASCS	Medium	0	0	0	no change	no change	no change	no change
RHR	7a	Low	None	Low	0	0	0	no change	no change	no change	no change
RHR Total								-3.47E-09	-1.46E-09	-3.47E-10	-1.46E-10
SI	2	High	TT	Medium	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
SI	2	High	PWSCC	Medium	2	2	0	no change	no change	no change	no change
SI	4	High	None	Low	17	32	15	-7.50E-10	-7.50E-10	-7.50E-11	-7.50E-11
SI	5a	Medium	TT, IGSCC	Medium	1	1	0	no change	no change	no change	no change
SI	5a	Medium	IGSCC	Medium	1	0	-1	1.00E-11	1.00E-11	1.00E-12	1.00E-12
SI	6a	Medium	None	Low	17	0	-17	negligible	negligible	negligible	negligible
SI Total								-2.54E-09	-1.74E-09	-2.54E-10	-1.74E-10

**Table 3.6-1
Risk Impact Analysis Results**

System ⁽¹⁾	Category	Consequence Rank	Failure Potential		Inspections			CDF Impact ⁽⁴⁾		LERF Impact ⁽⁴⁾	
			DMs	Rank	SXI ^(2 and 3)	RI-ISI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
CVC	2	High	TASCS	Medium	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
CVC	2	High	TT	Medium	0	8	8	-1.44E-08	-8.00E-09	-1.44E-09	-8.00E-10
CVC	4	High	None	Low	0	9	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
CVC	5a	Medium	TT	Medium	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
CVC	6a	Medium	None	Low	0	0	0	no change	no change	no change	no change
CVC	7a	Low	None	Low	0	0	0	no change	no change	no change	no change
CVC Total								-1.67E-08	-9.46E-09	-1.67E-09	-9.46E-10
MS	6a	Medium	None	Low	11	0	-11	negligible	negligible	negligible	negligible
MS Total								negligible	negligible	negligible	negligible
FW	5a	Medium	TASCS	Medium	6	2	-4	no change	4.00E-11	no change	4.00E-12
FW	6a (3)	Medium	None (FAC)	Low (High)	2	0	-2	negligible	negligible	negligible	negligible
FW	6a	Medium	None	Low	2	0	-2	negligible	negligible	negligible	negligible
FW Total								negligible	4.00E-11	negligible	4.00E-12
ICS	4	High	None	Low	0	9	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
ICS	6a	Medium	None	Low	1	0	-1	negligible	negligible	negligible	negligible
ICS	7a	Low	None	Low	0	0	0	no change	no change	no change	no change
ICS Total								-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
AF	4	High	None	Low	5	4	-1	5.00E-11	5.00E-11	5.00E-12	5.00E-12
AF	5a	Medium	TASCS, TT	Medium	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
AF	6a	Medium	None	Low	7	0	-7	negligible	negligible	negligible	negligible
AF Total								3.20E-11	4.00E-11	3.20E-12	4.00E-12
Grand Total								-3.19E-08	-1.58E-08	-3.19E-09	-1.58E-09

Notes

1. Systems are described in Table 3.1.

Notes for Table 3.6-1 (cont'd)

2. Only those ASME Section XI Code inspection locations that received a volumetric examination in addition to a surface examination are included in the count. Inspection locations previously subjected to a surface examination only were not considered in accordance with Section 3.7.1 of EPRI TR-112657.
3. Prior to the development of the RI-ISI program, Class 1 (Examination Categories B-F and B-J) and Class 2 (Examination Categories C-F-1 and C-F-2) piping weld selections were determined for the upcoming fourth interval. These selections were used for comparison purposes. As allowed by 10 CFR 50, the Class 1 piping weld selections were determined per the requirements of the 1974 Edition through Summer 1975 Addenda of ASME Code Section XI. For Class 2, the piping weld selections were determined per the requirements of the 1998 Edition through 2000 Addenda of ASME Code Section XI.
4. Per Section 3.7.1 of EPRI TR-112657, the contribution of low risk categories 6 and 7 need not be considered in assessing the change in risk. They are excluded from analysis because they have an insignificant impact on risk. Hence, the word "negligible" is given in these cases in lieu of values for CDF and LERF Impact. For those cases in high, medium or low risk region piping where no impact to CDF or LERF exists, "no change" is listed.

Table 5-1

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Region

System ⁽¹⁾	Code Category	High Risk Region					Medium Risk Region				Low Risk Region					
		Weld Count	Section XI ⁽²⁾		EPRI TR-112657		Weld Count	Section XI ⁽²⁾		EPRI TR-112657		Weld Count	Section XI ⁽²⁾		EPRI TR-112657	
			Vol/Sur	Sur Only	RI-ISI	Other ⁽³⁾		Vol/Sur	Sur Only	RI-ISI	Other ⁽³⁾		Vol/Sur	Sur Only	RI-ISI	Other ⁽³⁾
RC	B-F	1	1	0	1		12	12	0	12		0	0	0	0	
	B-J	21	2	0	5		236	17	53	13		0	0	0	0	
RHR	B-J	8	1	0	2		9	1	0	5		27	9	0	0	
	C-F-1	0	0	0	0		104	1	7	7		215	2	13	0	
SI	B-F	2	2	0	2		0	0	0	0		0	0	0	0	
	B-J	2	0	0	1		22	5	1	5		95	16	13	0	
	C-F-1	0	0	0	0		305	14	12	28		112	1	8	0	
CVC	B-J	35	0	10	9		93	0	30	10		85	0	25	0	
MS	C-F-2	0	0	0	0		0	0	0	0		76	11	2	0	
FW	C-F-2	0	0	0	0		16	6	1	2		35	4	0	0	
ICS	C-F-1	0	0	0	0		88	0	6	9		33	1	3	0	
AF	C-F-2	0	0	0	0		39	5	0	5		108	7	0	0	
Total	B-F	3	3	0	3		12	12	0	12		0	0	0	0	
	B-J	66	3	10	17		360	23	84	33		207	25	38	0	
	C-F-1	0	0	0	0		497	15	25	44		360	4	24	0	
	C-F-2	0	0	0	0		55	11	1	7		219	22	2	0	

Notes

1. Systems are described in Table 3.1.
2. Prior to the development of the RI-ISI program, Class 1 (Examination Categories B-F and B-J) and Class 2 (Examination Categories C-F-1 and C-F-2) piping weld selections were determined for the upcoming fourth interval. These selections were used for comparison purposes. As allowed by 10 CFR 50, the Class 1 piping weld selections were determined per the requirements of the 1974 Edition through Summer 1975 Addenda of ASME Code Section XI. For Class 2, the piping weld selections were determined per the requirements of the 1998 Edition through 2000 Addenda of ASME Code Section XI.

Notes for Table 5-1 (cont'd)

3. The column labeled "Other" is generally used to identify augmented inspection program locations credited per Section 3.6.5 of EPRI TR-112657. The EPRI methodology allows augmented inspection program locations to be credited if the inspection locations selected strictly for RI-ISI purposes produce less than a 10% sampling of the overall Class 1 weld population. As stated in Section 3.5 of this template, KNPP achieved a 10% sampling without relying on augmented inspection program locations. The "Other" column has been retained in this table solely for uniformity purposes with the other RI-ISI application template submittals.

Table 5-2

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Category

System ⁽¹⁾	Risk		Consequence Rank	Failure Potential		Code Category	Weld Count	Section XI ⁽²⁾		EPRI TR-112657	
	Category	Rank		DMs	Rank			Vol/Sur	Sur Only	RI-ISI	Other ⁽³⁾
RC	2	High	High	TASCS, TT	Medium	B-J	5	1	0	2	
RC	2	High	High	TASCS	Medium	B-J	7	0	0	1	
RC	2	High	High	TT	Medium	B-F	1	1	0	1	
						B-J	9	1	0	2	
RC	4	Medium	High	None	Low	B-F	12	12	0	12	
						B-J	236	17	53	13	
RHR	2	High	High	TASCS	Medium	B-J	8	1	0	2	
RHR	4	Medium	High	None	Low	B-J	9	1	0	5	
						C-F-1	98	1	7	6	
RHR	5	Medium	Medium	TASCS	Medium	C-F-1	6	0	0	1	
RHR	6	Low	Medium	None	Low	B-J	27	9	0	0	
RHR	6	Low	Medium	None	Low	C-F-1	192	2	13	0	
RHR	6	Low	Low	TASCS	Medium	C-F-1	2	0	0	0	
RHR	7	Low	Low	None	Low	C-F-1	21	0	0	0	
SI	2	High	High	TT	Medium	B-J	2	0	0	1	
SI	2	High	High	PWSCC	Medium	B-F	2	2	0	2	
SI	4	Medium	High	None	Low	B-J	12	3	0	4	
						C-F-1	305	14	12	28	
SI	5	Medium	Medium	TT, IGSCC	Medium	B-J	5	1	1	1	
SI	5	Medium	Medium	IGSCC	Medium	B-J	5	1	0	0	
SI	6	Low	Medium	None	Low	B-J	95	16	13	0	
						C-F-1	112	1	8	0	

Table 5-2 (cont'd)

Inspection Location Selection Comparison Between ASME Section XI Code and EPRI TR-112657 by Risk Category

System ⁽¹⁾	Risk		Consequence Rank	Failure Potential		Code Category	Weld Count	Section XI ⁽²⁾		EPRI TR-112657	
	Category	Rank		DMs	Rank			Vol/Sur	Sur Only	RI-ISI	Other ⁽³⁾
CVC	2	High	High	TASCS	Medium	B-J	2	0	0	1	
CVC	2	High	High	TT	Medium	B-J	33	0	10	8	
CVC	4	Medium	High	None	Low	B-J	88	0	30	9	
CVC	5	Medium	Medium	TT	Medium	B-J	5	0	0	1	
CVC	6	Low	Medium	None	Low	B-J	76	0	21	0	
CVC	7	Low	Low	None	Low	B-J	9	0	4	0	
MS	6	Low	Medium	None	Low	C-F-2	76	11	2	0	
FW	5	Medium	Medium	TASCS	Medium	C-F-2	16	6	1	2	
FW	6 (3)	Low (High)	Medium	None (FAC)	Low (High)	C-F-2	2	2	0	0	
FW	6	Low	Medium	None	Low	C-F-2	33	2	0	0	
ICS	4	Medium	High	None	Low	C-F-1	88	0	6	9	
ICS	6	Low	Medium	None	Low	C-F-1	16	1	0	0	
ICS	7	Low	Low	None	Low	C-F-1	17	0	3	0	
AF	4	Medium	High	None	Low	C-F-2	33	5	0	4	
AF	5	Medium	Medium	TASCS, TT	Medium	C-F-2	6	0	0	1	
AF	6	Low	Medium	None	Low	C-F-2	108	7	0	0	

Notes

1. Systems are described in Table 3.1.
2. Prior to the development of the RI-ISI program, Class 1 (Examination Categories B-F and B-J) and Class 2 (Examination Categories C-F-1 and C-F-2) piping weld selections were determined for the upcoming fourth interval. These selections were used for comparison purposes. As allowed by 10 CFR 50, the Class 1 piping weld selections were determined per the requirements of the 1974 Edition through Summer 1975 Addenda of ASME Code Section XI. For Class 2, the piping weld selections were determined per the requirements of the 1998 Edition through 2000 Addenda of ASME Code Section XI.

Notes for Table 5-2 (cont'd)

3. The column labeled "Other" is generally used to identify augmented inspection program locations credited per Section 3.6.5 of EPRI TR-112657. The EPRI methodology allows augmented inspection program locations to be credited if the inspection locations selected strictly for RI-ISI purposes produce less than a 10% sampling of the overall Class 1 weld population. As stated in Section 3.5 of this template, KNPP achieved a 10.0% sampling without relying on augmented inspection program locations. The "Other" column has been retained in this table solely for uniformity purposes with the other RI-ISI application template submittals.



INSERVICE
ENGINEERING

**DOCUMENT
PACKAGE**

FILE No.: NMC-01-342

PROJECT No.: NMC-01

PROJECT NAME: Risk-Informed ISI Code Case N-578 Application to NMC Plants

CLIENT: Nuclear Management Company (NMC)

DOCUMENT TITLE: Risk Ranking Summary, Matrix and Report for the Kewaunee Nuclear Power Plant

Document Revision	Affected Pages	Revision Description	Preparer(s) Signature(s) & Date	Checker(s) Signature(s) & Date	Approver(s) Signature(s) & Date
0	i A1 B1 C1 - C20	Original Issue	<i>Dan Burye</i> 7/14/2003	<i>Scott Kalut</i> 7/11/03	<i>Phillip C. Dukow</i> July 29, 2003

Kewaunee Risk Ranking Summary

System	Risk		Consequence Rank	Failure Potential		Weld Count	CC	No. of Elements Selected
	Category	Rank		DMs	Rank			
01RC	2	High	High	TASCS, TT	Medium	5	1	6
01RC	2	High	High	TASCS	Medium	7	1	
01RC	2	High	High	TT	Medium	10	1	
02RHR	2	High	High	TASCS	Medium	8	1	2
03SI	2	High	High	TT	Medium	2	1	3
03SI	2	High	High	PWSCC	Medium	2	1	
04CVC	2	High	High	TASCS	Medium	2	1	9
04CVC	2	High	High	TT	Medium	33	1	
01RC	4	Medium	High	None	Low	248	1	25
02RHR	4	Medium	High	None	Low	9	1	11
02RHR	4	Medium	High	None	Low	98	2	
03SI	4	Medium	High	None	Low	12	1	32
03SI	4	Medium	High	None	Low	305	2	
04CVC	4	Medium	High	None	Low	88	1	
07ICS	4	Medium	High	None	Low	88	2	9
08AF	4	Medium	High	None	Low	33	2	4
02RHR	5a	Medium	Medium	TASCS	Medium	6	2	1
03SI	5a	Medium	Medium	TT, IGSCC	Medium	5	1	1
03SI	5a	Medium	Medium	IGSCC	Medium	5	1	
04CVC	5a	Medium	Medium	TT	Medium	5	1	1
06FW	5a	Medium	Medium	TASCS	Medium	16	2	2
08AF	5a	Medium	Medium	TASCS, TT	Medium	6	2	1
02RHR	6a	Low	Medium	None	Low	27	1	0
02RHR	6a	Low	Medium	None	Low	192	2	
02RHR	6b	Low	Low	TASCS	Medium	2	2	0
03SI	6a	Low	Medium	None	Low	95	1	0
03SI	6a	Low	Medium	None	Low	112	2	
04CVC	6a	Low	Medium	None	Low	76	1	0
05MS	6a	Low	Medium	None	Low	76	2	0
06FW	6a (3)	Low (High)	Medium	None (FAC)	Low (High)	2	2	0
06FW	6a	Low	Medium	None	Low	33	2	0
07ICS	6a	Low	Medium	None	Low	16	2	0
08AF	6a	Low	Medium	None	Low	108	2	0
02RHR	7a	Low	Low	None	Low	21	2	0
04CVC	7a	Low	Low	None	Low	9	1	0
07ICS	7a	Low	Low	None	Low	17	2	0

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**Kewaunee Risk
Ranking Matrix**

**Consequence Evaluation
Conditional Core Melt Potential**

Degradation Mechanism Assessment
Pipe Rupture Potential

	NONE	LOW	MEDIUM	HIGH
H I G H	<p>Category 7b - Low Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>	<p>Category 5b - Medium Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>	<p>Category 3 - High Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>	<p>Category 1 - High Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>
M E D I U M	<p>Category 7c - Low Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>	<p>Category 6b - Low Risk</p> <p>01RC - 0 02RHR - 2 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 2 Elements</p>	<p>Category 5a - Medium Risk</p> <p>01RC - 0 02RHR - 6 03SI - 10 04CVC - 5 05MS - 0 06FW - 16 07ICS - 0 08AF - 6</p> <p>Total - 43 Elements</p>	<p>Category 2 - High Risk</p> <p>01RC - 22 02RHR - 8 03SI - 4 04CVC - 35 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 69 Elements</p>
L O W	<p>Category 7d - Low Risk</p> <p>01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0</p> <p>Total - 0 Elements</p>	<p>Category 7a - Low Risk</p> <p>01RC - 0 02RHR - 21 03SI - 0 04CVC - 9 05MS - 0 06FW - 0 07ICS - 17 08AF - 0</p> <p>Total - 47 Elements</p>	<p>Category 6a - Low Risk</p> <p>01RC - 0 02RHR - 219 03SI - 207 04CVC - 76 05MS - 76 06FW - 35 07ICS - 16 08AF - 108</p> <p>Total - 737 Elements</p>	<p>Category 4 - Medium Risk</p> <p>01RC - 248 02RHR - 107 03SI - 317 04CVC - 88 05MS - 0 06FW - 0 07ICS - 88 08AF - 33</p> <p>Total - 881 Elements</p>

Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342

Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s)	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
01RC	RC-027	2	High	RCS-C-09	High	TASCS, TT	Medium	10-RC-ISIM-1704 10-RC-ISIM-892	RC-W033BC RC-W062, RC-W063, RC-W064, RC-W065	5	ISIM-1704 ISIM-892	1
01RC	RC-039	2	High	RCS-C-17	High	TASCS	Medium	3-RC-ISIM-874-1	PS-W053, PS-W054, <u>PS-W055</u> , PS-W056, PS-W057, PS-W058, PS-W059	7	ISIM-874-1	1
01RC	RC-001	2	High	CVCS-C-02	High	TT	Medium	2-RC-ISIM-1704	RC-W051BC	1	ISIM-1704	1
01RC	RC-004	2	High	IL-C-05	High	TT	Medium	6-RC-ISIM-982 6-RC-ISIM-1703	RC-W028, RC-W029 <u>RC-W022BC</u>	3	ISIM-1703 ISIM-982	1
01RC	RC-005	2	High	IL-C-08	High	TT	Medium	6-RC-ISIM-936 6-RC-ISIM-1704	RC-W061, <u>RC-W060</u> RC-W054BC	3	ISIM-1704 ISIM-936	1
01RC	RC-007	2	High	IL-C-16	High	TT	Medium	12-RC-ISIM-1704	RC-W050BC	1	ISIM-1704	1
01RC	RC-026	2	High	RCS-C-09	High	TT	Medium	10-RC-ISIM-892 14-RC-ISIM-892	RC-W066 <u>RC-W067DM</u>	2	ISIM-892	1
02RHR	RHR-022	2	High	RHR-C-05A1	High	TASCS	Medium	8-RHR-ISIM-957-1	RHR-W003, RHR-W004, RHR-W005, RHR-W006	4	ISIM-957-1Sh1	1
02RHR	RHR-026	2	High	RHR-C-05B1	High	TASCS	Medium	8-RHR-ISIM-957-1	<u>RHR-W027</u> , RHR-W028, RHR-W029, RHR-W030	4	ISIM-957-1Sh1	1
03SI	SI-033	2	High	IL-C-16	High	TT	Medium	12-SI-ISIM-938-1	SI-W075, <u>SI-W076</u>	2	ISIM-938-1	1
03SI	SI-040	2	High	IL-C-19	High	PWSCC	Medium	4-SI-ISIM-938-2	<u>SI-W112DM</u>	1	ISIM-938-2Sh1	1
03SI	SI-047	2	High	IL-C-22	High	PWSCC	Medium	4-SI-ISIM-939	<u>SI-W054DM</u>	1	ISIM-939Sh1	1
04CVC	CVC-010	2	High	CVCS-C-09	High	TASCS	Medium	2-CVC-ISIM-1369-2	<u>WD-W004S</u> , WD-W005S	2	ISIM-1369-2	1
04CVC	CVC-003	2	High	CVCS-C-02	High	TT	Medium	2-CVC-ISIM-1473	<u>CVC-W096S</u> , <u>CVC-W095S</u> , <u>CVC-W094S</u> , <u>CVC-W093S</u> , <u>CVC-W092S</u> , <u>CVC-W091S</u> , <u>CVC-W090S</u> , <u>CVC-W089S</u> , <u>CVC-W088S</u> , <u>CVC-W087S</u> , <u>CVC-W086S</u> , <u>CVC-W085S</u> , <u>CVC-W084S</u> , <u>CVC-W083S</u> , <u>CVC-W082S</u> , <u>CVC-W081S</u> , <u>CVC-W080S</u> , <u>CVC-W079S</u> , <u>CVC-W078S</u> , <u>CVC-W077S</u> , <u>CVC-W076S</u> , <u>CVC-W075S</u> , <u>CVC-W074S</u> , <u>CVC-W073S</u> , <u>CVC-W072S</u> , <u>CVC-W071S</u> , <u>CVC-W070S</u> , <u>CVC-W069S</u> , <u>CVC-W068S</u> , <u>CVC-W067S</u> , <u>CVC-W066S</u> , <u>CVC-W065S</u> , <u>CVC-W064S</u>	33	ISIM-1473	1
01RC	RC-002	4	Medium	CVCS-C-05	High	None	Low	2-RC-ISIM-1704	RC-W044BC	1	ISIM-1704	1
01RC	RC-003	4	Medium	CVCS-C-09	High	None	Low	2-RC-ISIM-1703	RC-W014BC	1	ISIM-1703	1
01RC	RC-006	4	Medium	IL-C-14	High	None	Low	12-RC-ISIM-1703	RC-W023BC	1	ISIM-1703	1
01RC	RC-008	4	Medium	RCS-C-01	High	None	Low	29-RC-ISIM-1703	<u>RC-W001DM</u> , RC-W070, RC-W005, RC-W080, <u>RC-W076DM</u>	5	ISIM-1703	1
01RC	RC-009	4	Medium	RCS-C-01A	High	None	Low	2.5-RC-ISIM-1703	RC-W071BC	1	ISIM-1703	1
01RC	RC-010	4	Medium	RCS-C-01B	High	None	Low	6-RC-ISIM-1703	RC-W004BC, RC-W027	2	ISIM-1703	1

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
01RC	RC-011	4	Medium	RCS-C-02	High	None	Low	31-RC-ISIM-1703	<u>RC-W077DM</u> , RC-W081, RC-W008, RC-W009, RC-W012, RC-W015, RC-W018	7	ISIM-1703	1
01RC	RC-012	4	Medium	RCS-C-03	High	None	Low	27.5-RC-ISIM-1703	RC-W019, RC-W020, RC-W024, <u>RC-W026DM</u>	4	ISIM-1703	1
01RC	RC-013	4	Medium	RCS-C-03A	High	None	Low	2.5-RC-ISIM-1703	RC-W072BC	1	ISIM-1703	1
01RC	RC-014	4	Medium	RCS-C-04	High	None	Low	2-RC-ISIM-1703 2-RC-ISIM-1460 3-RC-ISIM-1460 3-RC-ISIM-1703	RC-W021BC RTD-W032S, RTD-W033S, RTD-W034S, RTD-W035S, RTD-W036S, RTD-W037S, RTD-W038S, RTD-W039S, RTD-W040S, RTD-W041S, RTD-W042S, RTD-W043S, RTD-W044S, RTD-W045S, RTD-W046S, RTD-W047S, RTD-W048S, RTD-W049S, RTD-W050S, RTD-W051S, RTD-W052S, RTD-W053S, RTD-W054S, RTD-W055B RTD-W001S, RTD-W002S, RTD-W003S, RTD-W004S, RTD-W005B, RTD-W006B, RTD-W007S, RTD-W008S, RTD-W009S, RTD-W010S, RTD-W011S, RTD-W012S, RTD-W013S, RTD-W014S, RTD-W015S, RTD-W016S, RTD-W017S, RTD-W018S, <u>RTD-W019S</u> , RTD-W020S, RTD-W021S, RTD-W022S, RTD-W023S, RTD-W024S, RTD-W025B RTD-W026, RTD-W027, RTD-W028, RTD-W029, RTD-W030, RTD-W031 RC-W013BC	57	ISIM-1703 ISIM-1460	1
01RC	RC-017	4	Medium	RCS-C-05	High	None	Low	29-RC-ISIM-1704	<u>RC-W030DM</u> , RC-W069, RC-W035, RC-W082, <u>RC-W078DM</u>	5	ISIM-1704	1
01RC	RC-018	4	Medium	RCS-C-05A	High	None	Low	2.5-RC-ISIM-1704	RC-W074BC	1	ISIM-1704	1
01RC	RC-019	4	Medium	RCS-C-05B	High	None	Low	6-RC-ISIM-1704	RC-W032BC, RC-W059	2	ISIM-1704	1
01RC	RC-020	4	Medium	RCS-C-06	High	None	Low	31-RC-ISIM-1704	<u>RC-W079DM</u> , RC-W083, RC-W038, RC-W039, RC-W042, RC-W073, RC-W045, RC-W048	8	ISIM-1704	1
01RC	RC-021	4	Medium	RCS-C-07	High	None	Low	27.5-RC-ISIM-1704	RC-W049, RC-W055, RC-W056, <u>RC-W058DM</u>	4	ISIM-1704	1
01RC	RC-022	4	Medium	RCS-C-07A	High	None	Low	2.5-RC-ISIM-1704	RC-W075BC	1	ISIM-1704	1

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
01RC	RC-023	4	Medium	RCS-C-08	High	None	Low	2-RC-ISIM-1704 2-RC-ISIM-1461 3-RC-ISIM-1461 3-RC-ISIM-1704	RC-W052BC RTD-W085S, RTD-W086S, RTD-W087S, RTD-W088S, RTD-W089S, RTD-W090S, RTD-W091S, RTD-W092S, RTD-W093S, RTD-W094S, RTD-W095S, RTD-W096S, RTD-W097S, RTD-W098S, RTD-W099S, RTD-W100S, RTD-W101S, RTD-W102S, RTD-W103S, RTD-W104S, RTD-W105S, RTD-W106B RTD-W056S, RTD-W057S, RTD-W058S, RTD-W059S, RTD-W060B, RTD-W061B, RTD-W062S, RTD-W063S, RTD-W064S, RTD-W065S, RTD-W066S, RTD-W067S, RTD-W068S, RTD-W069S, RTD-W070S, RTD-W071S, RTD-W072S, RTD-W073S, RTD-W074S, RTD-W075S, RTD-W076S, RTD-W077S, RTD-W078B RTD-W107, RTD-W079, RTD-W080, RTD-W081, RTD-W082, <u>RTD-W083</u> , RTD-W084 RC-W043BC	54	ISIM-1704 ISIM-1461	1
01RC	RC-030	4	Medium	RCS-C-10	High	None	Low	6-RC-ISIM-940-1 3-RC-ISIM-940-1	<u>PR-W001DM</u> , PR-W002 PR-W003, PR-W004, PR-W005, <u>PR-W006</u> , PR-W037, PR-W007, <u>PR-W008</u> , PR-W038, PR-W012, PR-W040	12	ISIM-940-1	1
01RC	RC-032	4	Medium	RCS-C-11	High	None	Low	3-RC-ISIM-940-1	PR-W039, PR-W011	2	ISIM-940-1	1
01RC	RC-033	4	Medium	RCS-C-12	High	None	Low	3-RC-ISIM-940-1	PR-W041, PR-W015	2	ISIM-940-1	1
01RC	RC-034	4	Medium	RCS-C-13	High	None	Low	6-RC-ISIM-940-2	<u>PR-W016DM</u> , PR-W017, PR-W018, PR-W019, PR-W020, PR-W021, PR-W022, PR-W023, PR-W025	9	ISIM-940-2	1
01RC	RC-035	4	Medium	RCS-C-14	High	None	Low	6-RC-ISIM-940-2	<u>PR-W026DM</u> , <u>PR-W027</u> , PR-W028, PR-W029, PR-W030, PR-W031, <u>PR-W032</u> , <u>PR-W033</u> , PR-W034, PR-W036	10	ISIM-940-2	1
01RC	RC-036	4	Medium	RCS-C-15	High	None	Low	3-RC-ISIM-1703 3-RC-ISIM-874-2	RC-W068BC PS-W001, PS-W002, PS-W003, PS-W004, PS-W005	6	ISIM-1703 ISIM-874-2	1
01RC	RC-037	4	Medium	RCS-C-16	High	None	Low	3-RC-ISIM-1704 3-RC-ISIM-874-1	RC-W053BC PS-W030, PS-W031, PS-W032, PS-W033	5	ISIM-1704 ISIM-874-1	1

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
01RC	RC-038	4	Medium	RCS-C-17	High	None	Low	3-RC-ISIM-874-1	PS-W034, PS-W035, PS-W036, PS-W037, PS-W038, PS-W039, PS-W040, PS-W041, PS-W042, PS-W043, <u>PS-W044</u> , PS-W045, PS-W046, PS-W047, <u>PS-W048</u> , PS-W049, PS-W050, PS-W051, PS-W052	19	ISIM-874-1	1
01RC	RC-040	4	Medium	RCS-C-17	High	None	Low	4-RC-ISIM-874-1	PS-W060, <u>PS-W061DM</u>	2	ISIM-874-1	1
01RC	RC-041	4	Medium	RCS-C-17	High	None	Low	3-RC-ISIM-874-2	PS-W006, PS-W007, PS-W008, PS-W009, PS-W010, PS-W011, PS-W012, PS-W013, PS-W014, PS-W015, PS-W016, PS-W017, PS-W018, PS-W019, <u>PS-W020</u> , PS-W021, PS-W022, PS-W023, PS-W024, PS-W025, PS-W026, PS-W027BC, PS-W028, PS-W029	24	ISIM-874-2	1
01RC	RC-042	4	Medium	RHR-C-05A1	High	None	Low	8-RC-ISIM-1703	<u>RC-W003BC</u>	1	ISIM-1703	1
01RC	RC-043	4	Medium	RHR-C-05B1	High	None	Low	8-RC-ISIM-1704	<u>RC-W034BC</u>	1	ISIM-1704	1
02RHR	RHR-021	4	Medium	RHR-C-05A1	High	None	Low	8-RHR-ISIM-957-1	RHR-W001, <u>RHR-W002</u>	2	ISIM-957-1Sh1	1
02RHR	RHR-023	4	Medium	RHR-C-05A1	High	None	Low	8-RHR-ISIM-957-1	RHR-W007, <u>RHR-W008</u> , <u>RHR-W009</u>	3	ISIM-957-1Sh1	1
02RHR	RHR-025	4	Medium	RHR-C-05B1	High	None	Low	8-RHR-ISIM-957-1	RHR-W025, <u>RHR-W026</u>	2	ISIM-957-1Sh1	1
02RHR	RHR-027	4	Medium	RHR-C-05B1	High	None	Low	8-RHR-ISIM-957-1	<u>RHR-W031</u> , RHR-W032	2	ISIM-957-1Sh1	1
02RHR	RHR-003	4	Medium	ICS-C-02A	High	None	Low	6-RHR-ISIM-950-1	RHR-W408	1	ISIM-950-1	2
02RHR	RHR-004	4	Medium	ICS-C-02B	High	None	Low	6-RHR-ISIM-950-2	RHR-W411	1	ISIM-950-2	2
02RHR	RHR-005	4	Medium	RHR-C-01A	High	None	Low	10-RHR-ISIM-958-1	RHR-W417, RHR-W080, RHR-W081	3	ISIM-958-1Sh2	2
02RHR	RHR-006	4	Medium	RHR-C-01B	High	None	Low	10-RHR-ISIM-959-1	RHR-W329, RHR-W118, RHR-W119	3	ISIM-959-1Sh1	2
02RHR	RHR-007	4	Medium	RHR-C-02A	High	None	Low	10-RHR-ISIM-958-1 8-RHR-ISIM-958-2 10-RHR-ISIM-958-1	<u>RHR-W082</u> , <u>RHR-W083</u> , <u>RHR-W084</u> , <u>RHR-W085</u> RHR-W078, RHR-W079, RHR-W086BC RHR-W091, RHR-W092, RHR-W093, RHR-W094, RHR-W095BC	12	ISIM-958-1Sh1 ISIM-958-1Sh2 ISIM-958-2	2
02RHR	RHR-010	4	Medium	RHR-C-02AH	High	None	Low	8-RHR-ISIM-958-2	RHR-W075, RHR-W076, RHR-W077	3	ISIM-958-2	2
02RHR	RHR-011	4	Medium	RHR-C-02AS	High	None	Low	12-RHR-ISIM-958-1 10-RHR-ISIM-958-1	RHR-W087, RHR-W088, RHR-W089 RHR-W090	4	ISIM-958-1Sh1	2
02RHR	RHR-012	4	Medium	RHR-C-02B	High	None	Low	10-RHR-ISIM-959-1 8-RHR-ISIM-959-1 10-RHR-ISIM-959-2	RHR-W120, RHR-W121, RHR-W123, RHR-W124, RHR-W126, RHR-W127 RHR-W109, RHR-W110, RHR-W125BC RHR-W116, RHR-W117, RHR-W122BC	12	ISIM-959-1Sh1 ISIM-959-2	2
02RHR	RHR-015	4	Medium	RHR-C-02BH	High	None	Low	8-RHR-ISIM-958-2	RHR-W107, RHR-W108	2	ISIM-958-2	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
02RHR	RHR-016	4	Medium	RHR-C-02BS	High	None	Low	12-RHR-ISIM-959-2 10-RHR-ISIM-959-2	RHR-W111, RHR-W112, <u>RHR-W113</u> , RHR-W114 RHR-W115	5	ISIM-959-2	2
02RHR	RHR-017	4	Medium	RHR-C-03A	High	None	Low	10-RHR-ISIM-958-1	RHR-W096, RHR-W097, RHR-W098, RHR-W099, RHR-W100, RHR-W101, RHR-W102	7	ISIM-958-1Sh1	2
02RHR	RHR-018	4	Medium	RHR-C-03B	High	None	Low	10-RHR-ISIM-959-1	RHR-W128, RHR-W129, RHR-W130, RHR-W131, RHR-W132, RHR-W133	6	ISIM-959-1Sh1	2
02RHR	RHR-042	4	Medium	RHR-C-13A	High	None	Low	8-RHR-ISIM-960-1	RHR-W142, RHR-W143, RHR-W143-1, RHR-W143-2, RHR-W144, RHR-W145, RHR-W146, RHR-W147, RHR-W148, RHR-W149, RHR-W150, RHR-W151, RHR-W152, RHR-W230	14	ISIM-960-1	2
02RHR	RHR-043	4	Medium	RHR-C-13B	High	None	Low	8-RHR-ISIM-960-1	RHR-W201, RHR-W202, RHR-W202-1, RHR-W202-2, RHR-W203, RHR-W204, RHR-W205, RHR-W206, RHR-W207, RHR-W208, RHR-W209, RHR-W240	12	ISIM-960-1	2
02RHR	RHR-064	4	Medium	RWST-C-01	High	None	Low	6-RHR-ISIM-961-1	<u>RHR-W419</u> , RHR-W420, RHR-W421, RHR-W422, RHR-W423, RHR-W424, RHR-W425, RHR-W426, RHR-W427, RHR-W428, RHR-W429, RHR-W430, RHR-W431BC	13	ISIM-961-1	2
03SI	SI-028	4	Medium	IL-C-14	High	None	Low	12-SI-ISIM-935	SI-W120, <u>SI-W121</u> , SI-W122, SI-W123	4	ISIM-935	1
03SI	SI-039	4	Medium	IL-C-19	High	None	Low	6-SI-ISIM-938-2 4-SI-ISIM-938-2	SI-W108 SI-W109, SI-W110	3	ISIM-938-2Sh1	1
03SI	SI-046	4	Medium	IL-C-22	High	None	Low	6-SI-ISIM-939	SI-W048, <u>SI-W049</u> , SI-W050, <u>SI-W051</u> , <u>SI-W052</u>	5	ISIM-939Sh1	1
03SI	SI-001	4	Medium	IL-C-01	High	None	Low	3-SI-ISIM-934-2	SI-W265, <u>SI-W266</u> , SI-W267, SI-W268	4	ISIM-934-2	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-003	4	Medium	IL-C-02	High	None	Low	4-SI-ISIM-936 3-SI-ISIM-936 2-SI-ISIM-936 2-SI-ISIM-982	SI-W271 SI-W272, SI-W273, SI-W274, SI-W275, SI-W276, <u>SI-W277</u> , SI-W278, SI-W279, SI-W280, SI-W281, <u>SI-W282</u> , <u>SI-W283</u> , <u>SI-W284</u> , SI-W285, SI-W286, SI-W287 SI-W288, <u>SI-W289S</u> , SI-W557S, SI-W291S SI-W438S, <u>SI-W439S</u> , SI-W440S, SI-W441S, SI-W442S, SI-W443S, SI-W444S, SI-W445S, SI-W446S, SI-W447S, SI-W448S, SI-W449S, SI-W450S, SI-W451S, SI-W452S, SI-W453S, SI-W542S, SI-W543S, SI-W454S	40	ISIM-936 ISIM-982	2
03SI	SI-017	4	Medium	IL-C-09	High	None	Low	3-SI-ISIM-934-1	SI-W237	1	ISIM-934-1	2
03SI	SI-019	4	Medium	IL-C-10	High	None	Low	4-SI-ISIM-937-2 3-SI-ISIM-937-2 2-SI-ISIM-937-2 3-SI-ISIM-937-2 3-SI-ISIM-937-1 2-SI-ISIM-937-1	SI-W304 SI-W305, SI-W306, <u>SI-W307</u> , SI-W308 SI-W309S, <u>SI-W310S</u> , SI-W311S, SI-W312S, SI-W313S, SI-W314S, SI-W315S, SI-W316S, SI-W317S, SI-W318S, SI-W319S, SI-W551S, SI-W552S, SI-W320S SI-W338, SI-W339, SI-W340, SI-W341 SI-W342, SI-W343, SI-W344, SI-W345, SI-W346, SI-W347, <u>SI-W348</u> , SI-W349 SI-W350S, SI-W546S	33	ISIM-937-2Sh1 ISIM-937-2Sh2 ISIM-937-1	2
03SI	SI-050	4	Medium	RWST-C-01	High	None	Low	16-SI-ISIM-992-1 12-SI-ISIM-992-1 12-SI-ISIM-959-1 10-SI-ISIM-959-1	SI-W560, SI-W570, <u>SI-W571</u> , SI-W573, <u>SI-W574</u> , <u>SI-W575</u> , SI-W576, SI-W577, SI-W578, SI-W579, SI-W585 SI-W586, SI-W587, SI-W588 SI-W561, SI-W562, SI-W563 SI-W564, SI-W565	19	ISIM-959-1Sh1 ISIM-992-1	2
03SI	SI-051	4	Medium	RWST-C-01	High	None	Low	10-SI-ISIM-958-1 10-SI-ISIM-958-1	SI-W558BC SI-W559	2	ISIM-958-1Sh1 ISIM-958-1Sh2	2
03SI	SI-052	4	Medium	RWST-C-01	High	None	Low	12-SI-ISIM-992-1	SI-W580, SI-W581, SI-W582, SI-W583	4	ISIM-992-1	2
03SI	SI-053	4	Medium	RWST-C-01	High	None	Low	12-SI-ISIM-992-1	SI-W584	1	ISIM-992-1	2
03SI	SI-054	4	Medium	RWST-C-01	High	None	Low	6-SI-ISIM-992-1	SI-W572BC	1	ISIM-992-1	2

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System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s).	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-055	4	Medium	SI-C-01	High	None	Low	8-SI-ISIM-992-1 12-SI-ISIM-992-1 12-SI-ISIM-933 6-SI-ISIM-933 12-SI-ISIM-933 6-SI-ISIM-933 2-SI-ISIM-933 2-SI-ISIM-1608 2-SI-ISIM-992-1 2-SI-ISIM-1608 2-SI-ISIM-992-1	SI-W466, SI-W467, SI-W468, SI-W469, SI-W470, SI-W471, SI-W472, SI-W473, SI-W474, SI-W475, SI-W476, SI-W477 SI-W478, SI-W479, SI-W480, SI-W481, SI-W482, SI-W483, SI-W484, SI-W485, SI-W486, SI-W487, SI-W488, SI-W489 <u>SI-W417</u> , SI-W418, SI-W419, SI-W420 SI-W421, SI-W422 SI-W403, SI-W407 SI-W408, SI-W409, SI-W410 SI-W404BC, SI-W405S, SI-W406S SI-W360S, SI-W361S, SI-W362S, SI-W363S, SI-W364S, SI-W365S, SI-W366S, SI-W367S SI-W368BC SI-W369S, SI-W370S, SI-W371S, <u>SI-W372S</u> , SI-W373S, SI-W374S, <u>SI-W375S</u> , SI-W376S, SI-W377S, SI-W378S, SI-W379S, SI-W380S, SI-W381S, <u>SI-W382S</u> , <u>SI-W383S</u> , SI-W384S SI-W385BC	64	ISIM-992-1 ISIM-933 ISIM-1608	2
03SI	SI-063	4	Medium	SI-C-02A	High	None	Low	6-SI-ISIM-933	SI-W394, SI-W395, SI-W396, SI-W397, SI-W398, SI-W400, SI-W401, SI-W402 SI-W411, SI-W412, SI-W413, SI-W414, SI-W415, SI-W416, SI-W399BC	15	ISIM-933	2
03SI	SI-065	4	Medium	SI-C-02B	High	None	Low	6-SI-ISIM-933	<u>SI-W429</u> , SI-W430, SI-W431, SI-W432, SI-W433, SI-W435, SI-W436, SI-W437 SI-W423, SI-W424, SI-W425, SI-W426, SI-W427, SI-W428, SI-W434BC	15	ISIM-933	2
03SI	SI-067	4	Medium	SI-C-03A	High	None	Low	4-SI-ISIM-934-2 2-SI-ISIM-934-2 2-SI-ISIM-993	SI-W240, SI-W241, SI-W242 SI-W491BC SI-W492S, SI-W493S, SI-W494S, SI-W495S	8	ISIM-934-2 ISIM-993	2
03SI	SI-069	4	Medium	SI-C-03B	High	None	Low	4-SI-ISIM-934-1 2-SI-ISIM-934-1 2-SI-ISIM-993	SI-W200, SI-W201, SI-W202 SI-W540BC SI-W541S, SI-W538S, SI-W537S, SI-W536S	8	ISIM-934-1 ISIM-993	2

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System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s)	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-073	4	Medium	SI-C-05	High	None	Low	2-SI-ISIM-993	SI-W498S, SI-W499S, SI-W500S, SI-W501S, SI-W502S, SI-W503S, SI-W504S, SI-W505S, SI-W506S, SI-W507S, SI-W508S, SI-W509S, SI-W510S, SI-W511S, SI-W512S, SI-W513S, SI-W514S, SI-W515S, SI-W516S, SI-W517S, SI-W533S, SI-W532S, SI-W531S, SI-W530S, SI-W529S, SI-W528S, SI-W527S, SI-W526S, SI-W525S, SI-W524S, SI-W523S, SI-W522S, SI-W521S, SI-W520S	34	ISIM-993	2
03SI	SI-080	4	Medium	SI-C-07A	High	None	Low	4-SI-ISIM-934-2	SI-W243, <u>SI-W244</u> , <u>SI-W245</u> , SI-W246, SI-W247	5	ISIM-934-2	2
03SI	SI-081	4	Medium	SI-C-07B	High	None	Low	4-SI-ISIM-934-1	SI-W203, SI-W204, SI-W205, SI-W206, SI-W207	5	ISIM-934-1	2
03SI	SI-082	4	Medium	SI-C-08	High	None	Low	4-SI-ISIM-934-2 3-SI-ISIM-934-2 3-SI-ISIM-934-1 4-SI-ISIM-934-1 3-SI-ISIM-934-1	SI-W248, SI-W220 <u>SI-W249</u> , SI-W250, SI-W251, SI-W252, SI-W253, SI-W254, SI-W255 SI-W219, SI-W218, SI-W217, SI-W216, SI-W215, SI-W214, SI-W213, SI-W212, SI-W211, SI-W210 SI-W209, SI-W208 SI-W221, SI-W222, SI-W223, SI-W224, <u>SI-W225</u> , SI-W226, SI-W227	28	ISIM-934-2 ISIM-934-1	2
03SI	SI-085	4	Medium	SI-C-08A	High	None	Low	3-SI-ISIM-934-2	SI-W256, SI-W257, SI-W258, SI-W259, SI-W260, SI-W261, <u>SI-W262</u> , SI-W263, SI-W264	9	ISIM-934-2	2
03SI	SI-086	4	Medium	SI-C-08B	High	None	Low	3-SI-ISIM-934-1	SI-W228, SI-W229	2	ISIM-934-1	2
03SI	SI-087	4	Medium	SI-C-09B	High	None	Low	3-SI-ISIM-934-1	SI-W230, SI-W231, <u>SI-W232</u> , <u>SI-W233</u>	4	ISIM-934-1	2
03SI	SI-088	4	Medium	SI-C-10B	High	None	Low	3-SI-ISIM-934-1	<u>SI-W234</u> , SI-W235, SI-W236	3	ISIM-934-1	2
04CVC	CVC-005	4	Medium	CVCS-C-05	High	None	Low	2-CVC-ISIM-1474	<u>LD-W001S</u> , LD-W002S, LD-W003S, LD-W004S, LD-W005S, LD-W006S, LD-W007S, LD-W008S, LD-W009S, LD-W010S, LD-W011S, LD-W012S WD-W017S, WD-W018S	14	ISIM-1474	1
04CVC	CVC-009	4	Medium	CVCS-C-09	High	None	Low	2-CVC-ISIM-1369-2	WD-W001S, <u>WD-W002S</u> , WD-W003S	3	ISIM-1369-2	1
04CVC	CVC-011	4	Medium	CVCS-C-09	High	None	Low	2-CVC-ISIM-1369-2	WD-W006S, WD-W007S, WD-W008S, WD-W009S, <u>WD-W010S</u> , <u>WD-W011S</u>	6	ISIM-1369-2	1

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
04CVC	CVC-019	4	Medium	CVCS-C-13	High	None	Low	2-CVC-ISIM-1471 1.5-CVC-ISIM-1471	CVC-W039S, CVC-W040S, CVC-W041S, CVC-W042S, CVC-W043S, CVC-W044S, CVC-W045S, CVC-W046S, CVC-W047S, CVC-W048S, CVC-W049S, <u>CVC-W050S</u> , <u>CVC-W051S</u> , CVC-W052S, CVC-W053S, CVC-W054S, CVC-W055S CVC-W056S, CVC-W057S, CVC-W180B	20	ISIM-1471	1
04CVC	CVC-023	4	Medium	CVCS-C-15	High	None	Low	2-CVC-ISIM-1476 1.5-CVC-ISIM-1476	CVC-W133S, CVC-W134S, CVC-W135S, CVC-W136S, CVC-W137S, <u>CVC-W138S</u> , CVC-W139S, <u>CVC-W140S</u> , CVC-W141S, CVC-W142S, CVC-W143S, CVC-W144S, CVC-W145S, CVC-W146S, CVC-W147S, CVC-W148S, CVC-W149S CVC-W150S, CVC-W151S, CVC-W152S	20	ISIM-1476	1
04CVC	CVC-024	4	Medium	RCS-C-17	High	None	Low	2-CVC-ISIM-874-3	CVC-W155S, CVC-W156S, CVC-W157S, CVC-W158S, CVC-W159S, CVC-W160S, CVC-W161S, CVC-W162S, CVC-W163S, CVC-W164S, CVC-W165S, <u>CVC-W166S</u> , CVC-W167S, CVC-W168S, CVC-W169S, CVC-W170S, CVC-W171S, CVC-W172S, CVC-W173S, CVC-W174S, CVC-W175S, CVC-W176S, CVC-W177S, CVC-W178S, CVC-W179S	25	ISIM-874-3	1
07ICS	ICS-001	4	Medium	ICS-C-02A	High	None	Low	8-ICS-ISIM-950-1 6-ICS-ISIM-950-1 8-ICS-ISIM-950-1 6-ICS-ISIM-950-1	<u>ICS-W045</u> ICS-W046BC ICS-W047 ICS-W048, ICS-W049	5	ISIM-950-1	2
07ICS	ICS-003	4	Medium	ICS-C-02B	High	None	Low	8-ICS-ISIM-950-2 6-ICS-ISIM-950-2 8-ICS-ISIM-950-2 6-ICS-ISIM-950-2	ICS-W050 ICS-W051BC ICS-W052 ICS-W053, ICS-W054	5	ISIM-950-2	2
07ICS	ICS-005	4	Medium	ICS-C-03A	High	None	Low	6-ICS-ISIM-951	ICS-W001, ICS-W002, ICS-W003, <u>ICS-W004</u> , ICS-W005 ICS-W010, ICS-W009	7	ISIM-951	2
07ICS	ICS-007	4	Medium	ICS-C-03B	High	None	Low	6-ICS-ISIM-953	ICS-W100, ICS-W101, ICS-W102, <u>ICS-W103</u> , ICS-W104 ICS-W109, ICS-W108	7	ISIM-953	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
07ICS	ICS-009	4	Medium	ICS-C-04A	High	None	Low	6-ICS-ISIM-951	ICS-W006, ICS-W007BC, ICS-W008, <u>ICS-W011</u> , <u>ICS-W012</u> , ICS-W013, ICS-W014, ICS-W015, ICS-W016, ICS-W017, ICS-W018, ICS-W019, ICS-W020, ICS-W021, ICS-W022, ICS-W023, ICS-W024, ICS-W025, ICS-W026, ICS-W027, ICS-W028, ICS-W029, ICS-W030, ICS-W031, ICS-W032, ICS-W033, ICS-W034, ICS-W035, ICS-W036	29	ISIM-951	2
07ICS	ICS-011	4	Medium	ICS-C-04B	High	None	Low	6-ICS-ISIM-953	ICS-W107, ICS-W106BC, ICS-W105, ICS-W110, <u>ICS-W111</u> , <u>ICS-W112</u> , ICS-W113, ICS-W114, ICS-W115, ICS-W116, ICS-W117, ICS-W118, ICS-W119, ICS-W120, ICS-W121	15	ISIM-953	2
07ICS	ICS-021	4	Medium	RWST-C-01	High	None	Low	6-ICS-ISIM-1646	ICS-W173, <u>ICS-W174</u> , <u>ICS-W175</u> , ICS-W176	4	ISIM-1646	2
07ICS	ICS-022	4	Medium	RWST-C-02	High	None	Low	12-ICS-ISIM-950-1 8-ICS-ISIM-950-1 8-ICS-ISIM-950-2	ICS-W179, ICS-W163, ICS-W164, ICS-W165, ICS-W166, ICS-W167, ICS-W168 ICS-W169 ICS-W170, ICS-W171	10	ISIM-950-1 ISIM-950-2	2
07ICS	ICS-023	4	Medium	RWST-C-02	High	None	Low	12-ICS-ISIM-950-1 8-ICS-ISIM-950-1	ICS-W158 ICS-W159, ICS-W160, ICS-W161	4	ISIM-950-1	2
07ICS	ICS-024	4	Medium	RWST-C-03	High	None	Low	8-ICS-ISIM-950-1	ICS-W162	1	ISIM-950-1	2
07ICS	ICS-025	4	Medium	RWST-C-04	High	None	Low	8-ICS-ISIM-950-2	ICS-W172	1	ISIM-950-2	2
08AF	AF-001	4	Medium	AFW-C-01A	High	None	Low	3-AF-ISIM-891-2	AFW-W001, AFW-W002, AFW-W003, AFW-W004, <u>AFW-W005</u> , <u>AFW-W006</u> , AFW-W007, AFW-W008, AFW-W009, AFW-W010, AFW-W011, AFW-W012, AFW-W013	13	ISIM-891-2	2
08AF	AF-007	4	Medium	AFW-C-01B	High	None	Low	3-AF-ISIM-891-2 3-AF-ISIM-891-1	AFW-W080, AFW-W081, AFW-W082, AFW-W083, AFW-W084, AFW-W085, AFW-W086, <u>AFW-W087</u> , <u>AFW-W088</u> , AFW-W089 AFW-W090, AFW-W091, AFW-W092, AFW-W093, AFW-W094, AFW-W095, AFW-W096, AFW-W097, AFW-W098, AFW-W099	20	ISIM-891-2 ISIM-891-1	2
02RHR	RHR-046	5a	Medium	RHR-C-14A	Medium	TASCS	Medium	8-RHR-ISIM-962-2 10-RHR-ISIM-962-2	RHR-W165 RHR-W166, RHR-W167, <u>RHR-W168</u>	4	ISIM-962-2Sh1	2
02RHR	RHR-048	5a	Medium	RHR-C-14A	Medium	TASCS	Medium	8-RHR-ISIM-961-1	RHR-W228, RHR-W229	2	ISIM-961-1	2
03SI	SI-012	5a	Medium	IL-C-04	Medium	TT, IGSCC	Medium	2-SI-ISIM-982 6-SI-ISIM-982	SI-W011B SI-W012	2	ISIM-982	1

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-016	5a	Medium	IL-C-07	Medium	TT, IGSCC	Medium	2-SI-ISIM-936 6-SI-ISIM-936	SI-W087B SI-W088	2	ISIM-936	1
03SI	SI-032	5a	Medium	IL-C-15	Medium	TT, IGSCC	Medium	12-SI-ISIM-938-1	<u>SI-W074</u>	1	ISIM-938-1	1
03SI	SI-027	5a	Medium	IL-C-13	Medium	IGSCC	Medium	12-SI-ISIM-935	SI-W119	1	ISIM-935	1
03SI	SI-031	5a	Medium	IL-C-15	Medium	IGSCC	Medium	12-SI-ISIM-938-1	SI-W072, SI-W073	2	ISIM-938-1	1
03SI	SI-038	5a	Medium	IL-C-18	Medium	IGSCC	Medium	6-SI-ISIM-938-2	SI-W107	1	ISIM-938-2Sh1	1
03SI	SI-044	5a	Medium	IL-C-21	Medium	IGSCC	Medium	6-SI-ISIM-939	SI-W047	1	ISIM-939Sh1	1
04CVC	CVC-001	5a	Medium	CVCS-C-01	Medium	TT	Medium	2-CVC-ISIM-1473	CVC-W063S, <u>CVC-W062S</u> , CVC-W061S, CVC-W060S, CVC-W059S	5	ISIM-1473	1
06FW	FW-001	5a	Medium	AFW-C-04A	Medium	TASCS	Medium	8-FW-ISIM-970	FW-W026, FW-W066	2	ISIM-970	2
06FW	FW-002	5a	Medium	AFW-C-04B	Medium	TASCS	Medium	8-FW-ISIM-866	FW-W054	1	ISIM-866	2
06FW	FW-011	5a	Medium	FW-C-04A	Medium	TASCS	Medium	16-FW-ISIM-970 8-FW-ISIM-970	<u>FW-W024</u> , FW-W025, FW-W060, FW-W063, FW-W058, FW-W064 FW-W027BC	7	ISIM-970	2
06FW	FW-013	5a	Medium	FW-C-04B	Medium	TASCS	Medium	16-FW-ISIM-971 8-FW-ISIM-971	FW-W052, <u>FW-W061</u> , FW-W062, FW-W059, FW-W065 FW-W055BC	6	ISIM-971	2
08AF	AF-015	5a	Medium	AFW-C-04A	Medium	TASCS, TT	Medium	3-AF-ISIM-865	AFW-W079, AFW-W147	2	ISIM-865	2
08AF	AF-016	5a	Medium	AFW-C-04B	Medium	TASCS, TT	Medium	3-AF-ISIM-866	AFW-W142, <u>AFW-W143</u> , AFW-W144, AFW-W145	4	ISIM-866	2
02RHR	RHR-024	6a	Low	RHR-C-05A2	Medium	None	Low	8-RHR-ISIM-957-1	RHR-W010, RHR-W011, RHR-W012, RHR-W013, RHR-W014, RHR-W015, RHR-W016, RHR-W017, RHR-W018, RHR-W019, RHR-W020, RHR-W021, RHR-W022, RHR-W023, RHR-W024	15	ISIM-957-1Sh1	1
02RHR	RHR-028	6a	Low	RHR-C-05B2	Medium	None	Low	8-RHR-ISIM-957-1 8-RHR-ISIM-957-1	RHR-W033, RHR-W034, RHR-W035, RHR-W036, RHR-W037, RHR-W038, RHR-W039, RHR-W040, RHR-W041, RHR-W042, RHR-W043 RHR-W044	12	ISIM-957-1Sh1 ISIM-957-1Sh2	1
02RHR	RHR-001	6a	Low	ICS-C-01A	Medium	None	Low	8-RHR-ISIM-950-1	RHR-W406, RHR-W407	2	ISIM-950-1	2
02RHR	RHR-002	6a	Low	ICS-C-01B	Medium	None	Low	6-RHR-ISIM-950-2	RHR-W409, RHR-W410	2	ISIM-950-2	2
02RHR	RHR-019	6a	Low	RHR-C-04A1	Medium	None	Low	12-RHR-ISIM-958-1	RHR-W413, RHR-W414	2	ISIM-958-1Sh1	2
02RHR	RHR-020	6a	Low	RHR-C-04B1	Medium	None	Low	12-RHR-ISIM-959-2	RHR-W401, RHR-W400	2	ISIM-959-2	2
02RHR	RHR-029	6a	Low	RHR-C-06	Medium	None	Low	8-RHR-ISIM-957-1 10-RHR-ISIM-957-1 8-RHR-ISIM-957-1	RHR-W046 RHR-W047, RHR-W048 RHR-W045	4	ISIM-957-1Sh1 ISIM-957-1Sh2	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
02RHR	RHR-030	6a	Low	RHR-C-06	Medium	None	Low	10-RHR-ISIM-957-2	RHR-W049, RHR-W050, RHR-W051, RHR-W053, RHR-W054, RHR-W055, RHR-W056, RHR-W057, RHR-W058, RHR-W059, RHR-W060, RHR-W061, RHR-W062	13	ISIM-957-2	2
02RHR	RHR-031	6a	Low	RHR-C-07	Medium	None	Low	10-RHR-ISIM-957-2 10-RHR-ISIM-958-2	RHR-W412, RHR-W063C, RHR-W063B RHR-W063A, RHR-W063, RHR-W064, RHR-W065	7	ISIM-957-2 ISIM-958-2	2
02RHR	RHR-032	6a	Low	RHR-C-08	Medium	None	Low	10-RHR-ISIM-958-2 10-RHR-ISIM-958-2 8-RHR-ISIM-958-2	RHR-W066A, RHR-W067, RHR-W066, RHR-W068, RHR-W069 RHR-W071 RHR-W072, RHR-W073	8	ISIM-958-2	2
02RHR	RHR-033	6a	Low	RHR-C-08	Medium	None	Low	8-RHR-ISIM-958-2 8-RHR-ISIM-958-2	RHR-W070BC RHR-W103, RHR-W104, RHR-W105	4	ISIM-958-2	2
02RHR	RHR-034	6a	Low	RHR-C-09A	Medium	None	Low	8-RHR-ISIM-958-2	RHR-W074	1	ISIM-958-2	2
02RHR	RHR-035	6a	Low	RHR-C-09B	Medium	None	Low	8-RHR-ISIM-958-2	RHR-W106	1	ISIM-958-2	2
02RHR	RHR-036	6a	Low	RHR-C-11A	Medium	None	Low	6-RHR-ISIM-958-1 8-RHR-ISIM-958-1	RHR-W134, RHR-W135 RHR-W136	3	ISIM-958-1Sh1	2
02RHR	RHR-037	6a	Low	RHR-C-11B	Medium	None	Low	6-RHR-ISIM-959-2 8-RHR-ISIM-959-2	RHR-W191, RHR-W192 RHR-W193	3	ISIM-959-2	2
02RHR	RHR-038	6a	Low	RHR-C-12A1	Medium	None	Low	8-RHR-ISIM-958-1	RHR-W137, RHR-W138, RHR-W139	3	ISIM-958-1Sh1	2
02RHR	RHR-039	6a	Low	RHR-C-12A2	Medium	None	Low	8-RHR-ISIM-958-1	RHR-W140, RHR-W141	2	ISIM-958-1Sh1	2
02RHR	RHR-040	6a	Low	RHR-C-12B1	Medium	None	Low	8-RHR-ISIM-959-2	RHR-W194, RHR-W195, RHR-W196	3	ISIM-959-2	2
02RHR	RHR-041	6a	Low	RHR-C-12B2	Medium	None	Low	8-RHR-ISIM-959-2	RHR-W197, RHR-W198, RHR-W199, RHR-W200	4	ISIM-959-2	2
02RHR	RHR-044	6a	Low	RHR-C-14A	Medium	None	Low	8-RHR-ISIM-960-1 8-RHR-ISIM-962-2	RHR-W153, RHR-W154, RHR-W155, RHR-W156 RHR-W254, RHR-W253	6	ISIM-960-1 ISIM-962-2Sh1	2
02RHR	RHR-045	6a	Low	RHR-C-14A	Medium	None	Low	8-RHR-ISIM-962-2 8-RHR-ISIM-962-2 8-RHR-ISIM-962-2	RHR-W159, RHR-W158 RHR-W157, RHR-W160, RHR-W161 RHR-W162, RHR-W163, RHR-W164	8	ISIM-962-2Sh1 ISIM-962-2Sh2	2
02RHR	RHR-047	6a	Low	RHR-C-14A	Medium	None	Low	10-RHR-ISIM-962-2 10-RHR-ISIM-938-2	RHR-W169, RHR-W170, RHR-W171, RHR-W172, RHR-W173, RHR-W174, RHR-W175, RHR-W176 RHR-W176A	9	ISIM-938-2Sh1 ISIM-962-2Sh1	2

NOTES:

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- 2) Welds that were selected for examination are underlined.

Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342

Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s)	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
02RHR	RHR-049	6a	Low	RHR-C-14B	Medium	None	Low	8-RHR-ISIM-960-1 8-RHR-ISIM-961-2 8-RHR-ISIM-961-1	RHR-W210, RHR-W211, RHR-W212, RHR-W213 RHR-W214, RHR-W215, RHR-W216, RHR-W217, RHR-W218, RHR-W219, RHR-W220, RHR-W221, RHR-W222, RHR-W223, RHR-W224 RHR-W225	16	ISIM-960-1 ISIM-961-1 ISIM-961-2	2
02RHR	RHR-050	6a	Low	RHR-C-14B	Medium	None	Low	8-RHR-ISIM-961-2	RHR-W284, RHR-W285	2	ISIM-961-2	2
02RHR	RHR-051	6a	Low	RHR-C-15A	Medium	None	Low	10-RHR-ISIM-938-2	RHR-W177, RHR-W177A	2	ISIM-938-2Sh1	2
02RHR	RHR-052	6a	Low	RHR-C-15A1	Medium	None	Low	8-RHR-ISIM-962-2 6-RHR-ISIM-950-1	RHR-W255, RHR-W256, RHR-W257, RHR-W258, RHR-W259, RHR-W260, RHR-W261 RHR-W262, RHR-W263, RHR-W264, RHR-W265, RHR-W266, RHR-W267, RHR-W268, RHR-W269, RHR-W270, RHR-W271, RHR-W272, RHR-W273, RHR-W274, RHR-W275	21	ISIM-950-1 ISIM-962-2Sh1	2
02RHR	RHR-053	6a	Low	RHR-C-15A1	Medium	None	Low	6-RHR-ISIM-933	RHR-W276, RHR-W277, RHR-W278, RHR-W279, RHR-W280, RHR-W281, RHR-W282, RHR-W283	8	ISIM-933	2
02RHR	RHR-054	6a	Low	RHR-C-15A2	Medium	None	Low	10-RHR-ISIM-938-2 10-RHR-ISIM-938-2 10-RHR-ISIM-938-1	RHR-W178, RHR-W179, RHR-W180, RHR-W181, RHR-W182, RHR-W183, RHR-W184, RHR-W185 RHR-W188, RHR-W189 RHR-W190	11	ISIM-938-1 ISIM-938-2Sh1	2
02RHR	RHR-055	6a	Low	RHR-C-15A2	Medium	None	Low	6-RHR-ISIM-938-2	RHR-W186, RHR-W187	2	ISIM-938-2Sh1	2
02RHR	RHR-056	6a	Low	RHR-C-15B1	Medium	None	Low	8-RHR-ISIM-961-2 6-RHR-ISIM-950-2	RHR-W286, RHR-W287, RHR-W288, RHR-W289, RHR-W290, RHR-W291, RHR-W292, RHR-W293, RHR-W294, RHR-W295, RHR-W296, RHR-W297 RHR-W298, RHR-W299, RHR-W300, RHR-W301, RHR-W302, RHR-W303, RHR-W304, RHR-W305, RHR-W306, RHR-W307, RHR-W308, RHR-W309, RHR-W311, RHR-W312, RHR-W313, RHR-W310, RHR-W314	29	ISIM-950-2 ISIM-961-2	2

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System	Risk Characterization			Consequence		Failure Potential		Lines in Segment	Welds in Segment	Weld Count	Sketch No(s).	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
02RHR	RHR-057	6a	Low	RHR-C-15B1	Medium	None	Low	6-RHR-ISIM-933	RHR-W315, RHR-W316, RHR-W317, RHR-W318, RHR-W319, RHR-W320, RHR-W321, RHR-W322, RHR-W323, RHR-W324, RHR-W325, RHR-W326, RHR-W327, RHR-W328	14	ISIM-933	2
02RHR	RHR-063	6b	Low	RHR-C-18	Low	TASCS	Medium	8-RHR-ISIM-961-1	RHR-W226, RHR-W227	2	ISIM-961-1	2
03SI	SI-010	6a	Low	IL-C-04	Medium	None	Low	2-SI-ISIM-982	SI-W001S	1	ISIM-982	1
03SI	SI-011	6a	Low	IL-C-04	Medium	None	Low	2-SI-ISIM-982	SI-W002S, SI-W003S, SI-W004S, SI-W005S, SI-W006S, SI-W007S, SI-W008S, SI-W009S, SI-W010S	9	ISIM-982	1
03SI	SI-014	6a	Low	IL-C-07	Medium	None	Low	2-SI-ISIM-936	SI-W077S	1	ISIM-936	1
03SI	SI-015	6a	Low	IL-C-07	Medium	None	Low	2-SI-ISIM-936	SI-W078S, SI-W079S, SI-W080S, SI-W081S, SI-W082S, SI-W083S, SI-W084S, SI-W085S, SI-W086S	9	ISIM-936	1
03SI	SI-026	6a	Low	IL-C-13	Medium	None	Low	12-SI-ISIM-935	SI-W113, SI-W114, SI-W115, SI-W116, SI-W117, SI-W118	6	ISIM-935	1
03SI	SI-029	6a	Low	IL-C-15	Medium	None	Low	10-SI-ISIM-938-1	SI-W055, SI-W056, SI-W057, SI-W058, SI-W059, SI-W060, SI-W061, SI-W062, SI-W063	9	ISIM-938-1	1
03SI	SI-030	6a	Low	IL-C-15	Medium	None	Low	12-SI-ISIM-938-1	SI-W064, SI-W065, SI-W066, SI-W067, SI-W068, SI-W069, SI-W070, SI-W071	8	ISIM-938-1	1
03SI	SI-035	6a	Low	IL-C-18	Medium	None	Low	2-SI-ISIM-937-2	SI-W091S, SI-W092S, SI-W093S, SI-W094S, SI-W095S	5	ISIM-937-2Sh1	1
03SI	SI-036	6a	Low	IL-C-18	Medium	None	Low	2-SI-ISIM-937-2 2-SI-ISIM-938-2	SI-W096S, SI-W097S, SI-W098S, SI-W099S, SI-W100S, SI-W101S, SI-W102S, SI-W103S, SI-W104BC	9	ISIM-937-2Sh1 ISIM-938-2Sh1	1
03SI	SI-037	6a	Low	IL-C-18	Medium	None	Low	6-SI-ISIM-938-2	SI-W089, SI-W090, SI-W105, SI-W106	4	ISIM-938-2Sh1	1
03SI	SI-042	6a	Low	IL-C-21	Medium	None	Low	2-SI-ISIM-937-1	SI-W031S	1	ISIM-937-1	1
03SI	SI-043	6a	Low	IL-C-21	Medium	None	Low	2-SI-ISIM-937-1 2-SI-ISIM-939 6-SI-ISIM-939	SI-W029S, SI-W030S, SI-W032S, SI-W033S, SI-W034S, SI-W035S, SI-W036S, SI-W037S, SI-W038S, SI-W039S, SI-W040S, SI-W041S, SI-W042BC, SI-W043, SI-W044, SI-W045, SI-W046	17	ISIM-937-1 ISIM-939Sh1	1

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Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342
Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s).	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-045	6a	Low	IL-C-21	Medium	None	Low	6-SI-ISIM-939 6-SI-ISIM-939	SI-W013 SI-W014, SI-W015, SI-W016, SI-W017, SI-W018, SI-W019, SI-W020, SI-W021, SI-W022, SI-W023, SI-W024, SI-W025, SI-W026, SI-W027, SI-W028	16	ISIM-939Sh1 ISIM-939Sh2	1
03SI	SI-002	6a	Low	IL-C-01A	Medium	None	Low	3-SI-ISIM-934-2 4-SI-ISIM-934-2	SI-W269 SI-W270	2	ISIM-934-2	2
03SI	SI-006	6a	Low	IL-C-02A	Medium	None	Low	2-SI-ISIM-982	SI-W455S, SI-W456S	2	ISIM-982	2
03SI	SI-007	6a	Low	IL-C-02A	Medium	None	Low	2-SI-ISIM-982	SI-W457S, SI-W458S, SI-W459S, SI-W460S, SI-W461S, SI-W462S, SI-W544S, SI-W545S, SI-W463S	9	ISIM-982	2
03SI	SI-008	6a	Low	IL-C-02B	Medium	None	Low	2-SI-ISIM-936	SI-W292S, SI-W293S, SI-W294S, SI-W295S, SI-W296S, SI-W297S, SI-W298S, SI-W556S, SI-W300S, SI-W301S	10	ISIM-936	2
03SI	SI-009	6a	Low	IL-C-03	Medium	None	Low	2-SI-ISIM-982	SI-W464S, SI-W465S	2	ISIM-982	2
03SI	SI-013	6a	Low	IL-C-06	Medium	None	Low	2-SI-ISIM-936	SI-W302S, SI-W303S	2	ISIM-936	2
03SI	SI-018	6a	Low	IL-C-09A	Medium	None	Low	3-SI-ISIM-934-1	SI-W238, SI-W239	2	ISIM-934-1	2
03SI	SI-021	6a	Low	IL-C-10A	Medium	None	Low	2-SI-ISIM-937-2	SI-W321S, SI-W553S, SI-W554S, SI-W322S, SI-W323S, SI-W324S, SI-W325S, SI-W326S, SI-W327S, SI-W555S, SI-W329S, SI-W331S, SI-W332S, SI-W333S, SI-W334S, SI-W335S	16	ISIM-937-2Sh1	2
03SI	SI-022	6a	Low	IL-C-10A	Medium	None	Low	2-SI-ISIM-937-2	SI-W330S	1	ISIM-937-2Sh2	2
03SI	SI-023	6a	Low	IL-C-10B	Medium	None	Low	2-SI-ISIM-937-1	SI-W352S, SI-W353S, SI-W354S, SI-W547S, SI-W548S, SI-W355S, SI-W356S, SI-W549S, SI-W550S, SI-W357S	10	ISIM-937-1	2
03SI	SI-024	6a	Low	IL-C-11	Medium	None	Low	2-SI-ISIM-937-2	SI-W336S, SI-W337S	2	ISIM-937-2Sh1	2
03SI	SI-025	6a	Low	IL-C-12	Medium	None	Low	2-SI-ISIM-937-1	SI-W358S, SI-W359S	2	ISIM-937-1	2
03SI	SI-034	6a	Low	IL-C-17	Medium	None	Low	6-SI-ISIM-938-2	SI-W124, SI-W125, SI-W126, SI-W127	4	ISIM-938-2Sh1	2
03SI	SI-041	6a	Low	IL-C-20	Medium	None	Low	6-SI-ISIM-939	SI-W168, SI-W169	2	ISIM-939Sh2	2
03SI	SI-048	6a	Low	RHR-C-14B	Medium	None	Low	6-SI-ISIM-961-2	SI-W128, SI-W129, SI-W130, SI-W131, SI-W132, SI-W133, SI-W134, SI-W135, SI-W136, SI-W137, SI-W138, SI-W139, SI-W140, SI-W141, SI-W142, SI-W143, SI-W144, SI-W145, SI-W146, SI-W147, SI-W148	21	ISIM-961-2	2

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Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342
Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines In Segment	Welds In Segment	Weld Count	Sketch No(s).	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
03SI	SI-049	6a	Low	RHR-C-15B2	Medium	None	Low	6-SI-ISIM-939 6-SI-ISIM-939	SI-W149, SI-W150, SI-W151, SI-W152, SI-W153, SI-W154, SI-W155, SI-W156, SI-W157, SI-W158, SI-W159, SI-W160, SI-W161, SI-W162, SI-W163, SI-W164, SI-W165, SI-W166, SI-W167	19	ISIM-939Sh1 ISIM-939Sh2	2
03SI	SI-071	6a	Low	SI-C-04A	Medium	None	Low	2-SI-ISIM-993	SI-W496S, SI-W497S	2	ISIM-993	2
03SI	SI-072	6a	Low	SI-C-04B	Medium	None	Low	2-SI-ISIM-993	SI-W535S, SI-W540S	2	ISIM-993	2
03SI	SI-079	6a	Low	SI-C-06	Medium	None	Low	2-SI-ISIM-993	SI-W518S, SI-W519S	2	ISIM-993	2
04CVC	CVC-015	6a	Low	CVCS-C-11	Medium	None	Low	2-CVC-ISIM-874-3	CVC-W153S, CVC-W154S	2	ISIM-874-3	1
04CVC	CVC-016	6a	Low	CVCS-C-12	Medium	None	Low	2-CVC-ISIM-1471	CVC-W001S, CVC-W002S	2	ISIM-1471	1
04CVC	CVC-017	6a	Low	CVCS-C-12	Medium	None	Low	2-CVC-ISIM-1471	CVC-W003S, CVC-W004S, CVC-W005S, CVC-W006S, CVC-W007S, CVC-W008S, CVC-W009S, CVC-W010S, CVC-W011S, CVC-W012S, CVC-W013S, CVC-W014S, CVC-W015S, CVC-W016S, CVC-W017S, CVC-W018S, CVC-W019S, CVC-W020S, CVC-W021S, CVC-W022S, CVC-W023S, CVC-W024S, CVC-W025S, CVC-W026S, CVC-W027S, CVC-W028S, CVC-W029S, CVC-W030S, CVC-W031S, CVC-W032S	30	ISIM-1471	1
04CVC	CVC-018	6a	Low	CVCS-C-12	Medium	None	Low	2-CVC-ISIM-1471	CVC-W033S, CVC-W034S, CVC-W035S, CVC-W036S, CVC-W037S, CVC-W038S	6	ISIM-1471	1
04CVC	CVC-020	6a	Low	CVCS-C-14	Medium	None	Low	2-CVC-ISIM-1476	CVC-W097S, CVC-W098S, CVC-W099S	3	ISIM-1476	1
04CVC	CVC-021	6a	Low	CVCS-C-14	Medium	None	Low	2-CVC-ISIM-1476	CVC-W100S, CVC-W101S, CVC-W102S, CVC-W103S, CVC-W104S, CVC-W105S, CVC-W106S, CVC-W107S, CVC-W108S, CVC-W109S, CVC-W110S, CVC-W111S, CVC-W112S, CVC-W113S, CVC-W114S, CVC-W115S, CVC-W116S, CVC-W117S, CVC-W118S, CVC-W119S, CVC-W120S	21	ISIM-1476	1
04CVC	CVC-022	6a	Low	CVCS-C-14	Medium	None	Low	2-CVC-ISIM-1476	CVC-W121S, CVC-W122S, CVC-W123S, CVC-W124S, CVC-W125S, CVC-W126S, CVC-W127S, CVC-W128S, CVC-W129S, CVC-W130S, CVC-W131S, CVC-W132S	12	ISIM-1476	1
05MS	MS-001	6a	Low	MS-C-01A	Medium	None	Low	30-MS-ISIM-871 31-MS-ISIM-984-2	MS-W118, MS-W002, MS-W003, MS-W004, MS-W120, MS-W005, MS-W006, MS-W100, MS-W007, MS-W008, MS-W009, MS-W010	12	ISIM-871 ISIM-984-2Sh1	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
05MS	MS-002	6a	Low	MS-C-01B	Medium	None	Low	30-MS-ISIM-872 31-MS-ISIM-985-1	MS-W119, MS-W050, MS-W051, MS-W052, MS-W121, MS-W053, MS-W054, MS-W054A, MS-W055, MS-W056 MS-W057, MS-W058, MS-W059	13	ISIM-872 ISIM-985-1Sh1	2
05MS	MS-003	6a	Low	MS-C-02A	Medium	None	Low	31-MS-ISIM-984-2	MS-W10A, MS-W047P	2	ISIM-984-2Sh1	2
05MS	MS-004	6a	Low	MS-C-02B	Medium	None	Low	31-MS-ISIM-985-1	MS-W059A, MS-W094P	2	ISIM-985-1Sh1	2
05MS	MS-005	6a	Low	MS-C-03A	Medium	None	Low	31-MS-ISIM-984-2 30-MS-ISIM-984-2	MS-W011, MS-W012 MS-W014, MS-W016	4	ISIM-984-2Sh1	2
05MS	MS-006	6a	Low	MS-C-03A	Medium	None	Low	24-MS-ISIM-984-2 24-MS-ISIM-984-2	MS-W097, MS-W096 MS-W015, MS-W013, MS-W018	5	ISIM-984-2Sh1 ISIM-984-2Sh2	2
05MS	MS-007	6a	Low	MS-C-03B	Medium	None	Low	31-MS-ISIM-985-1	MS-W060, MS-W061	2	ISIM-985-1Sh1	2
05MS	MS-008	6a	Low	MS-C-03B	Medium	None	Low	24-MS-ISIM-985-1	MS-W067, MS-W062, MS-W063, MS-W064, MS-W065	5	ISIM-985-1Sh1	2
05MS	MS-009	6a	Low	MS-C-04A	Medium	None	Low	6-MS-ISIM-984-2 8-MS-ISIM-969 6-MS-ISIM-969	MS-W031BC MS-W020, MS-W021, MS-W022 MS-W023	5	ISIM-969 ISIM-984-2Sh3	2
05MS	MS-010	6a	Low	MS-C-04B	Medium	None	Low	6-MS-ISIM-985-1 8-MS-ISIM-968 6-MS-ISIM-968	MS-W078BC MS-W079, MS-W080, MS-W081, MS-W082 MS-W083	6	ISIM-968 ISIM-985-1Sh3	2
05MS	MS-011	6a	Low	MS-C-05A1	Medium	None	Low	6-MS-ISIM-984-2 6-MS-ISIM-984-2	MS-W029BC MS-W024	2	ISIM-984-2Sh1 ISIM-984-2Sh3	2
05MS	MS-012	6a	Low	MS-C-05A2	Medium	None	Low	6-MS-ISIM-984-2 6-MS-ISIM-984-2	MS-W027BC MS-W026	2	ISIM-984-2Sh1 ISIM-984-2Sh3	2
05MS	MS-013	6a	Low	MS-C-05A3	Medium	None	Low	6-MS-ISIM-984-2 6-MS-ISIM-984-2	MS-W025BC MS-W028	2	ISIM-984-2Sh1 ISIM-984-2Sh3	2
05MS	MS-014	6a	Low	MS-C-05A4	Medium	None	Low	6-MS-ISIM-984-2 6-MS-ISIM-984-2	MS-W023BC MS-W030	2	ISIM-984-2Sh1 ISIM-984-2Sh3	2
05MS	MS-015	6a	Low	MS-C-05A5	Medium	None	Low	6-MS-ISIM-984-2 6-MS-ISIM-984-2	MS-W019BC MS-W032	2	ISIM-984-2Sh1 ISIM-984-2Sh3	2
05MS	MS-016	6a	Low	MS-C-05B1	Medium	None	Low	6-MS-ISIM-985-1 6-MS-ISIM-985-1	MS-W076BC MS-W077	2	ISIM-985-1Sh1 ISIM-985-1Sh3	2
05MS	MS-017	6a	Low	MS-C-05B2	Medium	None	Low	6-MS-ISIM-985-1 6-MS-ISIM-985-1	MS-W074BC MS-W075	2	ISIM-985-1Sh1 ISIM-985-1Sh3	2
05MS	MS-018	6a	Low	MS-C-05B3	Medium	None	Low	6-MS-ISIM-985-1 6-MS-ISIM-985-1	MS-W072BC MS-W073	2	ISIM-985-1Sh1 ISIM-985-1Sh3	2
05MS	MS-019	6a	Low	MS-C-05B4	Medium	None	Low	6-MS-ISIM-985-1 6-MS-ISIM-985-1	MS-W070BC MS-W071	2	ISIM-985-1Sh1 ISIM-985-1Sh3	2
05MS	MS-020	6a	Low	MS-C-05B5	Medium	None	Low	6-MS-ISIM-985-1 6-MS-ISIM-985-1	MS-W068BC MS-W069	2	ISIM-985-1Sh1 ISIM-985-1Sh3	2

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	Segment	Category	Rank	ID	Rank	DMs	Rank					
06FW	FW-008	6a (3)	Low (High)	FW-C-03A	Medium	None (FAC)	Low (High)	16-FW-ISIM-991-1 16-FW-ISIM-970	FW-W011 FW-W012	2	ISIM-970 ISIM-991-1Sh1	2
06FW	FW-003	6a	Low	FW-C-01A	Medium	None	Low	16-FW-ISIM-991-1	FW-W006	1	ISIM-991-1Sh1	2
06FW	FW-004	6a	Low	FW-C-01B	Medium	None	Low	16-FW-ISIM-972-1	FW-W032, FW-W033, FW-W034, FW-W035	4	ISIM-972-1Sh1	2
06FW	FW-005	6a	Low	FW-C-02A	Medium	None	Low	16-FW-ISIM-991-1	FW-W007P, FW-W008P	2	ISIM-991-1Sh1	2
06FW	FW-006	6a	Low	FW-C-02B	Medium	None	Low	16-FW-ISIM-972-1	FW-W036, FW-W039P	2	ISIM-972-1Sh1	2
06FW	FW-007	6a	Low	FW-C-03A	Medium	None	Low	16-FW-ISIM-991-1	FW-W010	1	ISIM-991-1Sh1	2
06FW	FW-009	6a	Low	FW-C-03A	Medium	None	Low	16-FW-ISIM-970	FW-W013, FW-W014, FW-W015, FW-W016, FW-W017, FW-W018, FW-W019, FW-W020, FW-W021, FW-W022, FW-W023	11	ISIM-970	2
06FW	FW-010	6a	Low	FW-C-03B	Medium	None	Low	16-FW-ISIM-972-1 16-FW-ISIM-971	FW-W040, FW-W041 FW-W042, FW-W043, FW-W044, FW-W045, FW-W046, FW-W047, FW-W048, FW-W049, FW-W050, FW-W051	12	ISIM-971 ISIM-972-1Sh1	2
07ICS	ICS-013	6a	Low	ICS-C-05A1	Medium	None	Low	6-ICS-ISIM-951	ICS-W037, ICS-W038	2	ISIM-951	2
07ICS	ICS-014	6a	Low	ICS-C-05A2	Medium	None	Low	6-ICS-ISIM-951	ICS-W039, ICS-W040, ICS-W041, ICS-W042	4	ISIM-951	2
07ICS	ICS-015	6a	Low	ICS-C-05B1	Medium	None	Low	6-ICS-ISIM-953	ICS-W122, ICS-W123	2	ISIM-953	2
07ICS	ICS-016	6a	Low	ICS-C-05B2	Medium	None	Low	6-ICS-ISIM-953	ICS-W124, ICS-W125, ICS-W126, ICS-W127	4	ISIM-953	2
07ICS	ICS-017	6a	Low	ICS-C-06A	Medium	None	Low	6-ICS-ISIM-951	ICS-W043, ICS-W044	2	ISIM-951	2
07ICS	ICS-018	6a	Low	ICS-C-06B	Medium	None	Low	6-ICS-ISIM-953	ICS-W128, ICS-W129	2	ISIM-953	2
08AF	AF-003	6a	Low	AFW-C-01A1	Medium	None	Low	3-AF-ISIM-877-1	AFW-W014, AFW-W015, AFW-W016, AFW-W017	4	ISIM-877-1	2
08AF	AF-004	6a	Low	AFW-C-01A2	Medium	None	Low	3-AF-ISIM-877-1	AFW-W018, AFW-W019, AFW-W020, AFW-W021, AFW-W022, AFW-W023, AFW-W024, AFW-W025, AFW-W026, AFW-W027, AFW-W028, AFW-W029, AFW-W030, AFW-W031, AFW-W032, AFW-W033, AFW-W034, AFW-W035, AFW-W036, AFW-W037, AFW-W038	21	ISIM-877-1	2
08AF	AF-005	6a	Low	AFW-C-01A3	Medium	None	Low	3-AF-ISIM-877-1 3-AF-ISIM-877-2	AFW-W039, AFW-W040 AFW-W041, AFW-W042, AFW-W043, AFW-W044, AFW-W045, AFW-W046, AFW-W047, AFW-W048, AFW-W049, AFW-W050, AFW-W051, AFW-W052, AFW-W053, AFW-W054	16	ISIM-877-1 ISIM-877-2	2
08AF	AF-006	6a	Low	AFW-C-01A4	Medium	None	Low	3-AF-ISIM-877-2	AFW-W055, AFW-W056	2	ISIM-877-2	2

NOTES:

- 1) Dissimilar metal welds are indicated by the letters "DM" in the weld number.
- 2) Welds that were selected for examination are underlined.

Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342
Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines in Segment	Welds in Segment	Weld Count	Sketch No(s)	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
08AF	AF-009	6a	Low	AFW-C-01B1	Medium	None	Low	3-AF-ISIM-891-1	AFW-W100, AFW-W101, AFW-W102, AFW-W103, AFW-W104, AFW-W105, AFW-W106, AFW-W107, AFW-W108, AFW-W109, AFW-W110, AFW-W111, AFW-W112, AFW-W113, AFW-W114, AFW-W115, AFW-W116, AFW-W117, AFW-W118, AFW-W119	20	ISIM-891-1	2
08AF	AF-010	6a	Low	AFW-C-01B2	Medium	None	Low	3-AF-ISIM-891-1	AFW-W120, AFW-W121	2	ISIM-891-1	2
08AF	AF-011	6a	Low	AFW-C-02A	Medium	None	Low	3-AF-ISIM-877-2 4-AF-ISIM-877-2	AFW-W057 AFW-W058	2	ISIM-877-2	2
08AF	AF-012	6a	Low	AFW-C-02B	Medium	None	Low	3-AF-ISIM-891-1 4-AF-ISIM-891-1	AFW-W122 AFW-W123	2	ISIM-891-1	2
08AF	AF-013	6a	Low	AFW-C-03A	Medium	None	Low	4-AF-ISIM-865 3-AF-ISIM-865	AFW-W059 AFW-W060, AFW-W061, AFW-W062, AFW-W063, AFW-W064, AFW-W065, AFW-W066, AFW-W067, AFW-W068, AFW-W069, AFW-W070, AFW-W071, AFW-W072, AFW-W073, AFW-W074, AFW-W075, AFW-W076, AFW-W077, AFW-W146, AFW-W078	21	ISIM-865	2
08AF	AF-014	6a	Low	AFW-C-03B	Medium	None	Low	4-AF-ISIM-866 3-AF-ISIM-866	AFW-W124 AFW-W125, AFW-W126, AFW-W127, AFW-W128, AFW-W129, AFW-W130, AFW-W131, AFW-W132, AFW-W133, AFW-W134, AFW-W135, AFW-W136, AFW-W137, AFW-W138, AFW-W139, AFW-W140, AFW-W141	18	ISIM-866	2
02RHR	RHR-058	7a	Low	RHR-C-16	Low	None	Low	8-RHR-ISIM-960-1 8-RHR-ISIM-960-1	RHR-W231, RHR-W232, RHR-W233, RHR-W234, RHR-W235, RHR-W236, RHR-W237 RHR-W239	8	ISIM-960-1	2
02RHR	RHR-059	7a	Low	RHR-C-16	Low	None	Low	6-RHR-ISIM-960-1	RHR-W238BC	1	ISIM-960-1	2
02RHR	RHR-060	7a	Low	RHR-C-17	Low	None	Low	6-RHR-ISIM-961-1	RHR-W241, RHR-W242, RHR-W243, RHR-W244, RHR-W245, RHR-W246	6	ISIM-961-1	2
02RHR	RHR-061	7a	Low	RHR-C-18	Low	None	Low	6-RHR-ISIM-961-1	RHR-W247, RHR-W248, RHR-W249	3	ISIM-961-1	2
02RHR	RHR-062	7a	Low	RHR-C-18	Low	None	Low	6-RHR-ISIM-961-1	RHR-W250, RHR-W251, RHR-W252	3	ISIM-961-1	2
04CVC	CVC-007	7a	Low	CVCS-C-06	Low	None	Low	2-CVC-ISIM-1474	LD-W013S, LD-W014S	2	ISIM-1474	1
04CVC	CVC-008	7a	Low	CVCS-C-07	Low	None	Low	2-CVC-ISIM-1474	WD-W019S, WD-W20S	2	ISIM-1474	1
04CVC	CVC-013	7a	Low	CVCS-C-10	Low	None	Low	2-CVC-ISIM-1369-2	WD-W012S, WD-W013S, WD-W014S	3	ISIM-1369-2	1
04CVC	CVC-014	7a	Low	CVCS-C-10	Low	None	Low	2-CVC-ISIM-1369-2	WD-W015S, WD-W016S	2	ISIM-1369-2	1
07ICS	ICS-019	7a	Low	ICS-C-07A	Low	None	Low	6-ICS-ISIM-952	ICS-W141, ICS-W142, ICS-W143, ICS-W144, ICS-W145, ICS-W146, ICS-W147	7	ISIM-952	2

NOTES:

- 1) Dissimilar metal welds are indicated by the letters "DM" in the weld number.
- 2) Welds that were selected for examination are underlined.

Kewaunee Risk Ranking Report

Calc./File No. NMC-01-342
Rev. 0

System	Risk Characterization			Consequence		Failure Potential		Lines in Segment	Welds in Segment	Weld Count	Sketch No(s).	CC
	Segment	Category	Rank	ID	Rank	DMs	Rank					
07ICS	ICS-020	7a	Low	ICS-C-07B	Low	None	Low	6-ICS-ISIM-954	ICS-W148, ICS-W149, ICS-W150, ICS-W151, ICS-W152, ICS-W153, ICS-W154, ICS-W155, ICS-W156, ICS-W157	10	ISIM-954	2

TOTAL: 1779

NOTES:

- 1) Dissimilar metal welds are indicated by the letters "DM" in the weld number.
- 2) Welds that were selected for examination are underlined.



INSERVICE
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**DOCUMENT
PACKAGE**

FILE No.: NMC-01-343

PROJECT No.: NMC-01

PROJECT NAME: Risk-Informed ISI Code Case N-578 Application to NMC Plants

CLIENT: Nuclear Management Company (NMC)

DOCUMENT TITLE: Risk Impact Analysis for the Kewaunee Nuclear Power Plant

Document Revision	Affected Pages	Revision Description	Preparer(s) Signature(s) & Date	Checker(s) Signature(s) & Date	Approver(s) Signature(s) & Date
0	i 1 1 (Att. 1) 1 (Att. 2) 1 (Att. 3) 1 (Att. 4)	Original Issue	<i>Dan Bruzen</i> 7/11/2003	<i>Scott Kulert</i> 7/11/03	<i>Phillip C. Baker</i> July 29, 2003

Risk Impact Analysis for Kewaunee

A risk impact analysis was conducted for Kewaunee per the requirements of Section 3.7 of EPRI TR-112657. The analysis estimates the net change in risk due to the positive and negative influence of adding and removing locations from the inspection program. Limits are imposed by the EPRI methodology to ensure that the change in risk of implementing the RI-ISI program meets the requirements of Regulatory Guides 1.174 and 1.178. The EPRI criterion requires that the cumulative change in core damage frequency (CDF) and large early release frequency (LERF) be less than 1E-07 and 1E-08 per year per system, respectively.

The change in CDF due to application of the RI-ISI process was estimated based on the following:

$$\Delta_{R_{CDF}} = CDDP * RF * [(POD_s * N_s) - (POD_R * N_R)]$$

CDDP	Conditional Core Damage Probability
RF	Rupture Frequency
POD_s	Probability of Detection associated with the ASME Section XI Code Program
POD_R	Probability of Detection associated with the EPRI TR-112657 RI-ISI Program
N_s	Number of Inspection Locations in the ASME Section XI Code Program
N_R	Number of Inspection Locations in the EPRI TR-112657 RI-ISI Program

The change in LERF due to application of the RI-ISI process was estimated by substituting the conditional large early release probability (CLERP) for CDDP in the above equation. In addition, the analysis was performed both with and without taking credit for enhanced inspection effectiveness due to an increased POD from application of the RI-ISI process.

The following were additional considerations in conducting the quantitative analysis.

- Only those ASME Section XI Code inspection locations that received a volumetric examination in addition to a surface examination are included in the count. Inspection locations previously subjected to a surface examination only were not considered in accordance with Section 3.7.1 of EPRI TR-112657.
- Per Section 3.7.1 of EPRI TR-112657, the contribution of low risk categories 6 and 7 need not be considered in assessing the change in risk. They are excluded from analysis because they have an insignificant impact on risk. Hence, the word "negligible" is given in these cases in lieu of values for CDF and LERF Impact. For those cases in high, medium or low risk region piping where no impact to CDF or LERF exists, "no change" is listed.
- Prior to the development of the RI-ISI program, Class 1 (B-F and B-J) and Class 2 (C-F-1 and C-F-2) piping weld selections were determined for the upcoming fourth interval. These selections were used for comparison purposes. As allowed by 10CFR50, the Class 1 piping weld selections were determined per the requirements of the 1974 Edition through Summer 1975 Addenda of ASME Code Section XI. For Class 2, the piping weld selections were determined per the requirements of the 1998 Edition through 2000 Addenda of ASME Code Section XI.
- For high consequence rank segments, the highest evaluated CDDP (1E-02) and CLERP (1E-03) values were used to assess risk impact. These values are based on postulated breaks in the RWST discharge piping that result in a flooding of the AFW pumps and a manual plant trip with only MFW available for feed flow.

The risk impact inputs and results are documented in the following attachments.

Attachment	Description
1	Contains risk impact inputs used in the analysis, including the upper bound values for CDDP and CLERP, best estimate and upper bound rupture frequencies, and POD improvement factors.
2	Provides an inspection location selection comparison between the ASME Section XI Code and EPRI TR-112657 by Risk Category.
3	Provides a bounding estimate of risk impact based on best estimate failure rates. These results are presented in the template.
4	Provides a bounding estimate of risk impact based on upper bound failure rates. Evaluated for sensitivity case purposes only.

This evaluation has demonstrated that unacceptable risk impacts will not occur from implementation of the RI-ISI program, and satisfies the acceptance criteria of Regulatory Guide 1.174 and EPRI TR-112657.

Kewaunee Risk Impact Inputs

Consequence Rank	Upper Bound		Failure Potential		Best Estimate Failure Rate	Upper Bound Failure Rate	POD Improvement Factors		
	CCDP	CLERP	Damage Mechanisms	Rank			Section XI	RI-ISI	None
High	1.00E-02	1.00E-03	FAC	High	2.00E-06	1.00E-04	N/A	N/A	N/A
Medium	1.00E-04	1.00E-05	TASCS, TT	Medium	2.00E-07	1.00E-05	0.3	0.9	0.5
			IGSCC, TGSCC, PWSCC, ECSCC, MIC, PIT, CC, E-C				0.5	0.5	
Low	1.00E-06	1.00E-07	None	Low	1.00E-08	1.00E-06	0.5	0.5	

Kewaunee Inspection Location Comparison by Risk Category

System	Risk		Consequence Rank	Failure Potential		Code Category	Weld Count	Section XI Selections		TR-112657 Selections	
	Category	Rank		DMs	Rank			Vol/Sur	Sur Only	RI-ISI	Other
01RC	2	High	High	TASCS, TT	Medium	B-J	5	1	0	2	-
01RC	2	High	High	TASCS	Medium	B-J	7	0	0	1	-
01RC	2	High	High	TT	Medium	B-F	1	1	0	1	-
						B-J	9	1	0	2	-
01RC	4	Medium	High	None	Low	B-F	12	12	0	12	-
						B-J	236	17	53	13	-
02RHR	2	High	High	TASCS	Medium	B-J	8	1	0	2	-
02RHR	4	Medium	High	None	Low	B-J	9	1	0	5	-
						C-F-1	98	1	7	6	-
02RHR	5a	Medium	Medium	TASCS	Medium	C-F-1	6	0	0	1	-
02RHR	6a	Low	Medium	None	Low	B-J	27	9	0	0	-
						C-F-1	192	2	13	0	-
02RHR	6b	Low	Low	TASCS	Medium	C-F-1	2	0	0	0	-
02RHR	7a	Low	Low	None	Low	C-F-1	21	0	0	0	-
03SI	2	High	High	TT	Medium	B-J	2	0	0	1	-
03SI	2	High	High	PWSCC	Medium	B-F	2	2	0	2	-
						B-J	12	3	0	4	-
03SI	4	Medium	High	None	Low	C-F-1	305	14	12	28	-
						B-J	5	1	1	1	-
03SI	5a	Medium	Medium	TT, IGSCC	Medium	B-J	5	1	1	1	-
03SI	5a	Medium	Medium	IGSCC	Medium	B-J	5	1	0	0	-
03SI	6a	Low	Medium	None	Low	B-J	95	16	13	0	-
						C-F-1	112	1	8	0	-
04CVC	2	High	High	TASCS	Medium	B-J	2	0	0	1	-
04CVC	2	High	High	TT	Medium	B-J	33	0	10	8	-
04CVC	4	Medium	High	None	Low	B-J	88	0	30	9	-
04CVC	5a	Medium	Medium	TT	Medium	B-J	5	0	0	1	-
04CVC	6a	Low	Medium	None	Low	B-J	76	0	21	0	-
04CVC	7a	Low	Low	None	Low	B-J	9	0	4	0	-
05MS	6a	Low	Medium	None	Low	C-F-2	76	11	2	0	-
06FW	5a	Medium	Medium	TASCS	Medium	C-F-2	16	6	1	2	-
06FW	6a (3)	Low (High)	Medium	None (FAC)	Low (High)	C-F-2	2	2	0	0	-
06FW	6a	Low	Medium	None	Low	C-F-2	33	2	0	0	-
07ICS	4	Medium	High	None	Low	C-F-1	88	0	6	9	-
07ICS	6a	Low	Medium	None	Low	C-F-1	16	1	0	0	-
07ICS	7a	Low	Low	None	Low	C-F-1	17	0	3	0	-
08AF	4	Medium	High	None	Low	C-F-2	33	5	0	4	-
08AF	5a	Medium	Medium	TASCS, TT	Medium	C-F-2	6	0	0	1	-
08AF	6a	Low	Medium	None	Low	C-F-2	108	7	0	0	-

Kewaunee Bounding Estimate of Risk Impact Based on Best Estimate Failure Rates

System	Category	Consequence Rank	Upper Bound		Failure Potential		Best Estimate Failure Rate	POD Improvement Factors			Inspection Locations			CDF Impact		LERF Impact	
			CCDP	CLERP	Damage Mechanisms	Rank		Section XI	RHSI	None	Section XI	RHSI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
RC	2	High	1.00E-02	1.00E-03	TASCS, TT	Medium	2.00E-07	0.3	0.9	0.5	1	2	1	-3.00E-09	-1.00E-09	-3.00E-10	-1.00E-10
RC	2	High	1.00E-02	1.00E-03	TASCS	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
RC	2	High	1.00E-02	1.00E-03	TT	Medium	2.00E-07	0.3	0.9	0.5	2	3	1	-4.20E-09	-1.00E-09	-4.20E-10	-1.00E-10
RC	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	29	25	-4	2.00E-10	2.00E-10	2.00E-11	2.00E-11
RC Total														-8.80E-09	-2.80E-09	-8.80E-10	-2.80E-10
RHR	2	High	1.00E-02	1.00E-03	TASCS	Medium	2.00E-07	0.3	0.9	0.5	1	2	1	-3.00E-09	-1.00E-09	-3.00E-10	-1.00E-10
RHR	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	2	11	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
RHR	5a	Medium	1.00E-04	1.00E-05	TASCS	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
RHR	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	11	0	-11	negligible	negligible	negligible	negligible
RHR	6b	Low	1.00E-06	1.00E-07	TASCS	Medium	2.00E-07	0.3	0.9	0.5	0	0	0	no change	no change	no change	no change
RHR	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-08	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
RHR Total														-3.47E-09	-1.46E-09	-3.47E-10	-1.46E-10
SI	2	High	1.00E-02	1.00E-03	TT	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
SI	2	High	1.00E-02	1.00E-03	PWSCC	Medium	2.00E-07	0.5	0.5	0.5	2	2	0	no change	no change	no change	no change
SI	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	17	32	15	-7.50E-10	-7.50E-10	-7.50E-11	-7.50E-11
SI	5a	Medium	1.00E-04	1.00E-05	TT, IGSCC	Medium	2.00E-07	0.5	0.5	0.5	1	1	0	no change	no change	no change	no change
SI	5a	Medium	1.00E-04	1.00E-05	IGSCC	Medium	2.00E-07	0.5	0.5	0.5	1	0	-1	1.00E-11	1.00E-11	1.00E-12	1.00E-12
SI	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	17	0	-17	negligible	negligible	negligible	negligible
SI Total														-2.54E-09	-1.74E-09	-2.54E-10	-1.74E-10
CVC	2	High	1.00E-02	1.00E-03	TASCS	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-09	-1.00E-09	-1.80E-10	-1.00E-10
CVC	2	High	1.00E-02	1.00E-03	TT	Medium	2.00E-07	0.3	0.9	0.5	0	8	8	-1.44E-08	-8.00E-09	-1.44E-09	-8.00E-10
CVC	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	0	9	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
CVC	5a	Medium	1.00E-04	1.00E-05	TT	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
CVC	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
CVC	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-08	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
CVC Total														-1.87E-08	-9.46E-09	-1.87E-09	-9.46E-10
MS	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	11	0	-11	negligible	negligible	negligible	negligible
MS Total														negligible	negligible	negligible	negligible
FW	5a	Medium	1.00E-04	1.00E-05	TASCS	Medium	2.00E-07	0.3	0.9	0.5	6	2	-4	no change	4.00E-11	no change	4.00E-12
FW	6a (3)	Medium	1.00E-04	1.00E-05	None (FAC)	Low (High)	1.00E-08	0.5	0.5	0.5	2	0	-2	negligible	negligible	negligible	negligible
FW	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	2	0	-2	negligible	negligible	negligible	negligible
FW Total														negligible	4.00E-11	negligible	4.00E-12
ICS	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	0	9	9	-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
ICS	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	1	0	-1	negligible	negligible	negligible	negligible
ICS	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-08	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
ICS Total														-4.50E-10	-4.50E-10	-4.50E-11	-4.50E-11
AF	4	High	1.00E-02	1.00E-03	None	Low	1.00E-08	0.5	0.5	0.5	5	4	-1	5.00E-11	5.00E-11	5.00E-12	5.00E-12
AF	5a	Medium	1.00E-04	1.00E-05	TASCS, TT	Medium	2.00E-07	0.3	0.9	0.5	0	1	1	-1.80E-11	-1.00E-11	-1.80E-12	-1.00E-12
AF	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-08	0.5	0.5	0.5	7	0	-7	negligible	negligible	negligible	negligible
AF Total														3.20E-11	4.00E-11	3.20E-12	4.00E-12
Grand Total														-3.19E-08	-1.58E-08	-3.19E-09	-1.58E-09

Kewaunee Bounding Estimate of Risk Impact Based on Upper Bound Failure Rates

System	Category	Consequence Rank	Upper Bound		Failure Potential		Upper Bound Failure Rate	POD Improvement Factors			Inspection Locations			CDF Impact		LERF Impact	
			CCDP	CLERP	Damage Mechanisms	Rank		Section XI	RI-ISI	None	Section XI	RI-ISI	Delta	w/ POD	w/o POD	w/ POD	w/o POD
RC	2	High	1.00E-02	1.00E-03	TASCS, TT	Medium	1.00E-05	0.3	0.9	0.5	1	2	1	-1.50E-07	-5.00E-08	-1.50E-08	-5.00E-09
RC	2	High	1.00E-02	1.00E-03	TASCS	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-08	-5.00E-08	-9.00E-09	-5.00E-09
RC	2	High	1.00E-02	1.00E-03	TT	Medium	1.00E-05	0.3	0.9	0.5	2	3	1	-2.10E-07	-5.00E-08	-2.10E-08	-5.00E-09
RC	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	29	25	-4	2.00E-08	2.00E-08	2.00E-09	2.00E-09
RC Total														-4.30E-07	-1.30E-07	-4.30E-08	-1.30E-08
RHR	2	High	1.00E-02	1.00E-03	TASCS	Medium	1.00E-05	0.3	0.9	0.5	1	2	1	-1.50E-07	-5.00E-08	-1.50E-08	-5.00E-09
RHR	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	2	11	9	-4.50E-08	-4.50E-08	-4.50E-09	-4.50E-09
RHR	5a	Medium	1.00E-04	1.00E-05	TASCS	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-10	-5.00E-10	-9.00E-11	-5.00E-11
RHR	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	11	0	-11	negligible	negligible	negligible	negligible
RHR	6b	Low	1.00E-06	1.00E-07	TASCS	Medium	1.00E-05	0.3	0.9	0.5	0	0	0	no change	no change	no change	no change
RHR	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-06	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
RHR Total														-1.96E-07	-9.55E-08	-1.96E-08	-9.55E-09
SI	2	High	1.00E-02	1.00E-03	TT	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-08	-5.00E-08	-9.00E-09	-5.00E-09
SI	2	High	1.00E-02	1.00E-03	PWSCC	Medium	1.00E-05	0.5	0.5	0.5	2	2	0	no change	no change	no change	no change
SI	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	17	32	15	-7.50E-08	-7.50E-08	-7.50E-09	-7.50E-09
SI	5a	Medium	1.00E-04	1.00E-05	TT, IGSCC	Medium	1.00E-05	0.5	0.5	0.5	1	1	0	no change	no change	no change	no change
SI	5a	Medium	1.00E-04	1.00E-05	IGSCC	Medium	1.00E-05	0.5	0.5	0.5	1	0	-1	5.00E-10	5.00E-10	5.00E-11	5.00E-11
SI	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	17	0	-17	negligible	negligible	negligible	negligible
SI Total														-1.65E-07	-1.25E-07	-1.65E-08	-1.25E-08
CVC	2	High	1.00E-02	1.00E-03	TASCS	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-08	-5.00E-08	-9.00E-09	-5.00E-09
CVC	2	High	1.00E-02	1.00E-03	TT	Medium	1.00E-05	0.3	0.9	0.5	0	8	8	-7.20E-07	-4.00E-07	-7.20E-08	-4.00E-08
CVC	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	0	9	9	-4.50E-08	-4.50E-08	-4.50E-09	-4.50E-09
CVC	5a	Medium	1.00E-04	1.00E-05	TT	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-10	-5.00E-10	-9.00E-11	-5.00E-11
CVC	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
CVC	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-06	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
CVC Total														-8.56E-07	-4.96E-07	-8.56E-08	-4.96E-08
MS	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	11	0	-11	negligible	negligible	negligible	negligible
MS Total														negligible	negligible	negligible	negligible
FW	5a	Medium	1.00E-04	1.00E-05	TASCS	Medium	1.00E-05	0.3	0.9	0.5	6	2	-4	no change	2.00E-09	no change	2.00E-10
FW	6a (3)	Medium	1.00E-04	1.00E-05	None (FAC)	Low (High)	1.00E-06	0.5	0.5	0.5	2	0	-2	negligible	negligible	negligible	negligible
FW	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	2	0	-2	negligible	negligible	negligible	negligible
FW Total														negligible	2.00E-09	negligible	2.00E-10
ICS	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	0	9	9	-4.50E-08	-4.50E-08	-4.50E-09	-4.50E-09
ICS	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	1	0	-1	negligible	negligible	negligible	negligible
ICS	7a	Low	1.00E-06	1.00E-07	None	Low	1.00E-06	0.5	0.5	0.5	0	0	0	no change	no change	no change	no change
ICS Total														-4.50E-08	-4.50E-08	-4.50E-09	-4.50E-09
AF	4	High	1.00E-02	1.00E-03	None	Low	1.00E-06	0.5	0.5	0.5	5	4	-1	5.00E-09	5.00E-09	5.00E-10	5.00E-10
AF	5a	Medium	1.00E-04	1.00E-05	TASCS, TT	Medium	1.00E-05	0.3	0.9	0.5	0	1	1	-9.00E-10	-5.00E-10	-9.00E-11	-5.00E-11
AF	6a	Medium	1.00E-04	1.00E-05	None	Low	1.00E-06	0.5	0.5	0.5	7	0	-7	negligible	negligible	negligible	negligible
AF Total														4.10E-09	4.50E-09	4.10E-10	4.50E-10
Grand Total														-1.69E-06	-8.84E-07	-1.69E-07	-8.84E-08

Appendix A

ISI Drawings

During development of the Third 10-Year Inservice Inspection (ISI) Interval Plan, Wisconsin Public Service Corporation (WPSC) created ISI CAD drawings for the Kewaunee Nuclear Power Plant. ISI drawings provide a source document for planning, scheduling, and administration of components subject to inspection under the 1998 Edition 2000 Addenda of ASME Boiler and Pressure Vessel Code, Section XI. The ISI isometric drawings (page A-4), ISI component drawings (page A-12), and ISI flow diagrams (page A-15) are listed in the attached tables. The ISI isometric drawings and ISI flow diagrams have been levelized. The ISI component drawings are not levelized. The term levelization indicates that data within the drafting design file has been segregated into different levels. The drafting software utilized at KNPP contains 63 drawing levels. Levels are put together to form a complete drawing. Furthermore, levels can be turned on and off independently to create different drawings from one drafting file. The drafting design files for the isometric drawings are used to generate isometric drawings (stress analysis), weld map isometric drawings, and ISI isometric drawings. The drafting design files for the flow diagrams are used to generate operation flow diagrams, analytical flow diagrams, and ISI flow diagrams.

The hierarchy of information contained on the isometric drawings is as follows:

- Isometric Drawings (Stress Analysis)
 - o Pipe configuration
 - o Component support identification numbers and location
 - o Analytical part number
 - o Valve identification number and location
- Weld Map Isometric Drawings
 - o Weld location
 - o Fabrication weld identification number
 - o Weld type (determined by referencing fabrication ID numbers to original weld datasheets located in KNPP QA Vault)
 - o Pipe material and thickness
- ISI Isometric Drawings
 - o ISI identification numbers
 - o NDE boundary flags
 - o ISI code class boundary flags

The hierarchy of information contained on the flow diagrams is as follows:

- Operations Flow Diagrams
 - o All piping and instrumentation
 - o QA boundary flags
- Analytical Flow Diagrams
 - o Analytical Part Number
 - o Anchor Points

Appendix A

ISI Drawings

- ISI Flow Diagrams
 - o Code Class Boundary Flags
 - o ISI Notes

Information contained on the ISI isometric drawings include:

- Size, schedule, material, and configuration of piping
- Location and identification of welds, supports and hangers, integrally welded attachments, and valves and flanges
- Class 1 and class 2 pressure retaining bolting within the NDE boundary
- Valve manufacturer for class 1 valves subject to VT-3 internal examination
- Floor and wall penetrations
- Calibration block
- Code class and NDE boundaries
- Examination direction

Information contained on the ISI component drawings include:

- Welds
- Component supports
- Integrally welded attachments
- Bolting
- Calibration block
- Thickness and material type
- Code class

The equipment numbering system used on the ISI isometric and component drawings is as follows. An equipment number is a unique identifier used to identify a piece of equipment. The term "equipment" refers to supports, valves, pumps, vessels, welds, etc. An example of each type of numbering scheme is given below.

Supports

MS-H27	MS	system abbreviation
	H	support/hanger
	27	sequential number

Valves

RHR-1A	RHR	system abbreviation
	1	sequential number
	A	train

Appendix A

ISI Drawings

Pumps, Vessels, etc.

AHEL-1A	A	Unit 1
	H	heat exchanger (P would indicate pump and F would indicate filter)
	EL	equipment or system identifier
	1	sequential number
	A	train

Welds

SI-W100S	SI	system abbreviation
	W	weld
	100	sequential number
	S	indicates a socket weld (BC indicates a branch connection weld, L indicates a longitudinal weld, and no designation indicates a butt weld)

Restraints

RR66	RR	rupture restraint
	66	sequential number

Integrally Welded Attachment

MS-WA-706	MS	system abbreviation
	WA	welded attachment (H indicates hanger)
	706	sequential number

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-865	Auxiliary Feedwater Piping to Steam Generator 1A	2	AFW-05B-001
ISIM-866	Auxiliary Feedwater Piping to Steam Generator 1B	2	AFW-05B-002
ISIM-867	Containment Service Water Piping Line 37NW	3	SW-02-001
ISIM-868	Containment Service Water Piping Line 37ES	3	SW-02-002
ISIM-869	Containment Service Water Piping Line 37EN	3	SW-02-003
ISIM-870	Containment Service Water Piping Line 37NE	3	SW-02-004
ISIM-871	Main Steam Steam Generator 1A	2	MS-06-001
ISIM-872	Main Steam Steam Generator 1B	2	MS-06-002
ISIM-874-1	3" R.C. to Pressurizer	1	RC-36-001
ISIM-874-2	3" R.C. to Pressurizer	1	RC-36-001
ISIM-874-3	2" CVC to Pressurizer RC	1	RC-36-001
ISIM-875	Aux. Cooling From CC Pumps 1A & 1B to CC HT Exch's 1A & 1B Inlet	3	CC-31-001
ISIM-876	SW From CC Heat Exch. & Spent Fuel Pool Heat Exch. To 24" Standpipe	3	SW-02-005
ISIM-877-1	Auxiliary Feedwater Piping From Intermediate Anch. To Pen. #46W	2	AFW-05B-003
ISIM-877-2	Auxiliary Feedwater Piping From Intermediate Anch. To Penet. #46W	2	AFW-05B-003
ISIM-881-1	CC - RSDL HX 1A, 1B, BA Evap Pkg Outs & Pens 33N, 40, 33E to Surge TK	3	CC-31-005
ISIM-885-1	Service Water From FCU 1A to Shroud Cooling Coil 1A to Pene. 38NW	3	SW-02-007

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-886	SW From Fan Coil Unit 1B to Shroud Clg Coil 1B to Cntmt Pen 38NE	3	SW-02-008
ISIM-888-1	Service Water From FCU 1C & 1D to Shroud Cooling Unit 1C/1D and Intermediate Anchors	3	SW-02-009
ISIM-888-2	Service Water From FCU 1C & 1D to Shroud Cooling Unit 1C/1D and Intermediate Anchors	3	SW-02-009
ISIM-889-1	Service Water From FCU 1C, 1D & Shroud Cooling Coil 1C, 1D to Pene. 38EN & 38ES	3	SW-02-010
ISIM-889-2	Service Water From FCU 1C, 1D & Shroud Cooling Coil 1C, 1D to Pene. 38EN & 38ES	3	SW-02-010
ISIM-890	CC – RSDL HX 1A, 1B, BA Evap Pkg Outs & Pens 33N, 40, 33E to Surge TK	3	CC-31-005
ISIM-891-1	From AFW Pumps 1A/1B & Turb. Driven Pump Disch. To Pen. 46E	2	AFW-05B-004
ISIM-891-2	From AFW Pumps 1A/1B & Turb. Driven Pump Disch. To Pen. 46E	2,3	AFW-05B-004
ISIM-892	Pressurizer Surge Line	1	RC-36-003
ISIM-893	SW Outlets From Strainers 1A1, 1A2, 1B1, & 1B2 to Anchors on 24 " Header	3	SW-02-011
ISIM-894	From Service Water Pump Discharge to Service Water Strainers Inlet	3	SW-02-012
ISIM-895	Service Water – From 24" Supply Header to traveling Screens 1A1 & 1A2	3	SW-02-013
ISIM-896	Service Water – From 24" Supply Hdr. To Traveling Screens 1B1 & 1B2	3	SW-02-014

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-897-1	Serv. Wtr. & Feedwater Suct. To Aux. Feedwater 1A, 1B, & Turb. Drvn. Pumps	3	SW-02-015
ISIM-897-2	Serv. Wtr. & Feedwater Suct. To Aux. Feedwater 1A, 1B & Turb. Drvn. Pumps	3	SW-02-015
ISIM-900	SW From Intermediate Anchor on 24" HDR to Intermediate Anchors on 16" Pipe & Near VLV SW-4B	3	SW-02-018
ISIM-901	SW From Intermediate Anchor on 24" HDR to Intermediate Anchors on 16" Pipe & Near VLV SW-4A	3	SW-02-019
ISIM-902	SW From Cntmt Pens. 38ES & 38EN to Aux. Bldg. Standpipe	3	SW-02-020
ISIM-903	SW RTN From Comp. Clg. HX1B to Aux. Bldg. Standpipe	3	SW-02-021
ISIM-904	SW – RTN From Cntmt Pens. 38NW & 38NE to Aux. Bldg. Standpipe	3	SW-02-022
ISIM-913	CC – From Anchor and Letdown HX to Comp. Clg. Pumps 1A/1B Suction	3	CC-31-007
ISIM-914	CC – From CC HX 1A/1B Outlets to Letdown HX & RSDL HX 1A Inlets	3	CC-31-008
ISIM-915	CC – From Anchor to RSDL HX 1B, Pens 32N, 39, 32E & BA Evap Pkg Inlt	3	CC-31-009
ISIM-922	Service Water – From Anchor to Cntmt Pens 37EN & 37ES	3	SW-02-031
ISIM-924-1	SW Sply to CC HX 1A/1B, Spent Fuel HX & Emergency Sply to Spent Fuel Pools	3	SW-02-033
ISIM-924-2	SW Sply to CC HX 1A/1B, Spent Fuel HX & Emergency Sply to Spent Fuel Pools	3	SW-02-033
ISIM-926	Service Water Anchors to Cntmt Pens. 37NE & 37NW	3	SW-02-035

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-932	SW – From Flex Conns on Diesel Gen. 1A & 1B CW HXS to Anchor	3	SW-02-039
ISIM-933	Safety Injection Pumps Suction Piping	2	SI-33-001
ISIM-934-1	Safety Injection Pumps Disch. Piping to Pen 28E & RWST	2	SI-33-002
ISIM-934-2	Safety Injection Pumps Disch. Piping to Pen 28N & RWST	2	SI-33-002
ISIM-935	SI – From Accumulator 1A to Loop A Cold Leg	1, 2	SI-33-003
ISIM-936	SI – From Cntmt PEN. 28N to Acmters and Cold Leg Loops	1, 2	SI-33-004
ISIM-937-1	SI – From Cntmt PEN. 28E to 2" Branch Conn on 6" HDR to Reactor	2	SI-33-005
ISIM-937-2SH1	SI – From Cntmt PEN. 28E to 2" Branch Conn on 6" HDR to Reactor	1, 2	SI-33-005
ISIM-937-2SH2	SI – From Cntmt PEN. 28E to 2" Branch Conn on 6" HDR to Reactor	2	SI-33-005
ISIM-938-1	SI – From Cntmt PEN. 10 to Reactor From Acmt 1B to Loop B Cold Leg	1, 2	SI-33-006
ISIM-938-2SH1	SI – From Cntmt PEN. 10 to Reactor From Acmt 1B to Loop B Cold Leg	1, 2	SI-33-006
ISIM-938-2SH2	SI – From Cntmt PEN. 10 to Reactor From Acmt 1B to Loop B Cold Leg	1, 2	SI-33-006
ISIM-939SH1	Safety Injection From Cntmt Pen 48 to Reactor	1, 2	SI-33-007

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-939SH2	Safety Injection From Cntmt Pen 48 to Reactor	1, 2	SI-33-007
ISIM-940-1	Reactor Coolant – From Pressurizer to Pressurizer Relief Tank	1	RC-36-002
ISIM-940-2	Reactor Coolant – From Pressurizer to Pressurizer Relief Tank	1	RC-36-002
ISIM-950-1	Containment Spray Pump Suction Piping	2	ICS-23-001
ISIM-950-2	Containment Spray Pump Suction Piping	2	ICS-23-001
ISIM-951	Containment Spray Pump 1A Disch Piping to Pen. 29N	2	ICS-23-002
ISIM-952	Cntmt Spray From Cntmt Pen 29N to Ring Headers 1 & 3	2	ICS-23-003
ISIM-953	Containment Spray Pump 1B Disch Piping to Pen. 29E	2	ICS-23-004
ISIM-954	Cntmt Spray From Cntmt Pen 29E To Ring Headers 2 & 4	2	ICS-23-005
ISIM-957-1SH1	RHR – From RC Loops A & B Hot Legs to Cntmt Pen. 9 & to Cntmt Sump B	2	RHR-34-001
ISIM-957-1SH2	RHR – From RC Loops A & B Hot Legs to Cntmt Pen. 9 & to Cntmt Sump B	1, 2	RHR-34-001
ISIM-957-2	RHR – From RC Loops A & B Hot Legs to Cntmt Pen. 9 & to Cntmt Sump B	2	RHR-34-001
ISIM-958-1-1	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1A to Anchor on Disch. Line	2	RHR-34-002
ISIM-958-1-2	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1A to Anchor on Disch. Line	2	RHR-34-002

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-958-2	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1A to Anchor on Disch. Line	2	RHR-34-002
ISIM-959-1-1	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1B to Anchor on Disch. Line	2	RHR-34-003
ISIM-959-1-2	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1B to Anchor on Disch. Line	2	RHR-34-003
ISIM-959-2	RHR – From Cntmt Sump B & Anchors Thru RHR Pump 1B to Anchor on Disch. Line	2	RHR-34-003
ISIM-960-1	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-960-2	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-961-1	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-961-2	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-962-1	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-962-2SH1	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004
ISIM-962-2SH2	RHR – From Anchors Thru RSDL HX 1A/1B to Pens. 10, 48 & RHR-SFP Interconns	2	RHR-34-004

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ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-968	Main Steam 1B Power Relief Valve Vent	2	MS-06-006
ISIM-969	Main Steam 1A Power Relief Valve Vent	2	MS-06-007
ISIM-970	Feedwater From Anchored ELL to Steam Gen. 1A	2	FW-05A-001
ISIM-971	Feedwater From Anchored ELL to Steam Gen. 1B	2	FW-05A-002
ISIM-972-1SH1	Feedwater – From Anchor Near Htrs to Anchored ELLs Inside Cntmt	2	FW-05A-003
ISIM-972-1SH2	Feedwater – From Anchor Near Htrs to Anchred ELLs Inside Cntmt	2	FW-05A-003
ISIM-982	SI – From Cntmt Pen. 28N to Acmters and Cold leg Loops	1, 2	SI-33-004
ISIM-984-2SH1	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-984-2SH2	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-984-2SH3	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-985-1SH1	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-985-1SH2	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-985-1SH3	Main Steam – From Anchred ELLs to HP Turbine Stop Valves	2	MS-06-003
ISIM-991SH1	Feedwater – From Anchor Near Htrs to Anchored ELLs Inside Cntmt	2	FW-05A-003

Appendix A

ISI Drawings

ISI ISOMETRIC DRAWINGS			
I.D.	TITLE	CLASS	ANALYTICAL PART NO.
ISIM-991SH2	Feedwater – From Anchor Near Htrs to Anchored ELLs Inside Cntmt	2	FW-05A-003
ISIM-992-1	Safety Injection Pumps Suction Piping	2	SI-33-001
ISIM-992-2	Safety Injection Pumps Suction Piping	2	SI-33-001
ISIM-993	Safety Injection Pumps Disch. Piping to Pen 28N, 28E & RWST	2	SI-33-002
ISIM-999	CC – From Anchor to RSDL HX 1B, Pens 32N, 39, 32E, & BA Evap Pkg Inlt	3	CC-31-009
ISIM-1369-2	RCS Cold leg Lop A & Excess Letdown Line	1	CVC-35-148
ISIM-1460	RC-RTD Line For R. C. Loop A	1	RC-36-102
ISIM-1461	RC-RTD Line For R. C. Loop B	1	RC-36-103
ISIM-1471	CVC – From Pene. #13N to R.C. Pump Loop 1A	1,2	CVC-35-140
ISIM-1473	CVC – From Disch. Line of Regen. HT. Exch. Anch. Point on Line to RCS Cold Leg Loop B	1,2	CVC-35-143
ISIM-1474	CVC – From Loop B of Pump Suction to Regenerative HT. Exch.	1,2	CVC-35-144
ISIM-1476	CVC – From Pene. #13E to R.C. Pump Loop 1B	1,2	CVC-35-147
ISIM-1608	SI – From 16" S.I. Pump Suction Line to Valve SI-31 to 8" S.I. Pump Suction Line From Boric Acid Tanks	2	N/A
ISIM-1646	Containment Spray Pumps 1A & 1B Disch Piping to Pens. 29E & 29N	2	ICS-23-002
ISIM-1703	Reactor Coolant Piping Loop A	1	N/A
ISIM-1704	Reactor Coolant Piping Loop B	1	N/A

Appendix A

ISI Drawings

ISI COMPONENT DRAWINGS		
I.D.	TITLE	CLASS
M-1193	Reactor Vessel RV	1
M-1194	Reactor Vessel Nozzles and Integrally Welded Attachments	1
M-1195	Reactor Vessel Threads in Flange	1
M-1196	Reactor Vessel Stud, Nut and Washers	1
M-1197	Reactor Vessel Vessel Closure Head Conoseal Bolting and Control Rod Drive Mechanisms	1
M-1198 SH. 1 of 2	Reactor Vessel Closure Head Flange and Control Rod Drive Mechanism	1
M-1198 SH. 2 of 2	Reactor Vessel Closure Head Flange Part Length Control Rod Drive Mechanism Motor Tube	1
M-1199	Reactor Vessel Internals	1
M-1200	Pressurizer PRZ	1
M-1201	Replacement Steam Generators SG-1A and SG-1B	1
M-1202	Reactor Coolant Pumps RCP-1A and RCP-1B	1
M-1203	Reactor Coolant Pump RCP-1A and RCP-1B Casing	1
M-1204	Reactor Coolant Pumps RCP-1A and RCP-1B Flywheel & Supports	1
M-1205SH1	Reactor Coolant Pumps RCP-1A and RCP-1B Main Flange and No. 1 Seal Housing Bolting	1
M-1205SH2	Reactor Coolant Pump 1A and RCP-1B Main Flange Bolt	1
M-1206	Steam Generators Existing and Replacement SG-1A and SG-1B	2
M-1207	Residual Heat Exchangers AHRS1-1A and AHRS2-1B	2
M-1208	Regenerative Heat Exchanger ARG	2
M-1209	Letdown Heat Exchange AHLD	2
M-1210	Charging Pump Pulsation Dampeners APD-1A, APD-1B and APD-1C	2
M-1211	Volume Control Tank VCT	2
M-1212	Seal Water Injection Filters AFSI-1A and AFSI-1B	2
M-1213	Reactor Coolant Filter AFRC	2
M-1214	Seal Water Filter AFSW	2

Appendix A

ISI Drawings

ISI COMPONENT DRAWINGS		
I.D.	TITLE	CLASS
M-1215	Residual Heat Removal Pumps APRH1-1A and APRH2-1B	2
M-1216	Charging Pumps APCH-1A, APCH-1B, APCH-1C	2
M-1218	Component Cooling Surge Tank ATCS	3
M-1220	Service Water Pump Strainers ASSW-1A1, ASSW-1A2, ASSW-1B1, and ASSW-1B2	3
M-1221	Excess Letdown Heat Exchangers AHEL-1A & AHEL-1B	1,3
M-1222	Component Cooling Heat Exchangers AHCC1-1A and AHCC2-1B	3
M-1223	Spent Fuel Pool Heat Exchanger AHSF	3
M-1224	Residual Heat Exchangers AHRS1-1A and AHRS2-1B	3
M-1225	Diesel Generator AHDG-1A and AHDG-1B Cooling Water Heat Exchangers	3
M-1226	Letdown Heat Exchanger AHLD	3
M-1227	Seal Water Heat Exchanger AHSF	3
M-1228	Reactor Coolant Pumps RCPC-1A and RCPC-1B Lube Oil Cooler	3
M-1229	Residual Heat Removal Pumps Shaft Seal Heat Exchangers AHRHRP-1A and AHRHRP-1B	3
M-1230	Spent Fuel Pool Pumps APSF-1A and APSF-1B	3
M-1231	Auxiliary Feed Water Pump Turbine Driven APFT	3
M-1232	Auxiliary Feed Water Pumps Motor Driven APFM-1A and APFM-1B	3
M-1233	Containment Spray Pumps and Gland Seal Coolers APCS-1A and APCS-1B	3
M-1234	Component Cooling Pumps APCC-1A and APCC-1B	3
M-1236	Service Water Pumps APSW-1A1, APSW-1A2, APSW-1B1 and APSW-1B2	3
M-1237	Safety Injection Pump Heat Exchangers (2), Lube Oil Cooler and Stuff Box Jacket AHSC-1A and AHSC-1B	3
M-1239	Containment Fan Coolers AHCF-1A, AHCF-1B, AHCF-1C and AHCF-1D	3
M-1705	Accumulator Tank ACC-1A	2

Appendix A

ISI Drawings

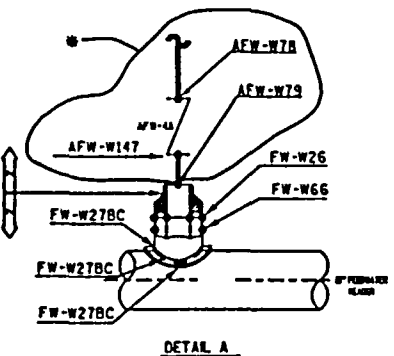
ISI COMPONENT DRAWINGS		
I.D.	TITLE	CLASS
M-1706	Accumulator Tank ACC-1B	2
M-1707	Safety Injection Pumps APSI-1A and APSI-1B	2
M-1709	Control Room Air Conditioning Chiller Units 1A and 1B, Control Room Air Conditioning Expansion Tanks 1A and 1B and Control Room Air Conditioning Coil Units 1A and 1B	3

Appendix A

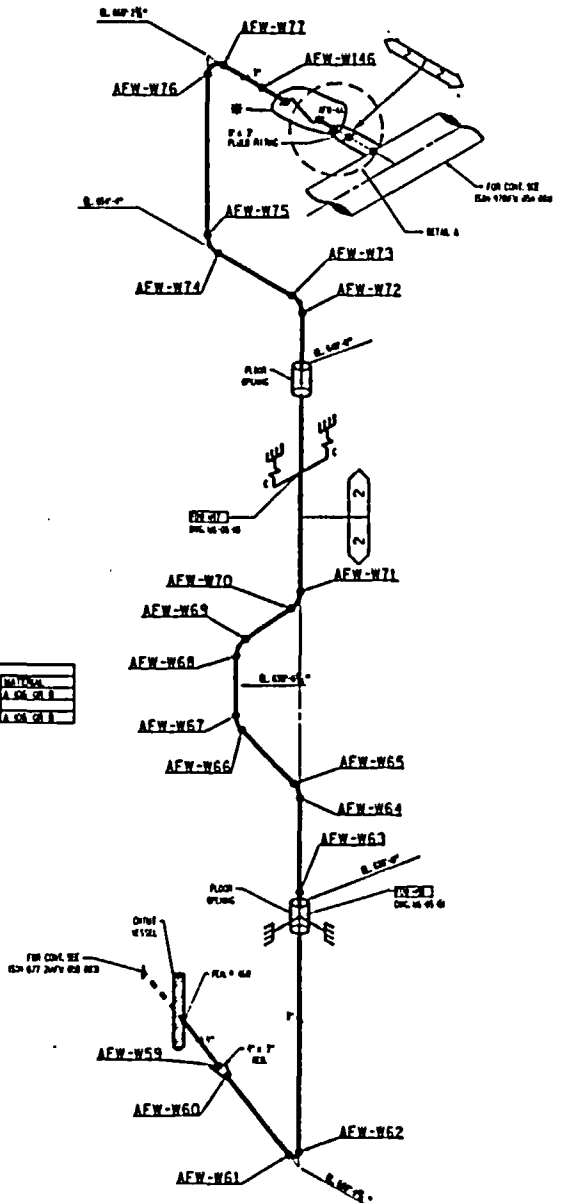
ISI Drawings

ISI FLOW DIAGRAMS		
I.D.	TITLE	CLASS
ISIXK-100-10	Reactor Coolant System	1,2
ISIXK-100-18	Residual Heat Removal System	1,2
ISIXK-100-19	Component Cooling System	3
ISIXK-100-20	Component Cooling System	3
ISIXK-100-28	Safety Injection System	1,2
ISIXK-100-29	Safety Injection System	2
ISIXK-100-35	Auxiliary Coolant System	1,2,3
ISIXK-100-36	Chemical & Volume Control System	2,3
ISIXK-100-38	Chemical & Volume Control System	NCC
ISIXK-100-44	Sampling System	1,2
ISIM-202-1	Service Water System	3
ISIM-202-2	Service Water System	3
ISIM-203	Main Aux. Steam and Steam Dump	2,3
ISIM-205	Feedwater System	2,3
ISIM-214	Chemical Injection System	2,3
ISIM-217	Internal Containment Spray System	2
ISIM-218	Spent Fuel Pool Cooling and Clean-Up System	2,3
ISIM-219	Secondary Sampling Systems	2
ISIM-350	Reactor Plant Misc. Vents, Drains & Sump Pump Piping	2
ISIM-547	Service Water System, Containment Cooling	3
ISIM-588	Air Cond. Cooling Water Piping	3
ISIM-606	Air Cond. Cooling Water Piping	3

900-028



DETAIL A



NO.	REV.	DESCRIPTION	DATE	BY	CHKD.
1		ISSUED FOR CONSTRUCTION	11/11/68	WJL	WJL
2		REVISED TO SHOW WELDING	11/11/68	WJL	WJL
3		REVISED TO SHOW WELDING	11/11/68	WJL	WJL
4		REVISED TO SHOW WELDING	11/11/68	WJL	WJL

INTEGRALLY WELDED ATTACHMENT DATA	
LA	THICKNESS (IN)
FDW-W67	1.0
FDW-W66	1.0

VALVE BOWIE BOLTING DATA		
LA	SIZE/DIA/LEN	MUTL
AFW-W44	1 CAP SCREW - 0.50" x STUDS - 0.375"	2
	1 CAP SCREW - 0.525"	2

C-1 # KAP 01-001639

CODE CLASS 2
LOCATION: CONTAINMENT

REFERENCE DWGS.
W-18, W-19, W-20, W-21, W-22, W-23, W-24

NOTE:
1. DIMENSIONS APPLICABLE FOR 3-D AND 1-D ISOMETRIC.

DESIGNED BY: []
CHECKED BY: []
DATE: []

151 ISOMETRIC
AUXILIARY FEEDWATER PIPING
TO STEAM GENERATOR 1A

WISCONSIN PUBLIC SERVICE CORP.
151 ISOMETRIC

SCALE: []

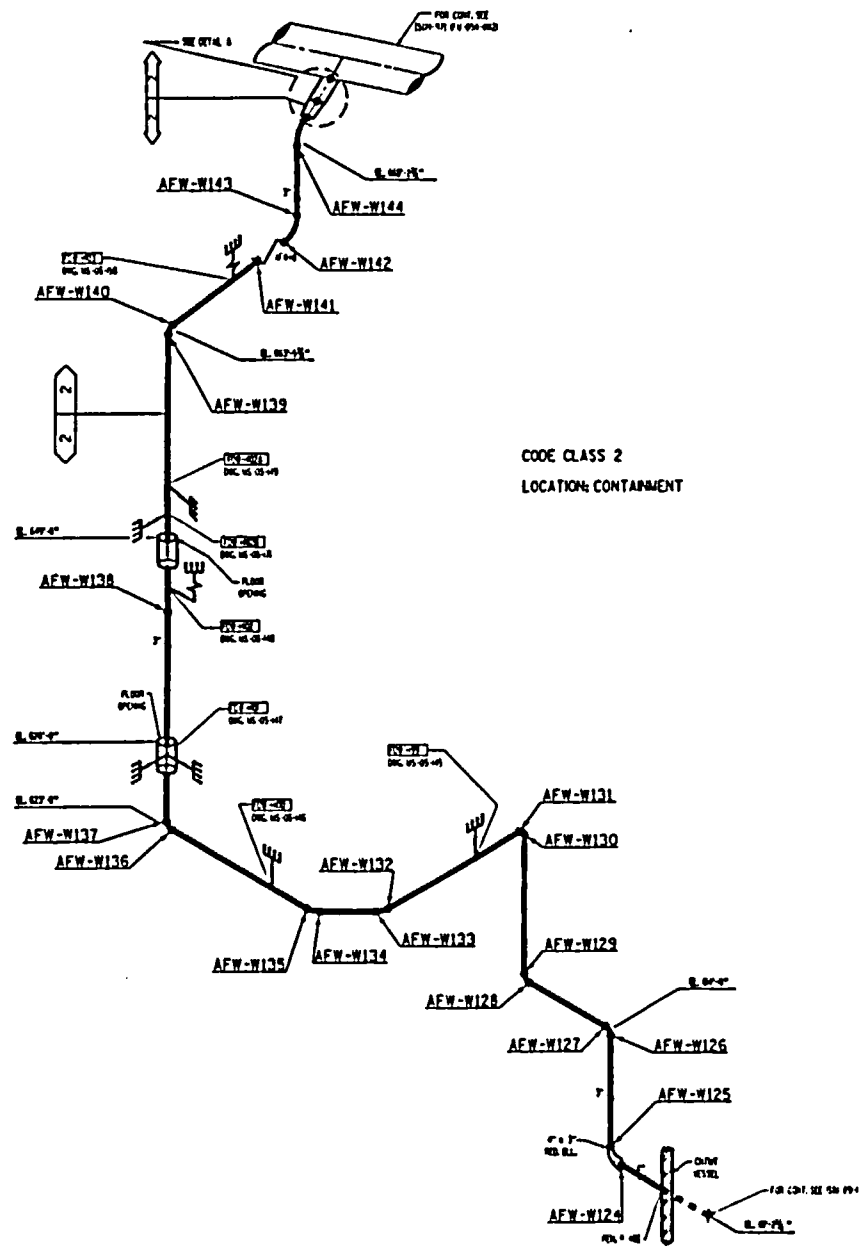
DATE: []

BY: []

APP'D: []

REVISIONS

NO.	DATE	DESCRIPTION
1	11/11/68	ISSUED FOR CONSTRUCTION
2	11/11/68	REVISED TO SHOW WELDING
3	11/11/68	REVISED TO SHOW WELDING
4	11/11/68	REVISED TO SHOW WELDING

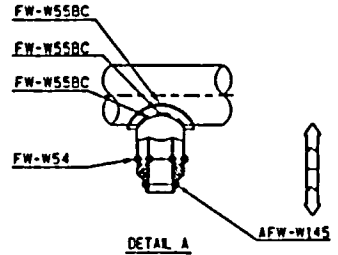


CODE CLASS 2
LOCATION: CONTAINMENT

INTEGRALLY WELDED ATTACHMENT DATA

LINE	THICKNESS (DPL)
FOR=101	LO
FOR=102	LO
FOR=103	

PIPE		CALCULATION BLOCK	
QA 28	SOU THICKNESS (DPL) MATERIAL	QA	SOU THICKNESS (DPL) MATERIAL
0	000/0.124 1 SA GR II	000/0.124	1 SA GR II
1	000/0.117 1 SA GR II	000/0.117	1 SA GR II
2	11-000/0.200 1 SA GR II	000/0.200	1 SA GR II



VALVE BONNET BOLTING DATA

LINE	VALVE
AFW-W54	CAP SCREWS-0.500, 4 STUDS-0.375, 4 CAP SCREWS-0.625

A-1
KAP 01-001639

NOTES:
1. UP TO 8.625\"/>

REFERENCE DWGS.
900-024, 900-025, 900-026, 900-027, 900-028

NOTE:
LOADING APPLICABLE FOR 2-D AND 4-D B WELDS.

WISCONSIN PUBLIC SERVICE CORPORATION
NUCLEAR DIVISION
CAPTIVE STEAMER SERVICE DIVISION

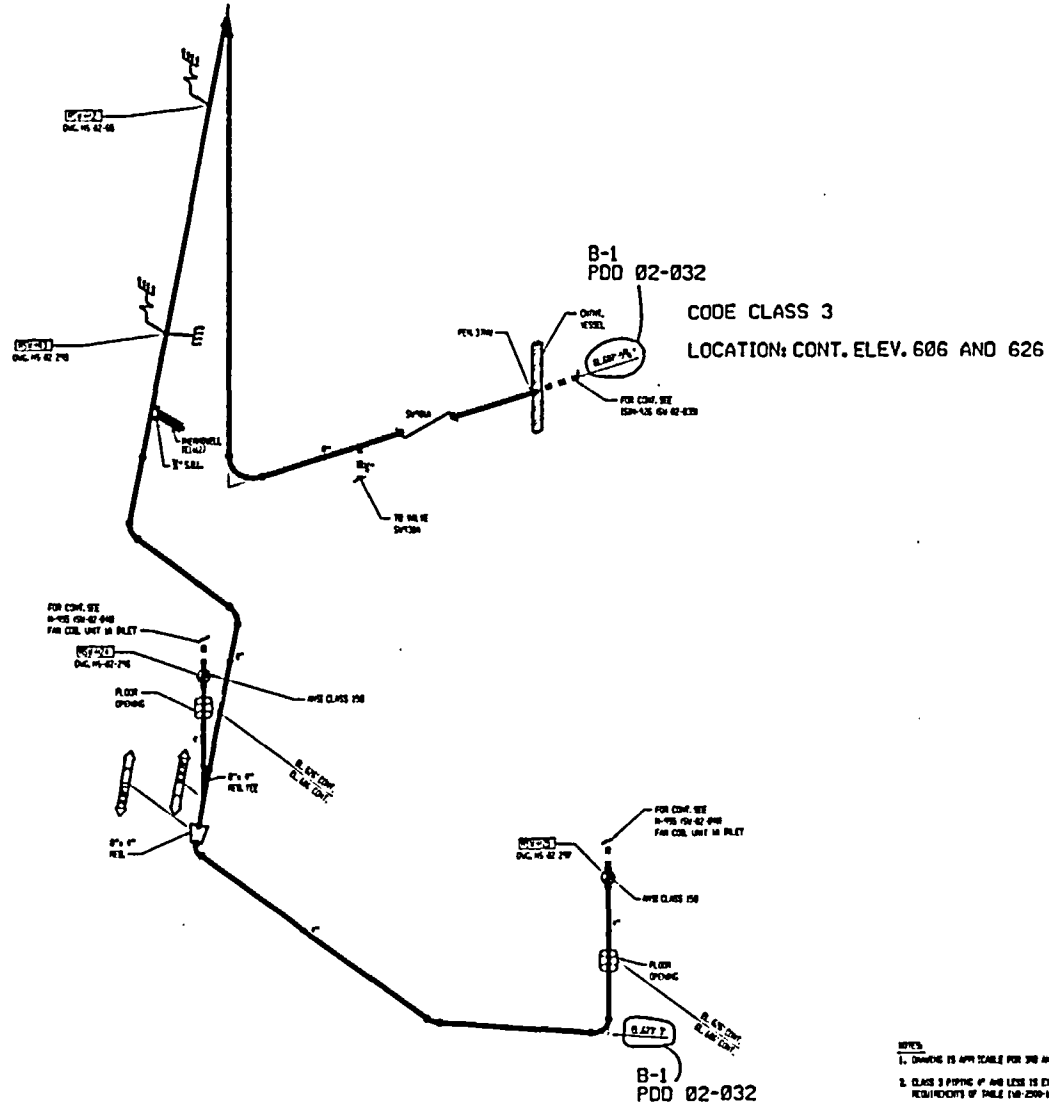
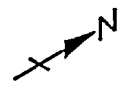
IS1 ISOMETRIC
AUXILIARY FEEDWATER PIPING
TO STEAM GENERATOR #3

Issued by
WISCONSIN PUBLIC SERVICE CORP.
FOR THE PROJECT

DATE	BY	CHKD	APP'D

900-028

190-HISI



INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER

CLASS 3 PIPE
CLASS 3 VALVE
CLASS 3 TANK
CLASS 3 FLANGE
CLASS 3 WELD
CLASS 3 FITTING
CLASS 3 GASKET
CLASS 3 BRACKET
CLASS 3 HANGAR
CLASS 3 SUPPORT
CLASS 3 LIFT
CLASS 3 BOLT
CLASS 3 NUT
CLASS 3 WASHER
CLASS 3 RIVET
CLASS 3 SCREW
CLASS 3 ANCHOR
CLASS 3 STUD
CLASS 3 PIPE
CLASS 3 VALVE
CLASS 3 TANK
CLASS 3 FLANGE
CLASS 3 WELD
CLASS 3 FITTING
CLASS 3 GASKET
CLASS 3 BRACKET
CLASS 3 HANGAR
CLASS 3 SUPPORT
CLASS 3 LIFT
CLASS 3 BOLT
CLASS 3 NUT
CLASS 3 WASHER
CLASS 3 RIVET
CLASS 3 SCREW
CLASS 3 ANCHOR
CLASS 3 STUD

1514-867

REFERENCE DWGS.
 B-1 PDD 02-032

NOTES
 1. DRAWING IS APPLICABLE FOR 300 AND 470 ISE DITCHES.
 2. CLASS 3 PIPING 4" AND LESS IS EXCEPT FROM 17-1 AND 17-3 REVISIONS OF PALE (10-2001 & 07-2004).

WISCONSIN PUBLIC SERVICE CORPORATION
 151 ISOMETRIC CONTAINMENT SERVICE WATER PIPING LINE 37W

DATE	BY	CHKD

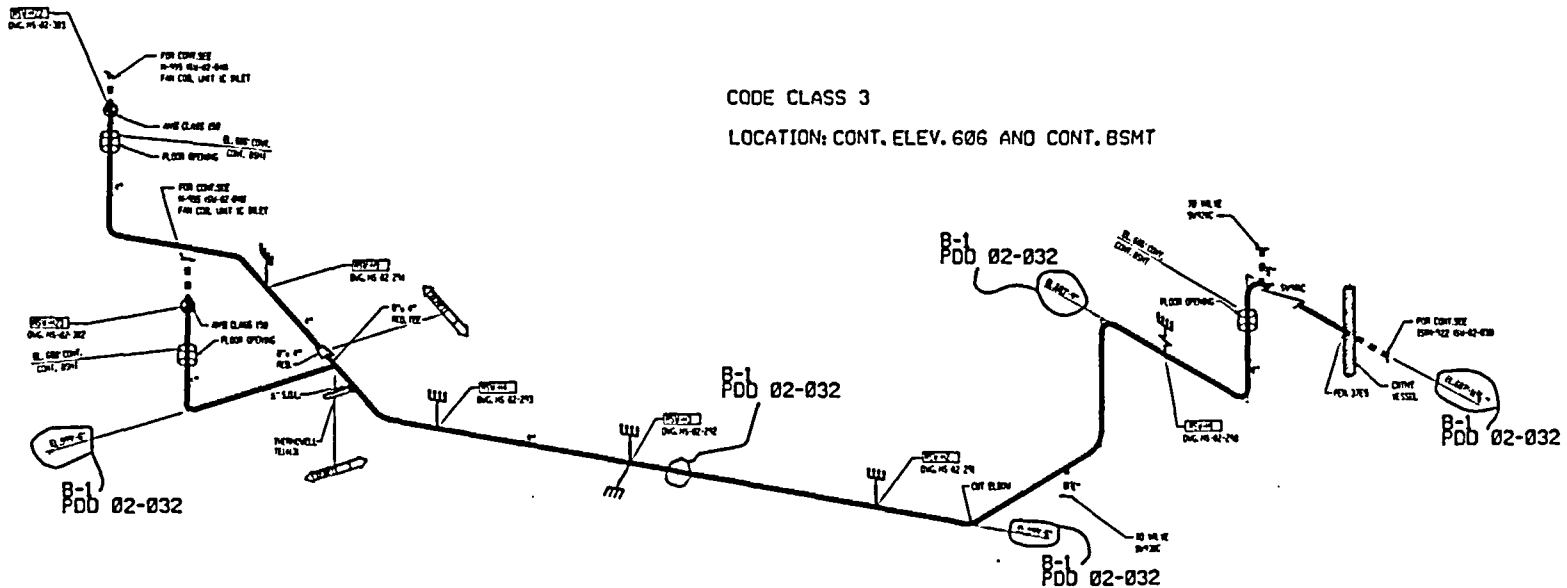
CADD C.A. TOMES 1514-867 6

999-W151



1. 0.100 0.000
2. 0.100 0.000
3. 0.100 0.000
4. 0.100 0.000
5. 0.100 0.000
6. 0.100 0.000
7. 0.100 0.000
8. 0.100 0.000
9. 0.100 0.000
10. 0.100 0.000
11. 0.100 0.000
12. 0.100 0.000
13. 0.100 0.000
14. 0.100 0.000
15. 0.100 0.000
16. 0.100 0.000
17. 0.100 0.000
18. 0.100 0.000
19. 0.100 0.000
20. 0.100 0.000

CODE CLASS 3
 LOCATION: CONT. ELEV. 606 AND CONT. BSMT



B-1
 Pdb 02-032

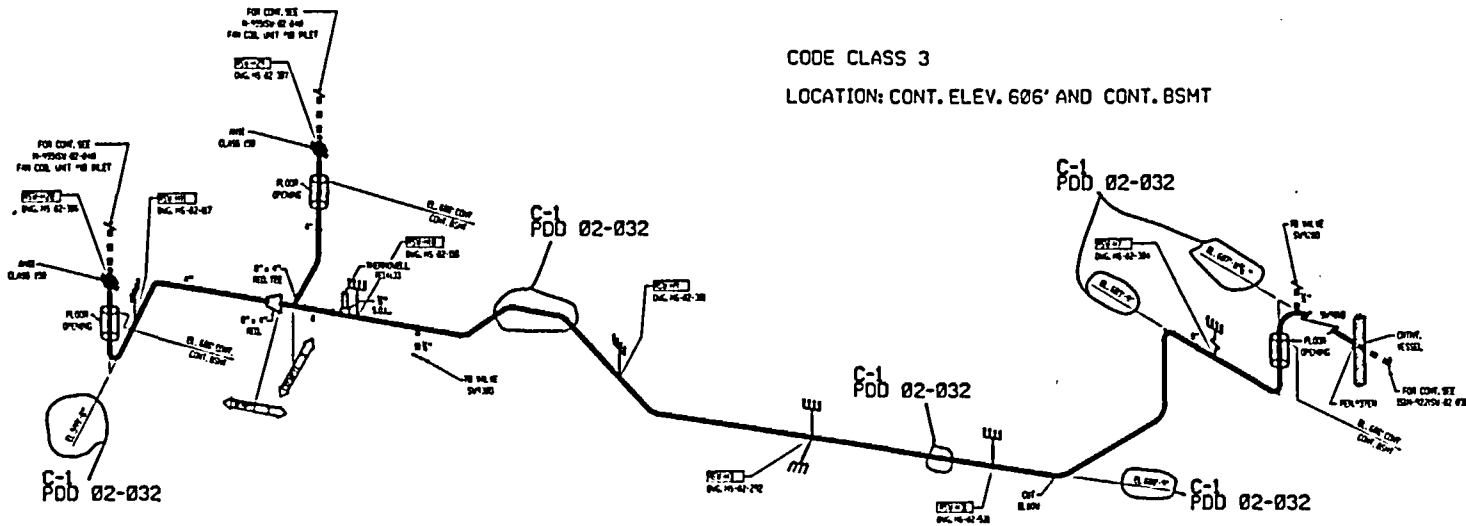
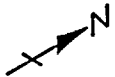
INTEGRALLY WELDED ATTACHMENT
 IDENTIFICATION NUMBER
 02-032

REFERENCE DWGS.
 PDB 02-032
 B-1
 Pdb 02-032

- NOTES
1. DRAWING IS APPLICABLE FOR 240 AND 470 ISE SYSTEMS.
 2. CLASS 3 PIPING 4" AND LARGER IS COPIED FROM 17-1 AND 17-2 REQUIREMENTS OF TABLE 110-2500-1 & 110-2500-2

151M-068

DESIGNED AND ENGINEERED BY W. J. HARRIS, REGISTERED PROFESSIONAL ENGINEER			
151 ISO-METRIC CONTAINMENT SERVICE WATER PIPING LINE 37ES			
AS PART OF WISCONSIN PUBLIC SERVICE CORP. BOSTON, MASSACHUSETTS			
DATE: 11/15/58	BY: WJH	CHKD: WJH	APP'D: WJH
CAD: J.A. TONES	SCALE: AS SHOWN	NO. 151M-068	REV. C



CODE CLASS 3
 LOCATION: CONT. ELEV. 606' AND CONT. BSMT

INTEGRALLY WELDED ATTACHMENT
 IDENTIFICATION NUMBER
 02-032

REFERENCE DWGS.
 151H-263
 Pdb 02-032

- NOTES
1. DRAWING IS APPLICABLE FOR 30" AND 48" IS2 SYSTEM.
 2. CLASS 3 PIPING OF AND LESS IS COVERED FROM 11'-1" AND 11'-3" REQUIREMENTS OF SABS 110-220-1 & 119-220-1

1] 100' R/W
2] 50' R/W
3] 25' R/W
4] 12.5' R/W
5] 6.25' R/W
6] 3.125' R/W
7] 1.5625' R/W
8] 0.78125' R/W
9] 0.390625' R/W
10] 0.1953125' R/W
11] 0.09765625' R/W
12] 0.048828125' R/W
13] 0.0244140625' R/W
14] 0.01220703125' R/W
15] 0.006103515625' R/W
16] 0.0030517578125' R/W
17] 0.00152587890625' R/W
18] 0.000762939453125' R/W
19] 0.0003814697265625' R/W
20] 0.00019073486328125' R/W
21] 0.000095367431640625' R/W
22] 0.0000476837158203125' R/W
23] 0.00002384185791015625' R/W
24] 0.000011920928955078125' R/W
25] 0.0000059604644775390625' R/W
26] 0.00000298023223876953125' R/W
27] 0.000001490116119384765625' R/W
28] 0.0000007450580596923828125' R/W
29] 0.00000037252902984619140625' R/W
30] 0.000000186264514923095703125' R/W

151H-263

DESIGNED AND IN CHARGE APPROVED BY
 DRAWN BY
 CHECKED BY
 DATE

151 ISOMETRIC
 CONTAINMENT SERVICE WATER PIPING
 LINE 37EN

DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 151H-263

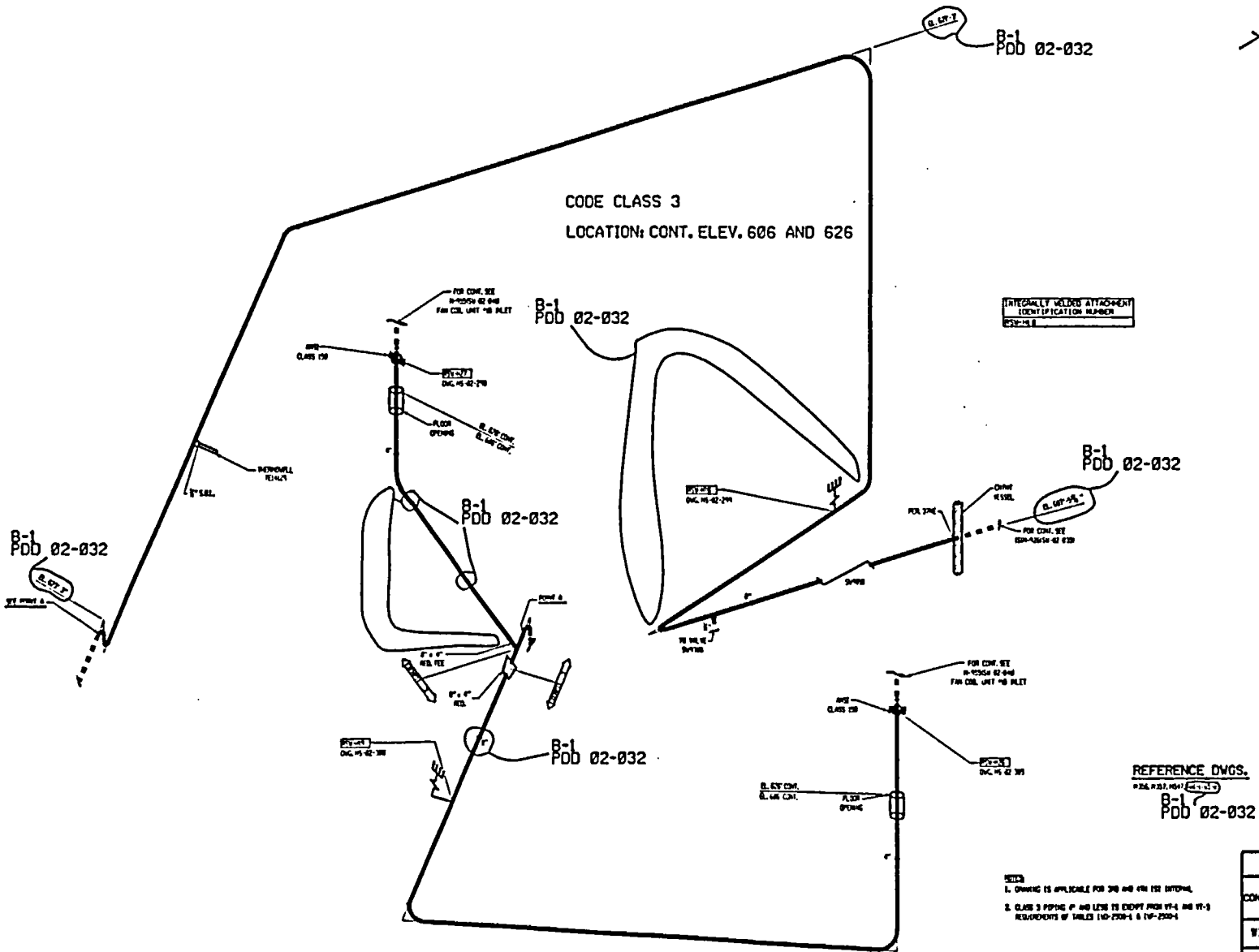
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CA. TOMES 151H-263 9

CADD



CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 626



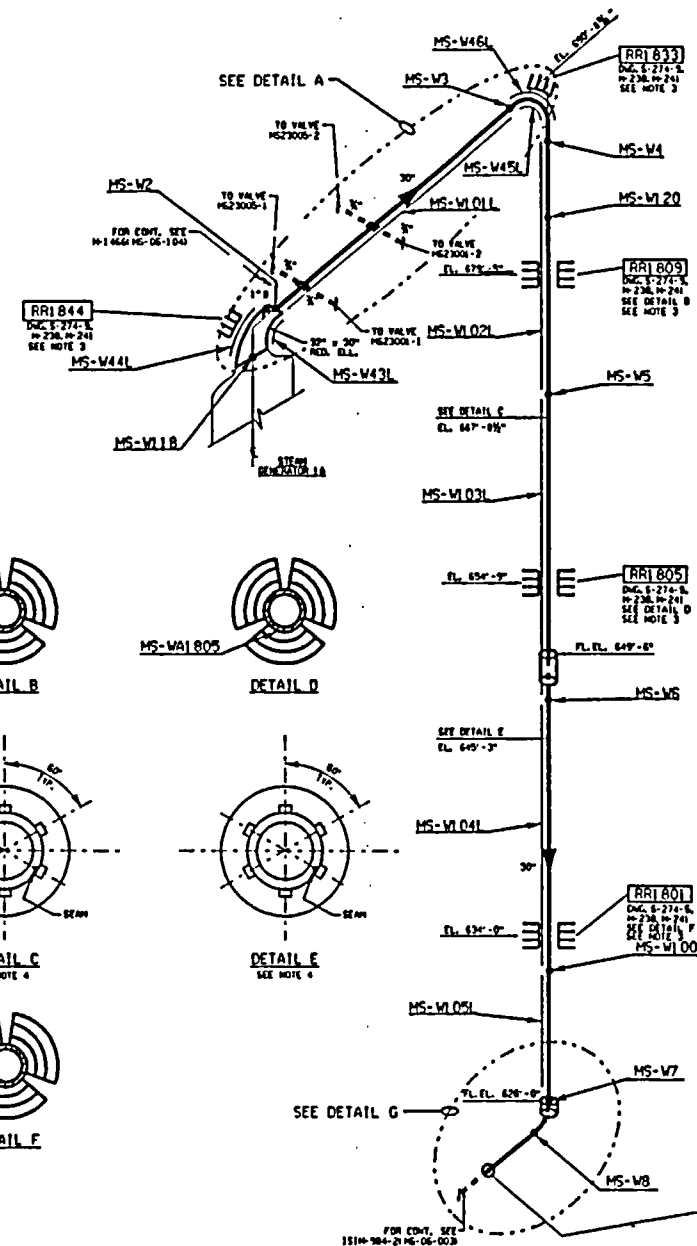
1. THIS DRAWING IS TO BE USED FOR THE DESIGN AND CONSTRUCTION OF THE PIPING SYSTEM DESCRIBED HEREIN. IT IS THE RESPONSIBILITY OF THE USER TO OBTAIN ALL NECESSARY PERMITS AND TO VERIFY THE ACCURACY OF ALL DIMENSIONS AND CONDITIONS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD AND FOR VERIFYING THE ACCURACY OF ALL DIMENSIONS AND CONDITIONS. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD AND FOR VERIFYING THE ACCURACY OF ALL DIMENSIONS AND CONDITIONS.

INTEGRALLY WELDED ATTACHMENT
IDENTIFICATION NUMBER
WSP-148

REFERENCE DWGS.
026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071, 072, 073, 074, 075, 076, 077, 078, 079, 080, 081, 082, 083, 084, 085, 086, 087, 088, 089, 090, 091, 092, 093, 094, 095, 096, 097, 098, 099, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

1. DRAWING IS APPLICABLE FOR 300 AND 400 (SEE SCHEDULE)
 2. CLASS 3 PIPING 1" AND LESS IS EXCEPT FROM 101-1 AND 101-2 REQUIREMENTS OF TABLES 110-250-1 & 110-250-1

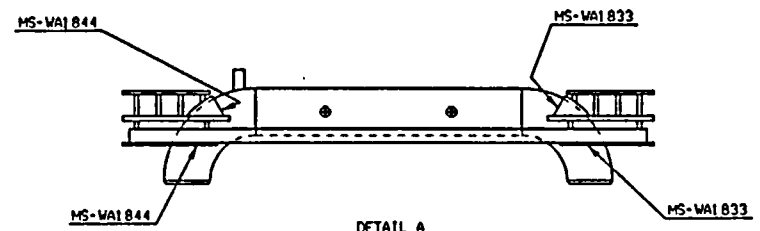
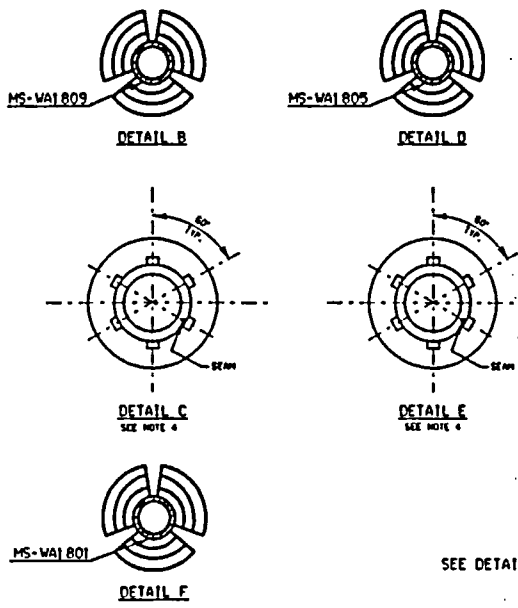
DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: [Date]	
ISI ISOMETRIC CONTAINMENT SERVICE WATER PIPING LINE 37NE	
PREPARED BY: WISCONSIN PUBLIC SERVICE CORP.	
PROJECT NO.: [Blank] SHEET NO.: [Blank]	TOTAL SHEETS: [Blank]
DRAWN BY: [Blank]	DATE: [Blank]
CHECKED BY: [Blank]	DATE: [Blank]
APPROVED BY: [Blank]	DATE: [Blank]
CADD: [Blank]	ISIH-870 C



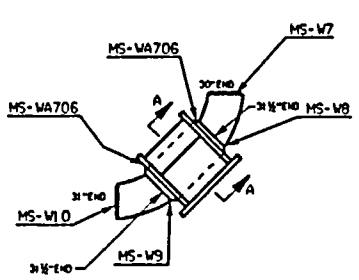
DIA. I.D.	SCHWARTZ/MESS I.D.	MATERIAL	I.A. SCHWARTZ/MESS I.D.	MATERIAL
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24.0310	27.9510	SA-106 CL. 1	24.0310	SA-106 CL. 2
24.0310	27.9510	SA-106 CL. 1	24.0310	SA-106 CL. 2
24.0310	27.9510	SA-106 CL. 1	24.0310	SA-106 CL. 2
24.0310	27.9510	SA-106 CL. 1	24.0310	SA-106 CL. 2

RRP 01-00632

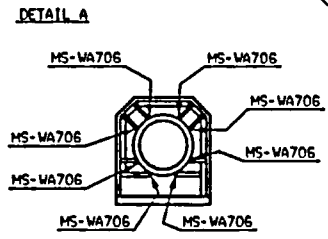
IRREGULAR WELDED ATTACHMENT DATA	
I.D.	IRREGULAR I.D.
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750
RRP 01-00632	0.750



CODE CLASS 2
LOCATION: CONTAINMENT



DETAIL G

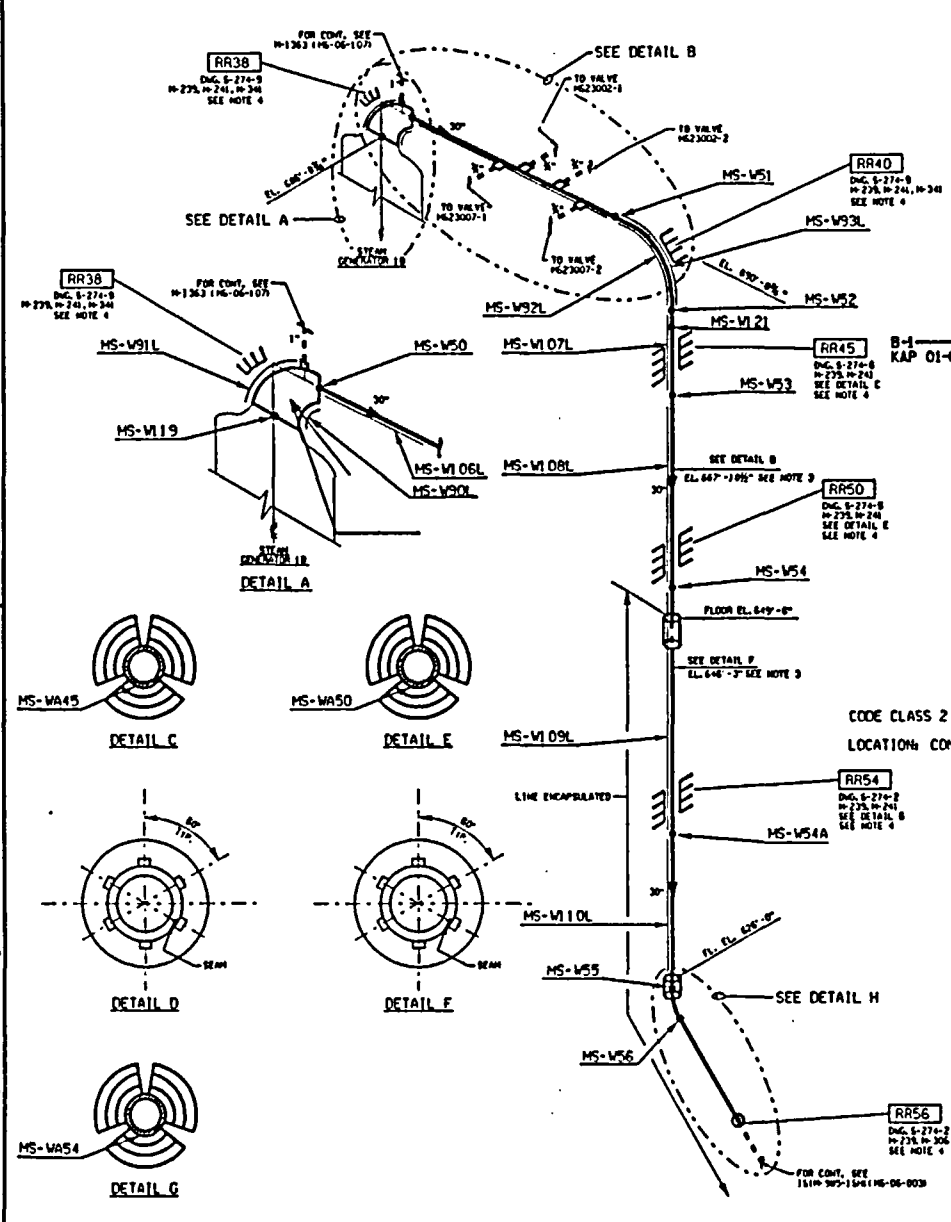


SECTION A-A
REFERENCE DWGS.

- LONG BEAM WELDS ALONG ENTIRE LENGTH OF SPOOL PIECE PER ASTM A-155, EC-70, CL-1.
- FOR MORE DETAIL ON VENTURE TUBE (FE-460) REFER TO DWG. 90-100-1375 AND 90-13042.
- RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION II.
- EQUIPMENT PROVIDES SUPPORT FOR INSULATION ONLY AND IS NOT WITHIN THE JURISDICTION OF THIS SECTION II.
- CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM HCL.
- DRAWING APPLICABLE FOR 3/8" & 1/2" INTERVAL.

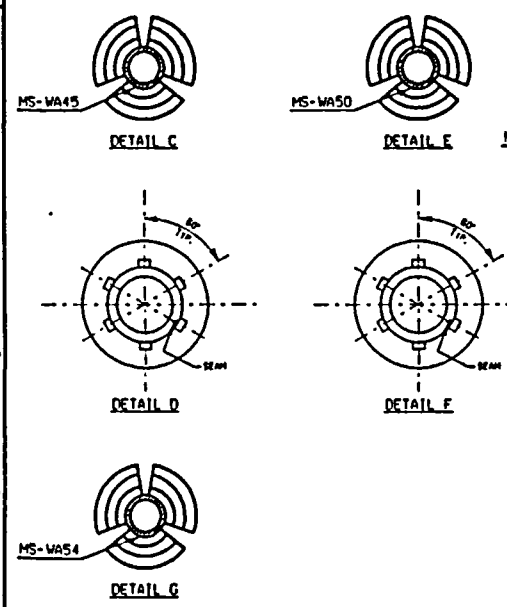
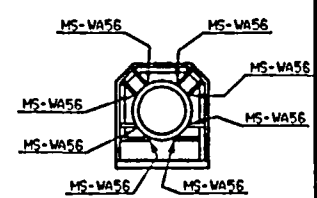
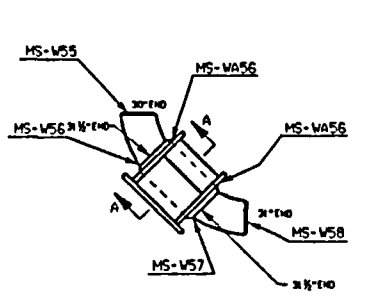
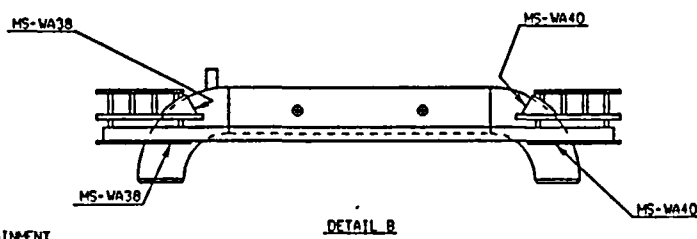
IS1M-871 WISCONSIN PUBLIC SERVICE COMP. 151M-871	
151M-871 151M-871 151M-871	151M-871 151M-871 151M-871

Z20-W151



ITEM	SIZE	THICKNESS	CL. CENTERLINE	CL. CENTERLINE	CL. CENTERLINE	CL. CENTERLINE
SA 0810 & 27, 96110	N/A / 1.254		A 154 20 0 CL. 1	SA 27 N/A / 2.3	SA 508 CL. 2	
SA 0811	N/A / 1.048		A 155 20 0 CL. 1	SA 27 N/A / 1.18	SA 512 0 0 0 CL. 1	
SA 0812	N/A / 1.250		A 155 20 0 CL. 1	SA 27 N/A / 1.18	SA 513 0 0 0 CL. 1	
SA 0813	N/A / 1.048		A 155 20 0 CL. 1	SA 27 N/A / 1.18	SA 514 0 0 0 CL. 1	
SA 0814	N/A / 1.25		A 154 20 0 CL. 1	SA 27 N/A / 1.50	SA 515 0 0 0	

ITEM	SIZE	THICKNESS
MS-W51	N/A	1.250
MS-W52	N/A	1.250
MS-W53	N/A	1.250
MS-W54	N/A	1.250
MS-W55	N/A	1.250
MS-W56	N/A	1.250
MS-W57	N/A	1.250
MS-W58	N/A	1.250
MS-W59	N/A	1.250
MS-W60	N/A	1.250



CODE CLASS 2
LOCATION: CONTAINMENT

**DETAIL H
NOTES CONT.**

1. PIPELINE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
2. CLASS 2 PIPING OF DIAMETER AND LESS IS EXCEPT FROM MSL.
3. DRAWING APPLICABLE FOR 3" & 4" IN. INTERNAL.

REFERENCE DWGS.

MS-W51, MS-W52, MS-W53, MS-W54, MS-W55, MS-W56, MS-W57, MS-W58, MS-W59, MS-W60, MS-W61, MS-W62, MS-W63, MS-W64, MS-W65, MS-W66, MS-W67, MS-W68, MS-W69, MS-W70, MS-W71, MS-W72, MS-W73, MS-W74, MS-W75, MS-W76, MS-W77, MS-W78, MS-W79, MS-W80.

NOTES:

1. LONG BEAM WELDED ALONG ENTIRE LENGTH OF SPOOL PIECE PER ASTM A-192, CL. 1.
2. FOR MORE DETAIL ON VENTURE TUBE (FT-474) REFER TO DWG. IS-100-1376 AND 101-1044.
3. COMPONENT PROVIDES SUPPORT FOR INSULATION ONLY AND IS NOT WITHIN THE JURISDICTION OF ASME SECTION XI.

IS1 ISO-METRIC
MAIN STEAM
STEAM GENERATOR IS1

DESIGNED BY
WISCONSIN PUBLIC SERVICE COMP.

DATE: 11/18/72

SCALE: AS SHOWN

PROJECT: IS1M-872

REV: C

1. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN INCHES AND DECIMALS THEREOF.

2. DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY.

3. DIMENSIONS IN BRACKETS ARE FOR INFORMATION ONLY.

4. DIMENSIONS IN DASHES ARE FOR INFORMATION ONLY.

5. DIMENSIONS IN SLASHES ARE FOR INFORMATION ONLY.

6. DIMENSIONS IN UNDERLINES ARE FOR INFORMATION ONLY.

7. DIMENSIONS IN SUPERSCRIPTS ARE FOR INFORMATION ONLY.

8. DIMENSIONS IN SUBSCRIPTS ARE FOR INFORMATION ONLY.

9. DIMENSIONS IN SMALL CAPS ARE FOR INFORMATION ONLY.

10. DIMENSIONS IN ALL CAPS ARE FOR INFORMATION ONLY.

11. DIMENSIONS IN LOWER CASE LETTERS ARE FOR INFORMATION ONLY.

12. DIMENSIONS IN UPPER CASE LETTERS ARE FOR INFORMATION ONLY.

13. DIMENSIONS IN MIXED CASE LETTERS ARE FOR INFORMATION ONLY.

14. DIMENSIONS IN NUMERICALS ARE FOR INFORMATION ONLY.

15. DIMENSIONS IN ALPHABETICALS ARE FOR INFORMATION ONLY.

16. DIMENSIONS IN SYMBOLS ARE FOR INFORMATION ONLY.

17. DIMENSIONS IN UNITS ARE FOR INFORMATION ONLY.

18. DIMENSIONS IN PREFIXES ARE FOR INFORMATION ONLY.

19. DIMENSIONS IN SUFFIXES ARE FOR INFORMATION ONLY.

20. DIMENSIONS IN OPERATORS ARE FOR INFORMATION ONLY.

21. DIMENSIONS IN RELATIONS ARE FOR INFORMATION ONLY.

22. DIMENSIONS IN FUNCTIONS ARE FOR INFORMATION ONLY.

23. DIMENSIONS IN CONSTANTS ARE FOR INFORMATION ONLY.

24. DIMENSIONS IN VARIABLES ARE FOR INFORMATION ONLY.

25. DIMENSIONS IN EXPONENTS ARE FOR INFORMATION ONLY.

26. DIMENSIONS IN RADICALS ARE FOR INFORMATION ONLY.

27. DIMENSIONS IN FRACTIONS ARE FOR INFORMATION ONLY.

28. DIMENSIONS IN DECIMALS ARE FOR INFORMATION ONLY.

29. DIMENSIONS IN PERCENTS ARE FOR INFORMATION ONLY.

30. DIMENSIONS IN PER MILLS ARE FOR INFORMATION ONLY.

31. DIMENSIONS IN THOUSTHS ARE FOR INFORMATION ONLY.

32. DIMENSIONS IN MILLIONS ARE FOR INFORMATION ONLY.

33. DIMENSIONS IN BILLIONS ARE FOR INFORMATION ONLY.

34. DIMENSIONS IN TRILLIONS ARE FOR INFORMATION ONLY.

35. DIMENSIONS IN QUADRILLIONS ARE FOR INFORMATION ONLY.

36. DIMENSIONS IN QUINTILLIONS ARE FOR INFORMATION ONLY.

37. DIMENSIONS IN SEXTILLIONS ARE FOR INFORMATION ONLY.

38. DIMENSIONS IN SEPTILLIONS ARE FOR INFORMATION ONLY.

39. DIMENSIONS IN OCTILLIONS ARE FOR INFORMATION ONLY.

40. DIMENSIONS IN NONILLIONS ARE FOR INFORMATION ONLY.

41. DIMENSIONS IN DECILLIONS ARE FOR INFORMATION ONLY.

42. DIMENSIONS IN UNDECILLIONS ARE FOR INFORMATION ONLY.

43. DIMENSIONS IN TWENTYILLIONS ARE FOR INFORMATION ONLY.

44. DIMENSIONS IN THIRTYILLIONS ARE FOR INFORMATION ONLY.

45. DIMENSIONS IN FORTYILLIONS ARE FOR INFORMATION ONLY.

46. DIMENSIONS IN FIFTYILLIONS ARE FOR INFORMATION ONLY.

47. DIMENSIONS IN SIXTYILLIONS ARE FOR INFORMATION ONLY.

48. DIMENSIONS IN SEVENTYILLIONS ARE FOR INFORMATION ONLY.

49. DIMENSIONS IN EIGHTYILLIONS ARE FOR INFORMATION ONLY.

50. DIMENSIONS IN NINETYILLIONS ARE FOR INFORMATION ONLY.

51. DIMENSIONS IN HUNDREDS ARE FOR INFORMATION ONLY.

52. DIMENSIONS IN THOUSANDS ARE FOR INFORMATION ONLY.

53. DIMENSIONS IN MILLIONS ARE FOR INFORMATION ONLY.

54. DIMENSIONS IN BILLIONS ARE FOR INFORMATION ONLY.

55. DIMENSIONS IN TRILLIONS ARE FOR INFORMATION ONLY.

56. DIMENSIONS IN QUADRILLIONS ARE FOR INFORMATION ONLY.

57. DIMENSIONS IN QUINTILLIONS ARE FOR INFORMATION ONLY.

58. DIMENSIONS IN SEXTILLIONS ARE FOR INFORMATION ONLY.

59. DIMENSIONS IN SEPTILLIONS ARE FOR INFORMATION ONLY.

60. DIMENSIONS IN OCTILLIONS ARE FOR INFORMATION ONLY.

61. DIMENSIONS IN NONILLIONS ARE FOR INFORMATION ONLY.

62. DIMENSIONS IN DECILLIONS ARE FOR INFORMATION ONLY.

63. DIMENSIONS IN UNDECILLIONS ARE FOR INFORMATION ONLY.

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70. DIMENSIONS IN EIGHTYILLIONS ARE FOR INFORMATION ONLY.

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78. DIMENSIONS IN QUINTILLIONS ARE FOR INFORMATION ONLY.

79. DIMENSIONS IN SEXTILLIONS ARE FOR INFORMATION ONLY.

80. DIMENSIONS IN SEPTILLIONS ARE FOR INFORMATION ONLY.

81. DIMENSIONS IN OCTILLIONS ARE FOR INFORMATION ONLY.

82. DIMENSIONS IN NONILLIONS ARE FOR INFORMATION ONLY.

83. DIMENSIONS IN DECILLIONS ARE FOR INFORMATION ONLY.

84. DIMENSIONS IN UNDECILLIONS ARE FOR INFORMATION ONLY.

85. DIMENSIONS IN TWENTYILLIONS ARE FOR INFORMATION ONLY.

86. DIMENSIONS IN THIRTYILLIONS ARE FOR INFORMATION ONLY.

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88. DIMENSIONS IN FIFTYILLIONS ARE FOR INFORMATION ONLY.

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90. DIMENSIONS IN SEVENTYILLIONS ARE FOR INFORMATION ONLY.

91. DIMENSIONS IN EIGHTYILLIONS ARE FOR INFORMATION ONLY.

92. DIMENSIONS IN NINETYILLIONS ARE FOR INFORMATION ONLY.

93. DIMENSIONS IN HUNDREDS ARE FOR INFORMATION ONLY.

94. DIMENSIONS IN THOUSANDS ARE FOR INFORMATION ONLY.

95. DIMENSIONS IN MILLIONS ARE FOR INFORMATION ONLY.

96. DIMENSIONS IN BILLIONS ARE FOR INFORMATION ONLY.

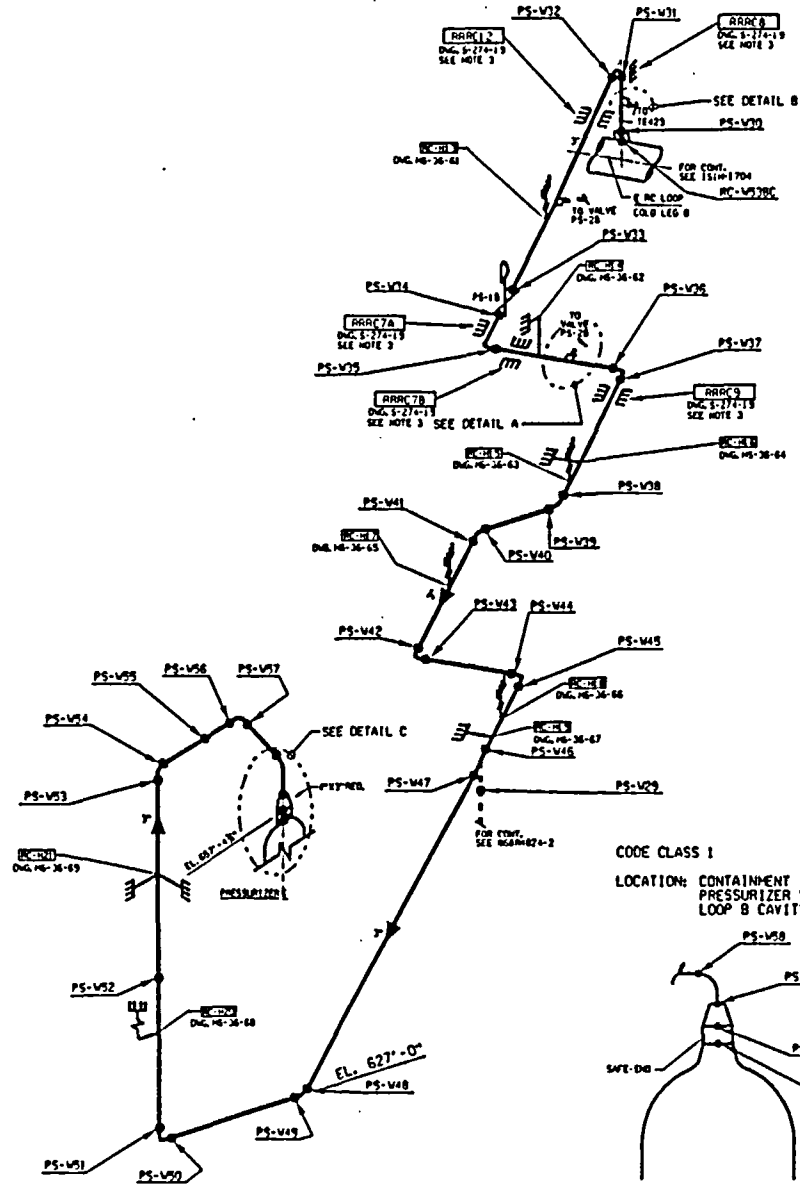
97. DIMENSIONS IN TRILLIONS ARE FOR INFORMATION ONLY.

98. DIMENSIONS IN QUADRILLIONS ARE FOR INFORMATION ONLY.

99. DIMENSIONS IN QUINTILLIONS ARE FOR INFORMATION ONLY.

100. DIMENSIONS IN SEXTILLIONS ARE FOR INFORMATION ONLY.

P-010-010



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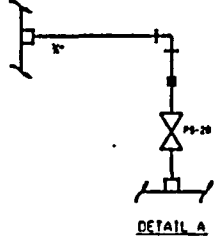
IN	WIDENESS
IN-04	1/8" DIA.

VALVE DATA

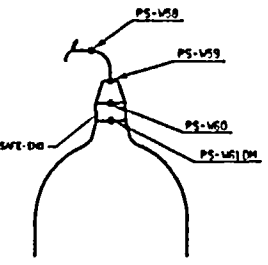
VALVE TO	DESCRIPTION	TYPE	SIZE	ORIF. DIA. (IN)	ORIF. MAT.
PS-19	INSTRUMENT AIR	globe	1/2"	1.125 DIA.	0

PIPING

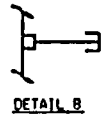
DIA. (IN)	WIDENESS	MATERIAL	W. T.	CORROSION ALLOW. (IN)	NOTES
0.75 DIA.	1/8 DIA.	A 304 SS	1/16	0.015	A 3/8 TP 1/8
1.125 DIA.	1/8 DIA.	A 304 SS	1/16	0.015	A 3/8 TP 1/8



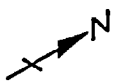
DETAIL A



DETAIL C



DETAIL B



REV. 15/04
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 BY WPS
 PER ESR 82-177
 APP. D. CAT. 09-28-99
 FILMED LUPD 10-12-99
 O-1 RMP ON 00639
 REVISED NOTE 1
 STAMP ON 11-02
 WPS
 RMP ON 00639 COMPLETE
 SEE REV. 04
 FILM STAFF

- NOTES:
1. DIMENSIONS APPLICABLE FOR 3" AND 4" IS1 INTERVAL.
 2. CLASSE 1 PIPING 1" DIA. AND LESS IS EXCEPT FROM MOE.
 3. SUPPORT RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION 41.
- REFERENCE DWGS.
 11020-518
 11020-519
 11020-520

ISIM-074-1

WISCONSIN PUBLIC SERVICE CORPORATION
 Kewaunee Nuclear Power Plant
 CARLTON, KEWAUNEE COUNTY, WISCONSIN

ISI ISOMETRIC
 3" R.C. TO PRESSURIZER

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 CHEEN DIV. OF WISCONSIN

DESIGNED BY	J. A. TEAGUE	DATE	
CHECKED BY		DATE	

NO. POINTS	DATE	BY	DATE	REV.

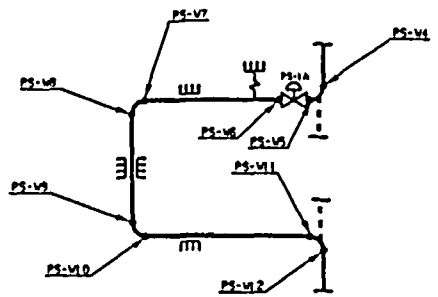
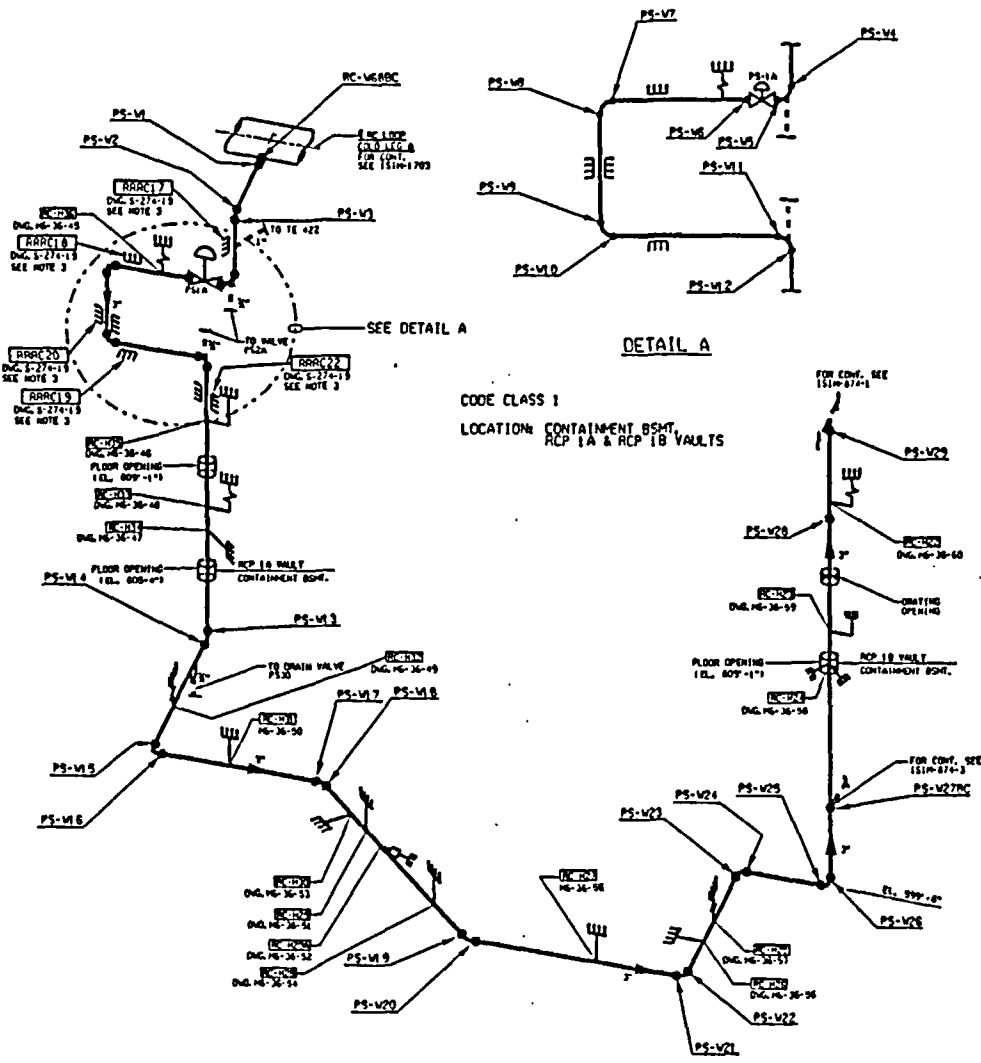
CADD

ISIM-074-1 A

D-110-1151



REVISION	
1	FILED FIRST ISSUE
2	REVISED FOR ISSUE
3	REVISED FOR ISSUE
4	REVISED FOR ISSUE
5	REVISED FOR ISSUE
6	REVISED FOR ISSUE
7	REVISED FOR ISSUE
8	REVISED FOR ISSUE
9	REVISED FOR ISSUE
10	REVISED FOR ISSUE



DETAIL A

CODE CLASS 1
 LOCATION: CONTAINMENT BSHVT
 RCP 1A & RCP 1B VAULTS

INSTALLED WEIGHT WITH HANGERS DATA	
ITEM	WEIGHT (LBS)
PS-V1	11.0
PS-V2	11.0
PS-V3	11.0
PS-V4	11.0
PS-V5	11.0
PS-V6	11.0
PS-V7	11.0
PS-V8	11.0
PS-V9	11.0
PS-V10	11.0
PS-V11	11.0
PS-V12	11.0
PS-V13	11.0
PS-V14	11.0
PS-V15	11.0
PS-V16	11.0

VALVE DATA			
VALVE ID	MANUFACTURER	ITEM	STATUS / DATE / COMMENTS
PS-V1	WATSON	111	1/1/1984

FITTING		CALCULATION REF.	
DIA. (IN)	SCH. (SCH. 40)	DIA. (IN)	SCH. (SCH. 40)
1.315	SCH. 40	1.315	SCH. 40

O-1 KAP 01-001639

- NOTES:
1. DRAWING APPLICABLE FOR 3" (3" DIA) ISI INTERNAL.
 2. CLASS 1 PIPING IS 1/2" DIA. AND LESS IS EXCEPT FROM HOLE.
 3. SUPPLEMENTARY RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION 21.

REFERENCE DWGS.
 WISCONSIN NUCLEAR POWER PLANT

WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT
 CANTON, KEWAUNEE COUNTY, WISCONSIN

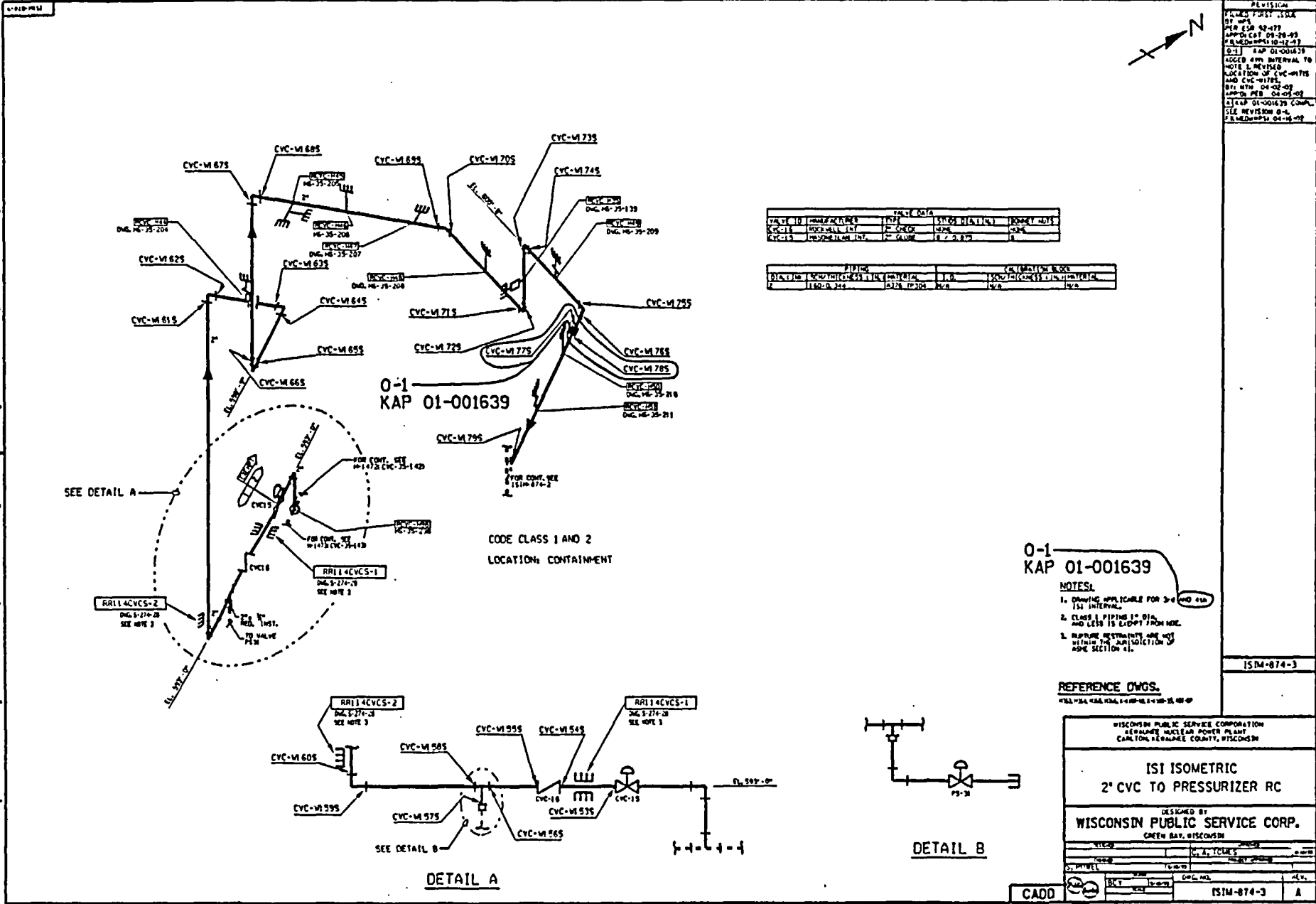
ISI ISOMETRIC
 3" R.C. TO PRESSURIZER

DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DATE	BY	CHKD	APP'D
10/1/84	J. S. DUKES		
10/1/84			
10/1/84			
10/1/84			

CADD

SCALE	DWG. NO.	REV.
AS SHOWN	ISI-874-2	A



REVISION	
1	ISSUED FIRST ISSUE BY: WPS PER ESD 92-477 APPROVED: 09-28-83 PLANNING 10-12-83
2	ADD 4th INTERVAL TO NOTE 1, REVISE LOCATION OF CVC-M785 AND CVC-M785 BY: WPS 04-02-89 APPROV: PER 04-02-89
3	DELETE 01-001639 COMP. FILE REVISION 04- FILE NUMBER 01-001639

TRACE DATA			
DATE IN	PREPARED BY	TYPE	STATUS
CVC-11	WHEELER, J.T.	2-CHECK	4-28-83
CVC-13	WHEELER, J.T.	2-CHECK	4-28-83

FITTING			
SIZE	TYPE	TYPE	TYPE
1/2"	90°	90°	90°
1/2"	90°	90°	90°

0-1
KAP 01-001639

CODE CLASS 1 AND 2
LOCATION: CONTAINMENT

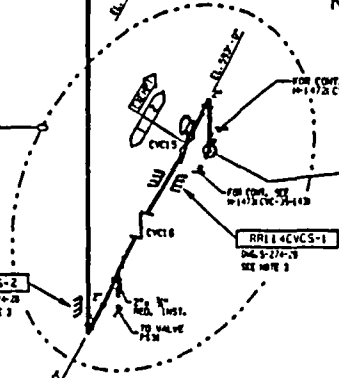
0-1
KAP 01-001639

- NOTES:
1. DRAWING APPLICABLE FOR 2nd AND 4th ISI INTERVAL.
 2. CLASS 1 PIPING 2" DIA. AND LESS IS EXCEPT FROM NDE.
 3. SUPPORT RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION 41.

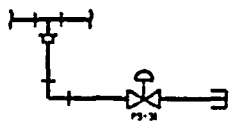
REFERENCE DWGS.
WPS 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 142, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314, 316, 318, 320, 322, 324, 326, 328, 330, 332, 334, 336, 338, 340, 342, 344, 346, 348, 350, 352, 354, 356, 358, 360, 362, 364, 366, 368, 370, 372, 374, 376, 378, 380, 382, 384, 386, 388, 390, 392, 394, 396, 398, 400, 402, 404, 406, 408, 410, 412, 414, 416, 418, 420, 422, 424, 426, 428, 430, 432, 434, 436, 438, 440, 442, 444, 446, 448, 450, 452, 454, 456, 458, 460, 462, 464, 466, 468, 470, 472, 474, 476, 478, 480, 482, 484, 486, 488, 490, 492, 494, 496, 498, 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000.

ISDM-874-3

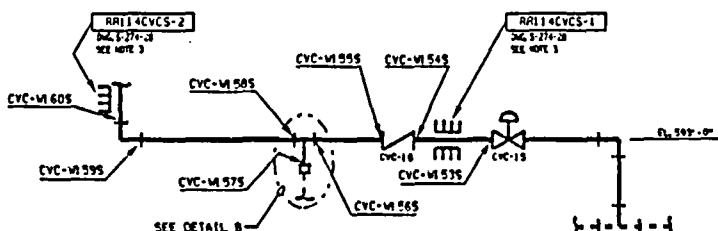
SEE DETAIL A



DETAIL A

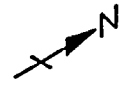


DETAIL B



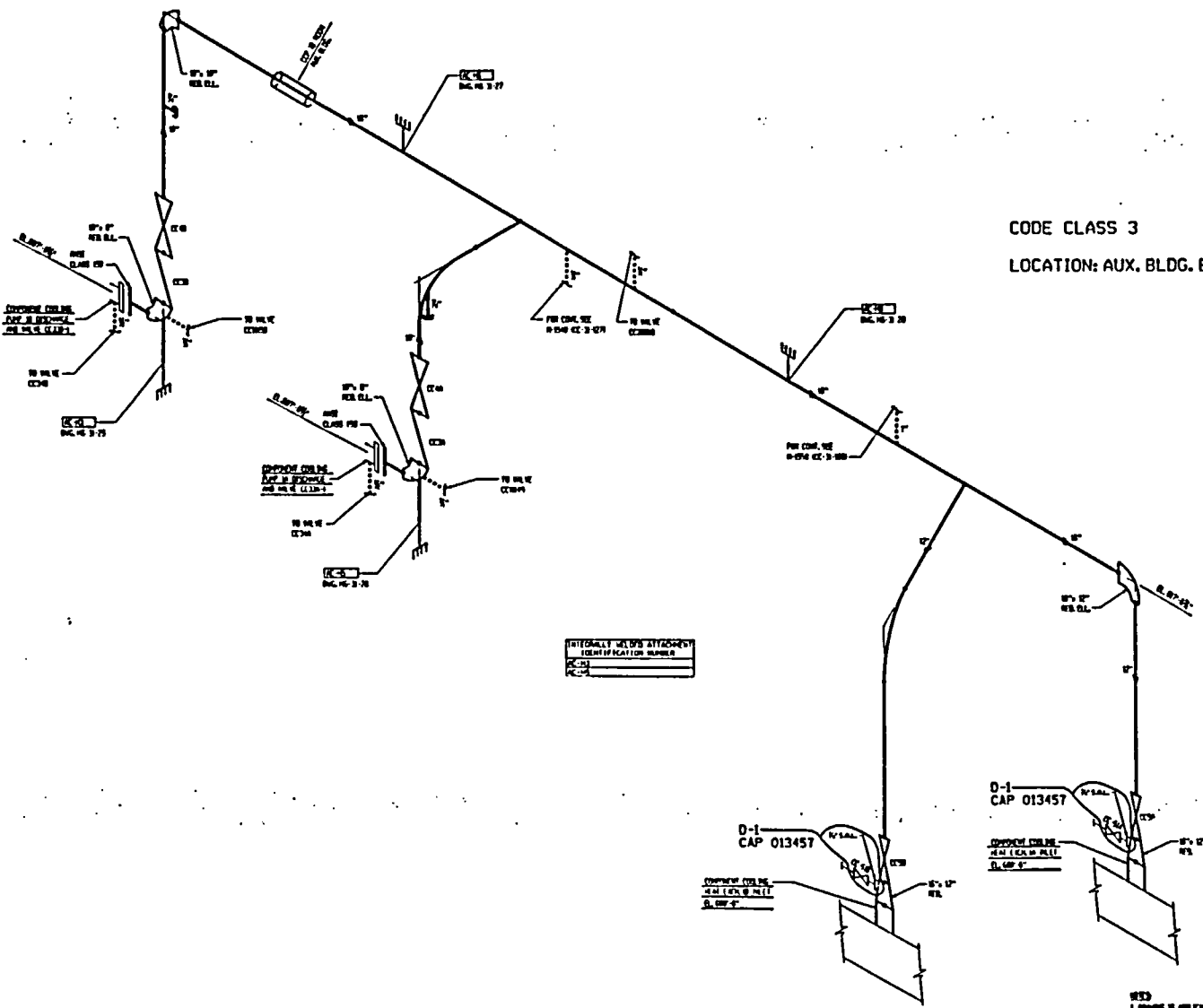
WISCONSIN PUBLIC SERVICE CORPORATION REGULATED NUCLEAR POWER PLANT CARLTON, BERKSHIRE COUNTY, WISCONSIN			
ISI ISOMETRIC 2" CVC TO PRESSURIZER RC			
DESIGNED BY WISCONSIN PUBLIC SERVICE CORP. GREEN BAY, WISCONSIN			
DATE	BY	CHKD. BY	APP. BY
10-12-83	J.T. WHEELER	J.T. WHEELER	J.T. WHEELER
SCALE	DATE	SCALE	DATE
AS SHOWN	10-12-83	AS SHOWN	10-12-83
CADD	BY	DATE	APP.
WPS	J.T. WHEELER	10-12-83	J.T. WHEELER
ISDM-874-3			A

218-MISI



1. THIS DRAWING IS FOR THE USE OF THE CONTRACTOR AND IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE OWNER AND THE DESIGNER.
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.
 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD.

CODE CLASS 3
LOCATION: AUX. BLDG. ELEV. 606



INTERNALLY WELDED ATTACHMENT
 IDENTIFICATION NUMBER
 C-1
 C-2

REFERENCE DWGS.
 REF. DWG. 2 100 11

151M-875

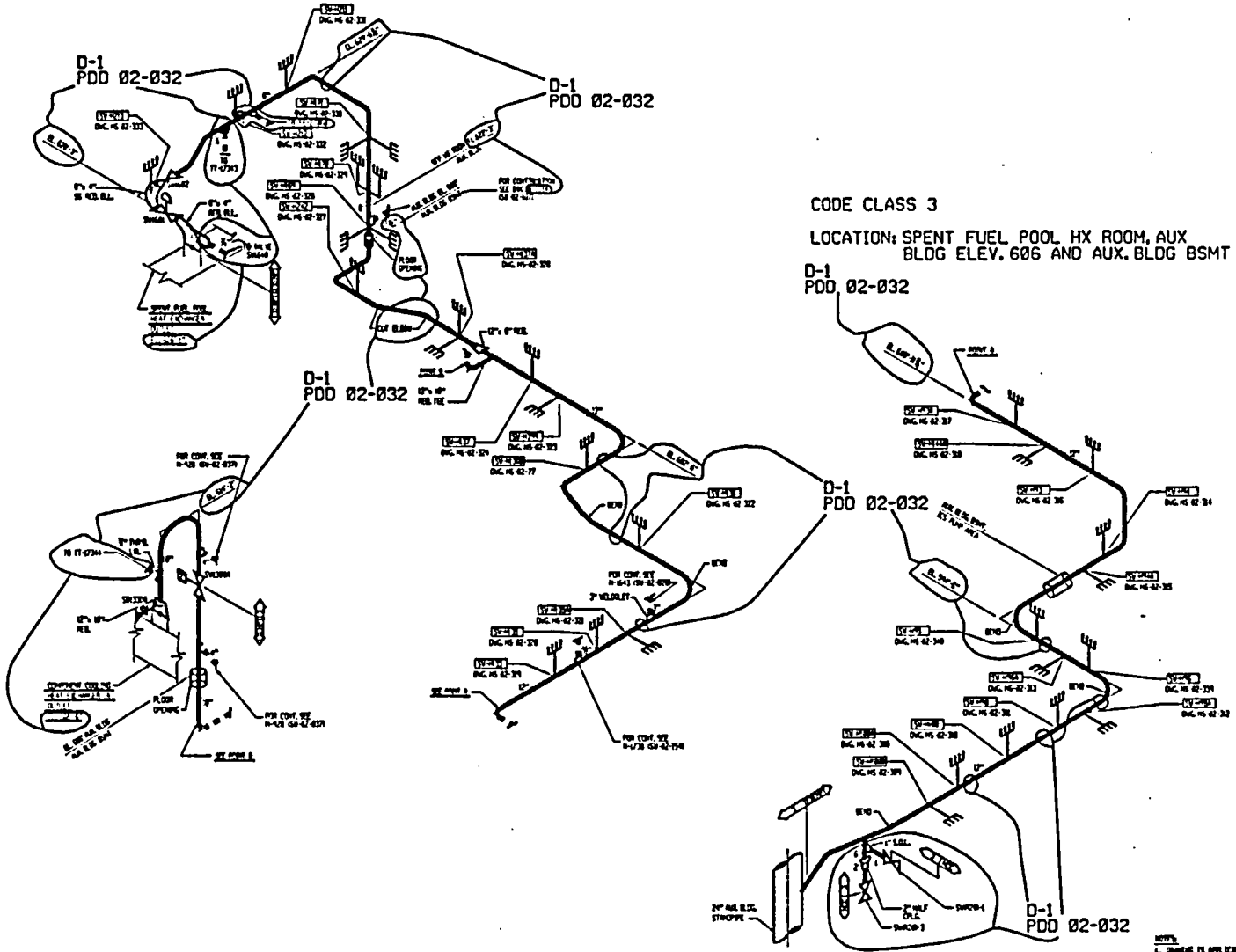
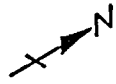
RECEIVED FROM THE CONTRACTOR FOR REVIEW AND APPROVAL CONTRACT NO. 151M-875	
151 THERMATIC AUX. COOLING FROM CC PLUMPS 1A & 1B TO CC HT EXCHG 5 1A AIR INLET	
DESIGNED BY WISCONSIN PUBLIC SERVICE CORP.	
CHECKED BY DATE	APPROVED BY DATE
DRAWN BY DATE	SCALE 1/4" = 1'-0"
PROJECT NO. 151M-875	SHEET NO. 1

1. DRAWING IS APPLICABLE FOR THE 151 THERMATIC
 2. CLASS 3 PIPING OF AND LINES TO EXCEPT FROM 151-1 AND 151-2
 REQUIREMENTS OF TABLE 1 AND 100-1 & 100-2

CADD

151M-875

1



CODE CLASS 3
LOCATION: SPENT FUEL POOL HX ROOM, AUX
BLDG ELEV. 606 AND AUX. BLDG BSMT

REVISIONS

NO.	DATE	DESCRIPTION
1	02-02-02	ISSUED FOR CLASSIFICATION
2	02-02-02	ISSUED FOR CLASSIFICATION
3	02-02-02	ISSUED FOR CLASSIFICATION
4	02-02-02	ISSUED FOR CLASSIFICATION
5	02-02-02	ISSUED FOR CLASSIFICATION
6	02-02-02	ISSUED FOR CLASSIFICATION
7	02-02-02	ISSUED FOR CLASSIFICATION
8	02-02-02	ISSUED FOR CLASSIFICATION
9	02-02-02	ISSUED FOR CLASSIFICATION
10	02-02-02	ISSUED FOR CLASSIFICATION
11	02-02-02	ISSUED FOR CLASSIFICATION
12	02-02-02	ISSUED FOR CLASSIFICATION
13	02-02-02	ISSUED FOR CLASSIFICATION
14	02-02-02	ISSUED FOR CLASSIFICATION
15	02-02-02	ISSUED FOR CLASSIFICATION
16	02-02-02	ISSUED FOR CLASSIFICATION
17	02-02-02	ISSUED FOR CLASSIFICATION
18	02-02-02	ISSUED FOR CLASSIFICATION
19	02-02-02	ISSUED FOR CLASSIFICATION
20	02-02-02	ISSUED FOR CLASSIFICATION

REFERENCE DWGS.
 D-1 PDD 02-032

- NOTES**
1. CLASS 3 PIPING IS APPLICABLE FOR 300 AND 400 PSI DESIGN.
 2. CLASS 3 PIPING IS TO EXCEPT FROM 10'-0" AND 11'-0" REQUIREMENTS OF TABLES 140-200-1 & 140-200-4
 3. PORTIONS OF CLASS 3 PIPING EXCEEDING 10' IN HEIGHT FROM 10'-0" AND 11'-0" REQUIREMENTS OF TABLES 140-200-1 AND 140-200-4 IS ACCORDANCE WITH 140-120-1 & 140-20-1 & 140-20-2.

WISCONSIN PUBLIC SERVICE CORP.	
IS1 ISOMETRIC	
SP FROM CC HEAT EXCH. & SPENT FUEL POOL HEAT EXCH. TO SP STANDOFF	
DRAWN BY: []	
CHECKED BY: []	
DATE: []	
SCALE: []	
SHEET NO. [] OF []	
CA. TIMES	IS11-876

CADD

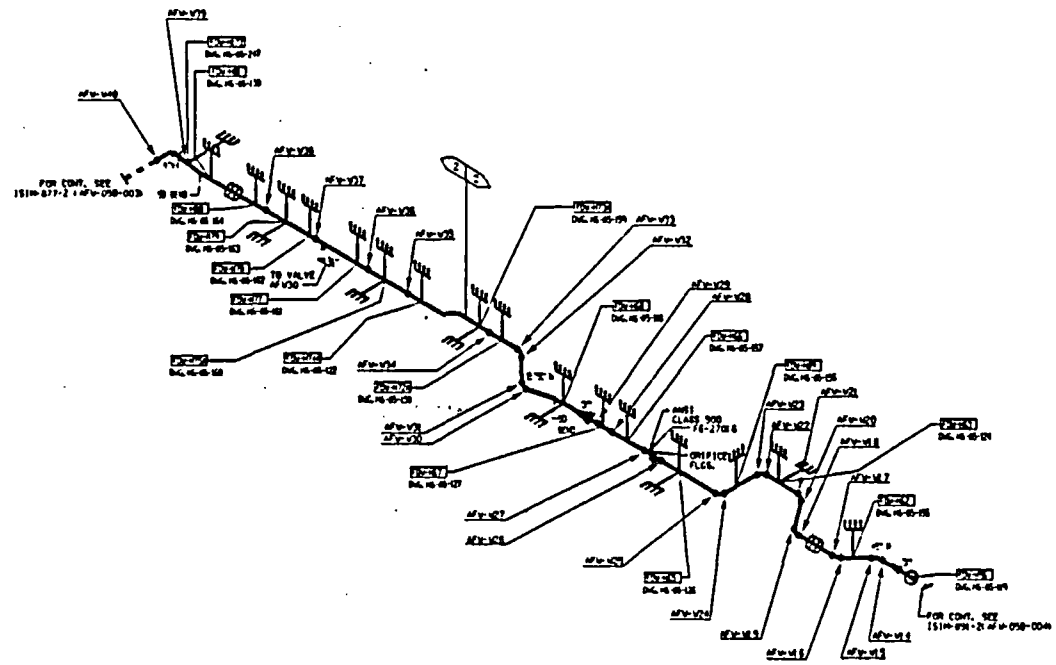
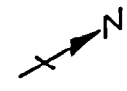
1-118-MS1

DATE: 12-15-66
 FILMED FIRST ISSUE
 PER 80P IN 8061A
 APPROVED BY: 80 82
 FILMED 10/25/82-82-82

INTERMEDIATE ANCHOR ATTACHED TO	
1	ANCHOR
2	ANCHOR
3	ANCHOR
4	ANCHOR
5	ANCHOR
6	ANCHOR
7	ANCHOR
8	ANCHOR
9	ANCHOR
10	ANCHOR

SEE SHEET 1
 FOR THE COMPLETE LIST OF ANCHORS

REVISIONS		DATE		BY	
1	ISSUED	12-15-66	MS	MS	MS
2	ISSUED	12-15-66	MS	MS	MS



NOTES:
 1. DRAWING IS SUBJECT TO ANY CHANGES.
 2. CLASS 2 PIPING IS SHOWN AND LISTED AS
 EXCEPT FROM HERE.
REFERENCE DWGS.
 151M-877-1, 151M-877-2, 151M-877-3, 151M-877-4, 151M-877-5, 151M-877-6, 151M-877-7, 151M-877-8, 151M-877-9, 151M-877-10, 151M-877-11, 151M-877-12, 151M-877-13, 151M-877-14, 151M-877-15, 151M-877-16, 151M-877-17, 151M-877-18, 151M-877-19, 151M-877-20, 151M-877-21, 151M-877-22, 151M-877-23, 151M-877-24, 151M-877-25, 151M-877-26, 151M-877-27, 151M-877-28, 151M-877-29, 151M-877-30, 151M-877-31, 151M-877-32, 151M-877-33, 151M-877-34, 151M-877-35, 151M-877-36, 151M-877-37, 151M-877-38, 151M-877-39, 151M-877-40, 151M-877-41, 151M-877-42, 151M-877-43, 151M-877-44, 151M-877-45, 151M-877-46, 151M-877-47, 151M-877-48, 151M-877-49, 151M-877-50, 151M-877-51, 151M-877-52, 151M-877-53, 151M-877-54, 151M-877-55, 151M-877-56, 151M-877-57, 151M-877-58, 151M-877-59, 151M-877-60, 151M-877-61, 151M-877-62, 151M-877-63, 151M-877-64, 151M-877-65, 151M-877-66, 151M-877-67, 151M-877-68, 151M-877-69, 151M-877-70, 151M-877-71, 151M-877-72, 151M-877-73, 151M-877-74, 151M-877-75, 151M-877-76, 151M-877-77, 151M-877-78, 151M-877-79, 151M-877-80, 151M-877-81, 151M-877-82, 151M-877-83, 151M-877-84, 151M-877-85, 151M-877-86, 151M-877-87, 151M-877-88, 151M-877-89, 151M-877-90, 151M-877-91, 151M-877-92, 151M-877-93, 151M-877-94, 151M-877-95, 151M-877-96, 151M-877-97, 151M-877-98, 151M-877-99, 151M-877-100.

WISCONSIN PUBLIC SERVICE CORPORATION
 ASHWAHNEE NUCLEAR POWER PLANT
 CARLTON, WAUKESHA COUNTY, WISCONSIN

**AUXILIARY FEEDWATER PIPING FROM
 INTERMEDIATE ANCHL TO PEN. #46W**

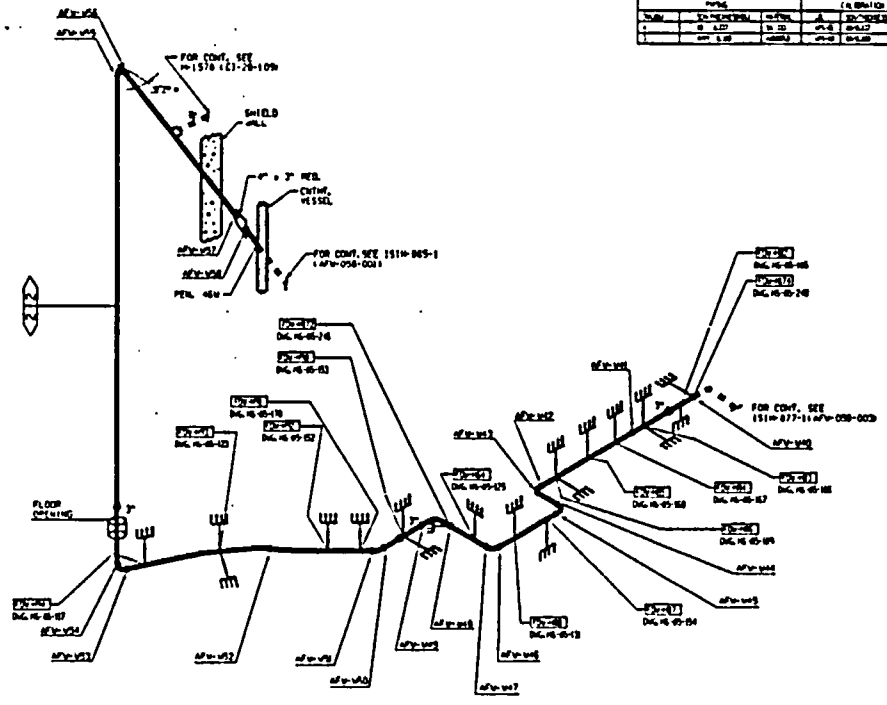
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GRETCH BAY, WISCONSIN

INTERMEDIATE ANCHOR BOLT

NO.	DESCRIPTION	QTY
1	1/2" DIA. A307	1
2	1/2" DIA. A307	1
3	1/2" DIA. A307	1
4	1/2" DIA. A307	1
5	1/2" DIA. A307	1
6	1/2" DIA. A307	1
7	1/2" DIA. A307	1
8	1/2" DIA. A307	1
9	1/2" DIA. A307	1
10	1/2" DIA. A307	1
11	1/2" DIA. A307	1
12	1/2" DIA. A307	1
13	1/2" DIA. A307	1
14	1/2" DIA. A307	1
15	1/2" DIA. A307	1
16	1/2" DIA. A307	1
17	1/2" DIA. A307	1
18	1/2" DIA. A307	1
19	1/2" DIA. A307	1
20	1/2" DIA. A307	1

SEE SHEET 1 FOR ANCHOR BOLT TO PEN. #46

NO.	DESCRIPTION	QTY	REMARKS
1	1/2" DIA. A307	1	
2	1/2" DIA. A307	1	
3	1/2" DIA. A307	1	
4	1/2" DIA. A307	1	
5	1/2" DIA. A307	1	
6	1/2" DIA. A307	1	
7	1/2" DIA. A307	1	
8	1/2" DIA. A307	1	
9	1/2" DIA. A307	1	
10	1/2" DIA. A307	1	
11	1/2" DIA. A307	1	
12	1/2" DIA. A307	1	
13	1/2" DIA. A307	1	
14	1/2" DIA. A307	1	
15	1/2" DIA. A307	1	
16	1/2" DIA. A307	1	
17	1/2" DIA. A307	1	
18	1/2" DIA. A307	1	
19	1/2" DIA. A307	1	
20	1/2" DIA. A307	1	



NOTES:
 1. DRAWING APPLICABLE TO 4" TO 24" INTERNAL.
 2. CLASS 2 PIPING PIPE DIAMETER AND LESS IS COVERED BY THIS SET.
REFERENCE DWGS.
 ANSI B31.1, B31.3, B31.4, B31.5, B31.6, B31.7, B31.8, B31.9, B31.10, B31.11, B31.12, B31.13, B31.14, B31.15, B31.16, B31.17, B31.18, B31.19, B31.20, B31.21, B31.22, B31.23, B31.24, B31.25, B31.26, B31.27, B31.28, B31.29, B31.30, B31.31, B31.32, B31.33, B31.34, B31.35, B31.36, B31.37, B31.38, B31.39, B31.40, B31.41, B31.42, B31.43, B31.44, B31.45, B31.46, B31.47, B31.48, B31.49, B31.50, B31.51, B31.52, B31.53, B31.54, B31.55, B31.56, B31.57, B31.58, B31.59, B31.60, B31.61, B31.62, B31.63, B31.64, B31.65, B31.66, B31.67, B31.68, B31.69, B31.70, B31.71, B31.72, B31.73, B31.74, B31.75, B31.76, B31.77, B31.78, B31.79, B31.80, B31.81, B31.82, B31.83, B31.84, B31.85, B31.86, B31.87, B31.88, B31.89, B31.90, B31.91, B31.92, B31.93, B31.94, B31.95, B31.96, B31.97, B31.98, B31.99, B31.100

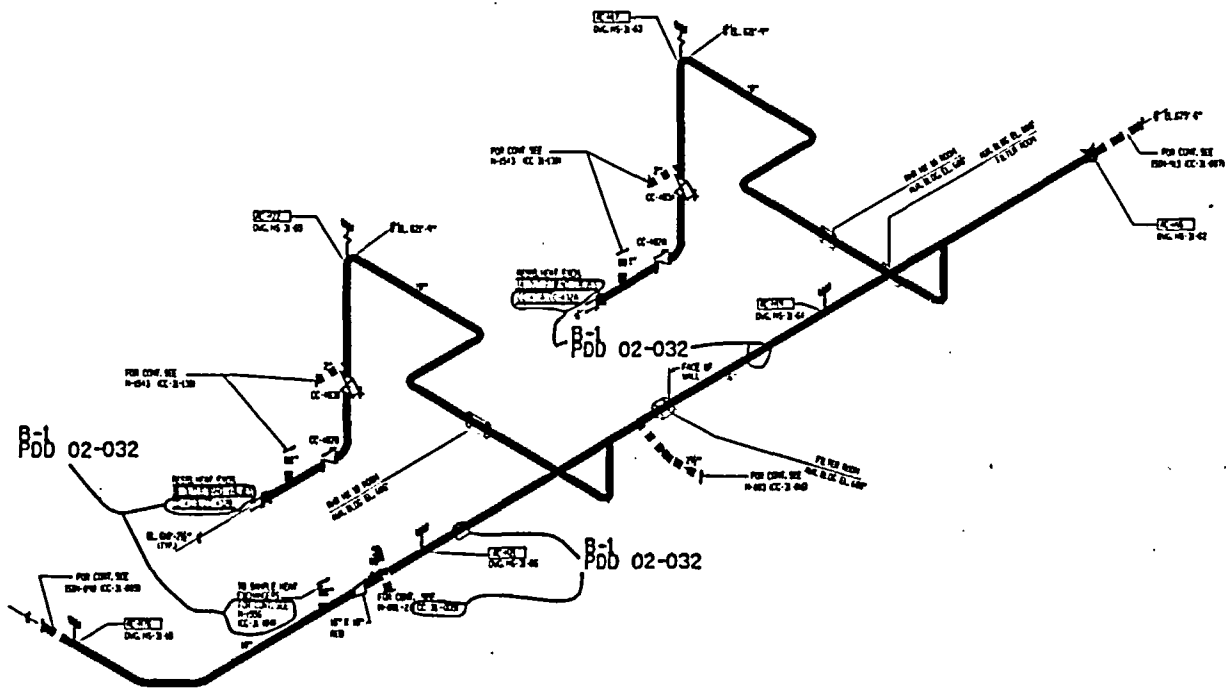
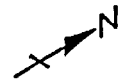
WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT
 CALTON, KEWAUNEE COUNTY, WISCONSIN

**AUXILIARY FEEDWATER PIPING FROM
 INTERMEDIATE ANCH. TO PEN. #46W**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DATE: 10/20/87
 DRAWN BY: J. J. JONES
 CHECKED BY: J. J. JONES
 PROJECT: 87-02

-109-1151



CODE CLASS 3
 LOCATION: AUX. BLDG ELEV. 606, RHR HX
 1A & 1B ROOMS, FILTER ROOM

UNIONALLY WELDED ATTACHMENT
IDENTIFICATION NUMBER
DCV-1
DCV-2
DCV-3

REFERENCE DWGS.
 B-1 Pdb 02-032

NOTE:
 1. DRAWING IS APPLICABLE FOR 300 AND 400 TSI DRAWING.
 2. CLASS 3 PIPING IS 1/2" AND LARGER TO EXCEPT FROM 1/2" AND 1/4" REQUIREMENTS OF TABLE 110-2.200-1 & 110-2.200-2

REVISIONS
 1. ISSUED FOR CONSTRUCTION AND REVISIONS
 2. ISSUED FOR CONSTRUCTION AND REVISIONS
 3. ISSUED FOR CONSTRUCTION AND REVISIONS
 4. ISSUED FOR CONSTRUCTION AND REVISIONS
 5. ISSUED FOR CONSTRUCTION AND REVISIONS
 6. ISSUED FOR CONSTRUCTION AND REVISIONS
 7. ISSUED FOR CONSTRUCTION AND REVISIONS
 8. ISSUED FOR CONSTRUCTION AND REVISIONS
 9. ISSUED FOR CONSTRUCTION AND REVISIONS
 10. ISSUED FOR CONSTRUCTION AND REVISIONS

151M-881-1

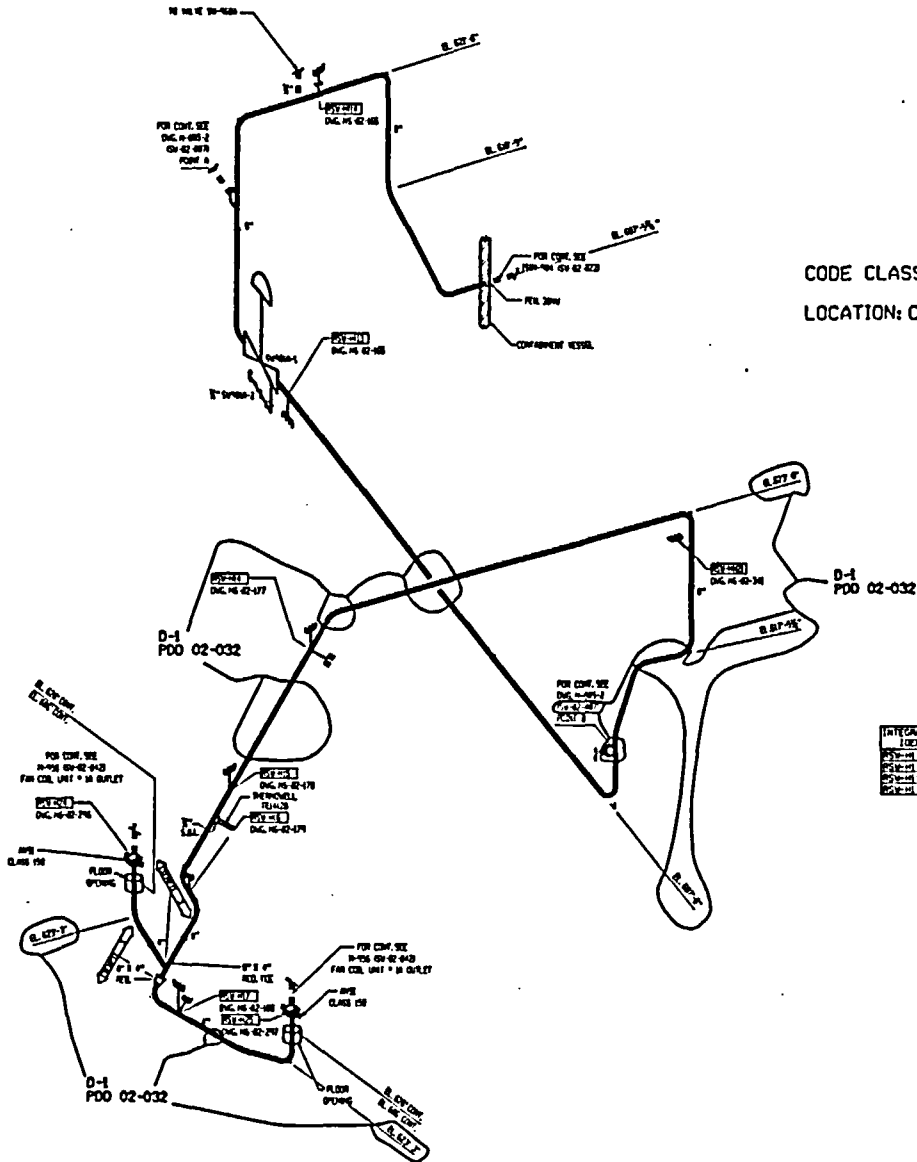
WISCONSIN PUBLIC SERVICE CORP.			
151 ISOMETRIC			
DC-RSOL, NO. 1A, 1B, DA EVAP PROD OUTS			
A PDBS 300, 40 SEE TO SURGE TK			
DRAWING OF			
WISCONSIN PUBLIC SERVICE CORP.			
DATE: 11/1/68			
DESIGNED BY	DATE	CHKD BY	DATE
DRAWN BY	DATE	APP'D BY	DATE
C.A. TOMAS			

CADD 151M-881-1 C

1-200-1113



CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 626



INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBERS	
VALVE	
FLANGE	
FLOOR FLANGE	
FLANGEBOLT	

REFERENCE DWGS.
K226, K227, K258, K261, K262, K263, K264, K265, K266, K267, K268, K269

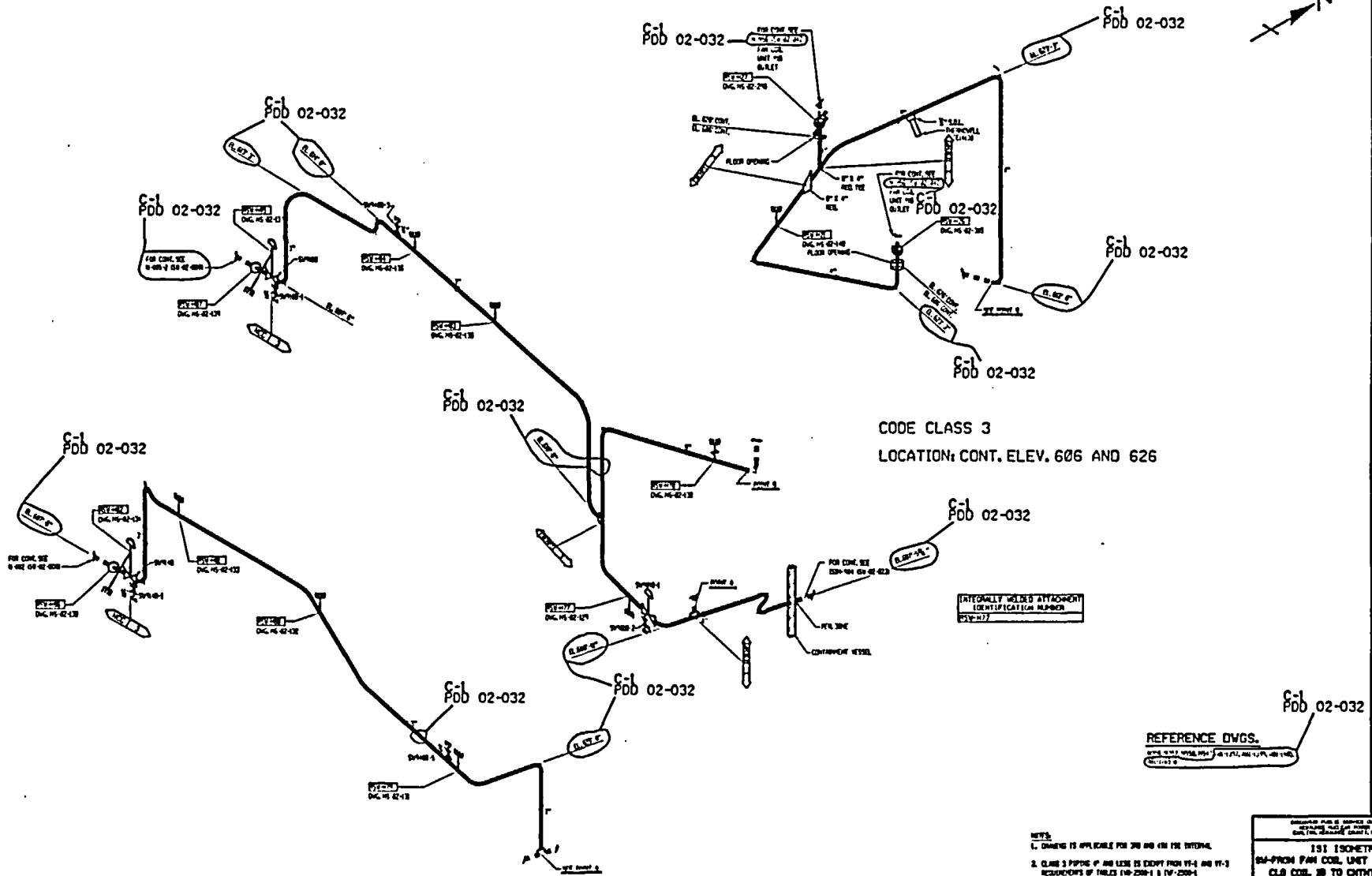
- NOTES
1. DRAWING IS APPLICABLE FOR 300 AND 400 ISE INTERNAL.
 2. CLASS 3 PIPING IS AND LESS IS EMPTY FROM IT-1 AND IT-2 NEAR/ENDS OF TUBES (TOP 250'-1 & TOP 250'-2)

ICAD

WISCONSIN PUBLIC SERVICE CORPORATION ENGINEERING DEPARTMENT	
181 ISOMETRIC SERVICE WATER FROM FCU 1A TO SHROUD COOLING COIL 1A TO PENC. 384W	
DRAWN BY WISCONSIN PUBLIC SERVICE CORP.	
DATE	NO.
SCALE	
DRAWN BY	C.A. TONES
CHECKED BY	IS1H-885-1 E

DATE	11/21/85
DRAWN BY	C.A. TONES
CHECKED BY	
SCALE	
DRAWING NO.	IS1H-885-1
SHEET NO.	1
TITLE	

IS1H-885-



1. DIMENSIONS APPLICABLE FOR 3/8" AND 1/2" DIA. EXTERNAL.
 2. CLASS 3 PIPING OF THIS SIZE IS EXCEPT FROM 174-1 AND 174-2
 REQUIREMENTS OF TABLES 140-200-1 & 140-200-2

1. DIMENSIONS APPLICABLE FOR 3/8" AND 1/2" DIA. EXTERNAL. 2. CLASS 3 PIPING OF THIS SIZE IS EXCEPT FROM 174-1 AND 174-2 REQUIREMENTS OF TABLES 140-200-1 & 140-200-2	1. DIMENSIONS APPLICABLE FOR 3/8" AND 1/2" DIA. EXTERNAL. 2. CLASS 3 PIPING OF THIS SIZE IS EXCEPT FROM 174-1 AND 174-2 REQUIREMENTS OF TABLES 140-200-1 & 140-200-2
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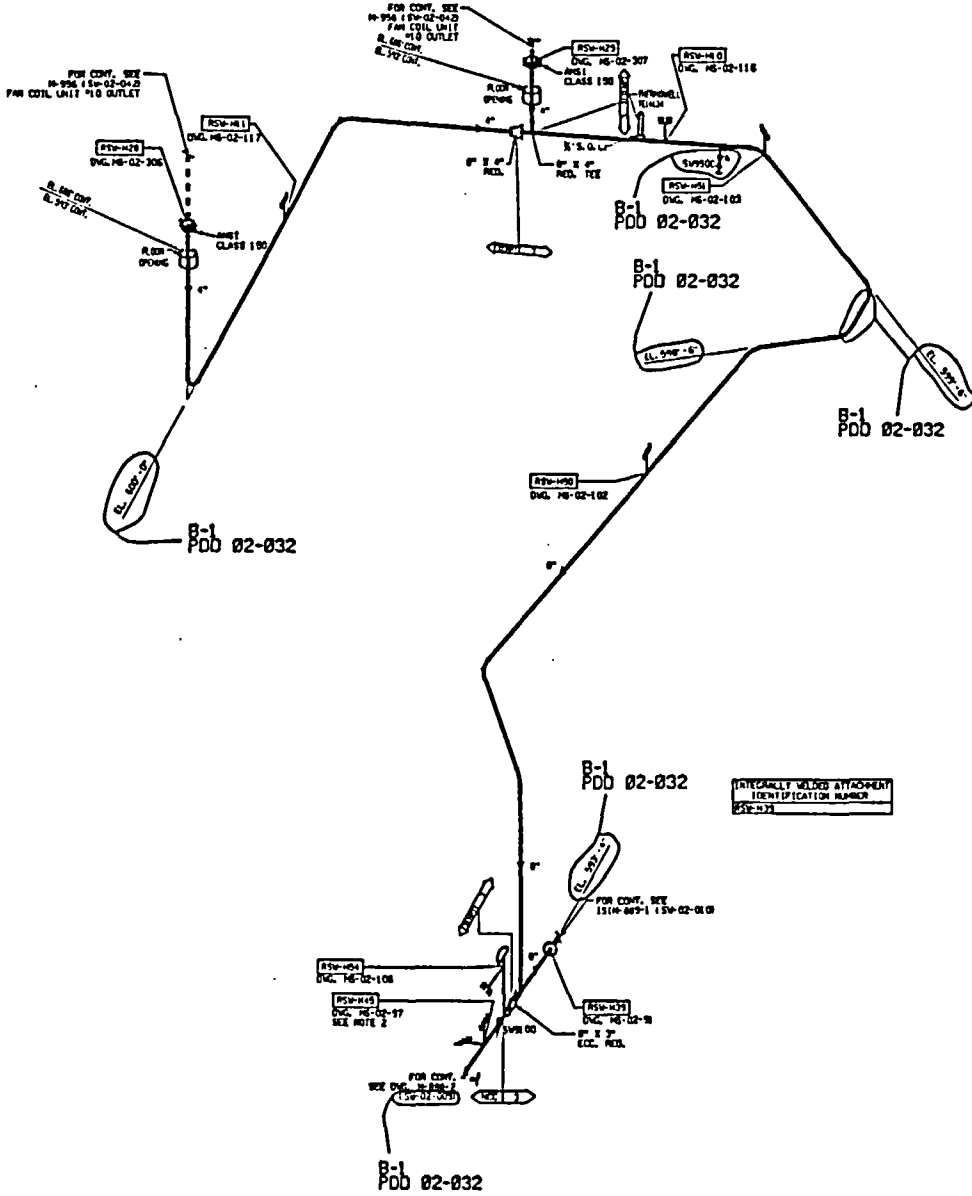
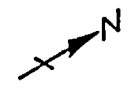
REFERENCE DWGS.

191H-888

1. DIMENSIONS APPLICABLE FOR 3/8" AND 1/2" DIA. EXTERNAL.
 2. CLASS 3 PIPING OF THIS SIZE IS EXCEPT FROM 174-1 AND 174-2
 REQUIREMENTS OF TABLES 140-200-1 & 140-200-2

191H-888			
WISCONSIN PUBLIC SERVICE CORP.			
DATE	BY	CHECKED	APPROVED

CADD



CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 593

135-02-042	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET
135-02-040	FAN COIL UNIT #10 OUTLET

INTEGRALLY WELDED ATTACHMENT
IDENTIFICATION NUMBER
R40-M3

B-1 Pdb 02-032
REFERENCE DWGS.
131M-02-117, 135-02-040, 135-02-042

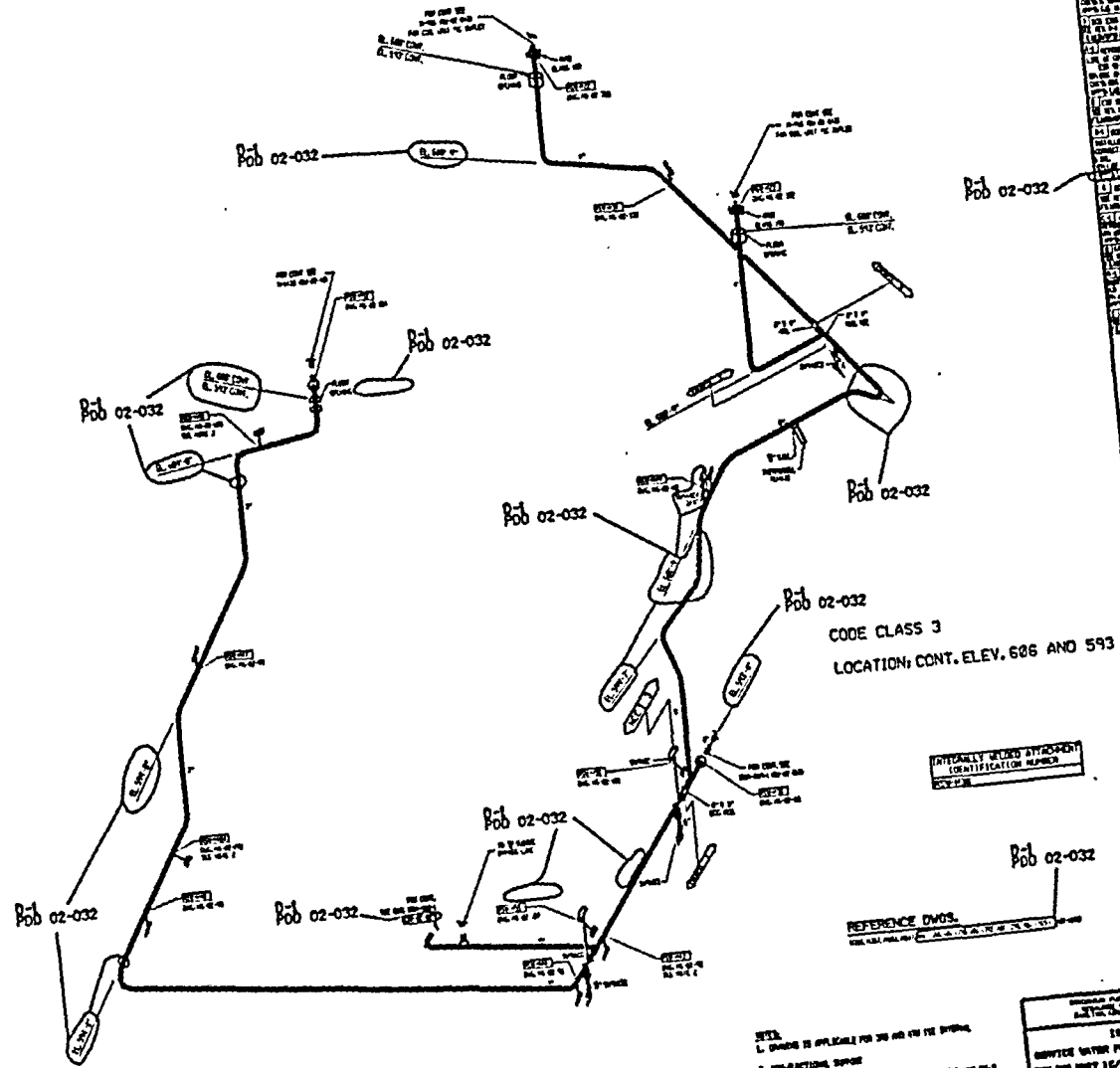
- NOTES:
1. DRAWING IS APPLICABLE FOR 3RD AND 4TH EST. INTERVAL.
 2. NON-FUNCTIONAL SUPPORT.
 3. CLASS 3 PIPING 6" AND LESS IS EXEMPT FROM VT-1 AND VT-2 REQUIREMENTS OF TABLES 140-2500-1 & 147-2500-1

ISIM-888-1

WISCONSIN PUBLIC SERVICE CORP.

131M-888-1 C

2-888-415



1. ALL DIMENSIONS ARE IN FEET AND INCHES.
 2. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 6. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 7. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 8. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 9. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 10. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 11. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 12. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 13. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 14. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 15. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 16. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 17. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 18. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 19. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 20. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

CODE CLASS 3
 LOCATION: CONT. ELEV. 606 AND 593

UNEXPECTEDLY PLACED BYPASS/IDENTIFICATION NUMBER

REFERENCE DWGS.

1. DIMENSIONS ARE APPLICABLE FOR THE END OF THE PIPELINE.
 2. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 3. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 4. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 5. DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

WISCONSIN PUBLIC SERVICE CORP. PROJECT NO. 151M-888-2	
SHEET NO. 1 OF 1	DATE: 11/19/88
DRAWN BY: E. J. TOMAS	CHECKED BY:
SCALE:	PROJECT NO. 151M-888-2

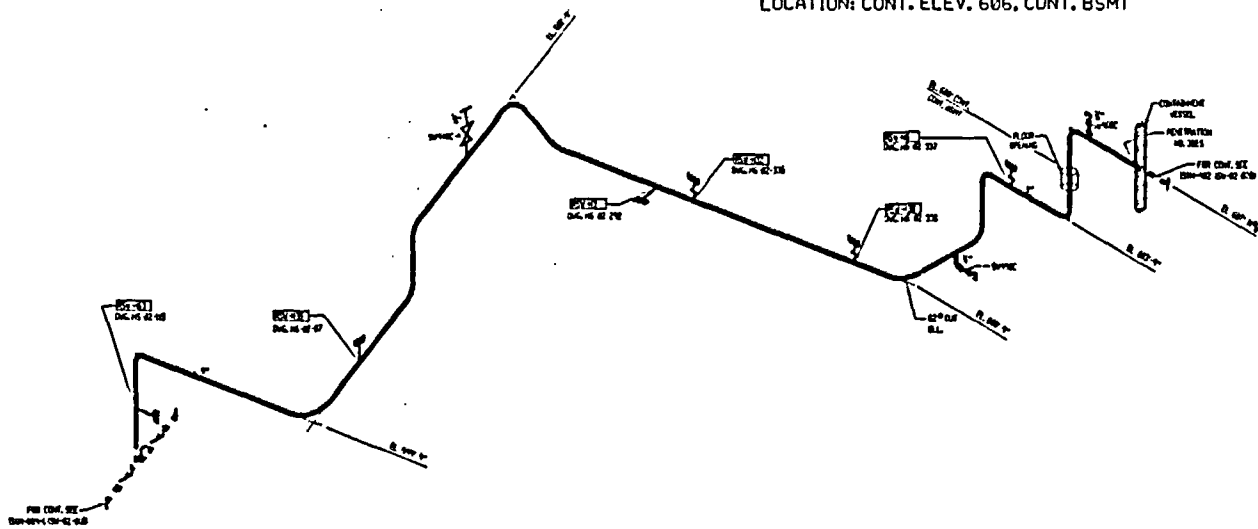
151M-888-2

151M-888-2

2-600-413



CODE CLASS 3
LOCATION: CONT. ELEV. 606, CONT. BSMT



INTEGRALLY WELDED ATTACHMENT
IDENTIFICATION NUMBER
R. 606
R. 607
R. 608
R. 609

REFERENCE DWGS.
R. 606, R. 607, R. 608, R. 609, R. 610, R. 611, R. 612, R. 613, R. 614, R. 615, R. 616, R. 617, R. 618, R. 619, R. 620, R. 621, R. 622, R. 623, R. 624, R. 625, R. 626, R. 627, R. 628, R. 629, R. 630, R. 631, R. 632, R. 633, R. 634, R. 635, R. 636, R. 637, R. 638, R. 639, R. 640, R. 641, R. 642, R. 643, R. 644, R. 645, R. 646, R. 647, R. 648, R. 649, R. 650, R. 651, R. 652, R. 653, R. 654, R. 655, R. 656, R. 657, R. 658, R. 659, R. 660, R. 661, R. 662, R. 663, R. 664, R. 665, R. 666, R. 667, R. 668, R. 669, R. 670, R. 671, R. 672, R. 673, R. 674, R. 675, R. 676, R. 677, R. 678, R. 679, R. 680, R. 681, R. 682, R. 683, R. 684, R. 685, R. 686, R. 687, R. 688, R. 689, R. 690, R. 691, R. 692, R. 693, R. 694, R. 695, R. 696, R. 697, R. 698, R. 699, R. 700, R. 701, R. 702, R. 703, R. 704, R. 705, R. 706, R. 707, R. 708, R. 709, R. 710, R. 711, R. 712, R. 713, R. 714, R. 715, R. 716, R. 717, R. 718, R. 719, R. 720, R. 721, R. 722, R. 723, R. 724, R. 725, R. 726, R. 727, R. 728, R. 729, R. 730, R. 731, R. 732, R. 733, R. 734, R. 735, R. 736, R. 737, R. 738, R. 739, R. 740, R. 741, R. 742, R. 743, R. 744, R. 745, R. 746, R. 747, R. 748, R. 749, R. 750, R. 751, R. 752, R. 753, R. 754, R. 755, R. 756, R. 757, R. 758, R. 759, R. 760, R. 761, R. 762, R. 763, R. 764, R. 765, R. 766, R. 767, R. 768, R. 769, R. 770, R. 771, R. 772, R. 773, R. 774, R. 775, R. 776, R. 777, R. 778, R. 779, R. 780, R. 781, R. 782, R. 783, R. 784, R. 785, R. 786, R. 787, R. 788, R. 789, R. 790, R. 791, R. 792, R. 793, R. 794, R. 795, R. 796, R. 797, R. 798, R. 799, R. 800, R. 801, R. 802, R. 803, R. 804, R. 805, R. 806, R. 807, R. 808, R. 809, R. 810, R. 811, R. 812, R. 813, R. 814, R. 815, R. 816, R. 817, R. 818, R. 819, R. 820, R. 821, R. 822, R. 823, R. 824, R. 825, R. 826, R. 827, R. 828, R. 829, R. 830, R. 831, R. 832, R. 833, R. 834, R. 835, R. 836, R. 837, R. 838, R. 839, R. 840, R. 841, R. 842, R. 843, R. 844, R. 845, R. 846, R. 847, R. 848, R. 849, R. 850, R. 851, R. 852, R. 853, R. 854, R. 855, R. 856, R. 857, R. 858, R. 859, R. 860, R. 861, R. 862, R. 863, R. 864, R. 865, R. 866, R. 867, R. 868, R. 869, R. 870, R. 871, R. 872, R. 873, R. 874, R. 875, R. 876, R. 877, R. 878, R. 879, R. 880, R. 881, R. 882, R. 883, R. 884, R. 885, R. 886, R. 887, R. 888, R. 889, R. 890, R. 891, R. 892, R. 893, R. 894, R. 895, R. 896, R. 897, R. 898, R. 899, R. 900, R. 901, R. 902, R. 903, R. 904, R. 905, R. 906, R. 907, R. 908, R. 909, R. 910, R. 911, R. 912, R. 913, R. 914, R. 915, R. 916, R. 917, R. 918, R. 919, R. 920, R. 921, R. 922, R. 923, R. 924, R. 925, R. 926, R. 927, R. 928, R. 929, R. 930, R. 931, R. 932, R. 933, R. 934, R. 935, R. 936, R. 937, R. 938, R. 939, R. 940, R. 941, R. 942, R. 943, R. 944, R. 945, R. 946, R. 947, R. 948, R. 949, R. 950, R. 951, R. 952, R. 953, R. 954, R. 955, R. 956, R. 957, R. 958, R. 959, R. 960, R. 961, R. 962, R. 963, R. 964, R. 965, R. 966, R. 967, R. 968, R. 969, R. 970, R. 971, R. 972, R. 973, R. 974, R. 975, R. 976, R. 977, R. 978, R. 979, R. 980, R. 981, R. 982, R. 983, R. 984, R. 985, R. 986, R. 987, R. 988, R. 989, R. 990, R. 991, R. 992, R. 993, R. 994, R. 995, R. 996, R. 997, R. 998, R. 999, R. 1000

A-1
KAP 01-001639

- NOTES
- 1. DIMENSIONS TO APPLY UNLESS OTHERWISE SPECIFIED.
- 2. CLASS 3 PIPING 4" AND LARGER TO EXCEPT FROM THE 10' TO 15' HEIGHTS OF TABLE 100-200-1.3 OF ASME B31.1.

IS1 ISOMETRIC
SERVICE WATER FROM FCW IC, IN & UNDER
COOLING COIL, IC, IS TO FCW, WEA & WEE

DESIGNED BY
WISCONSIN PUBLIC SERVICE COMP.

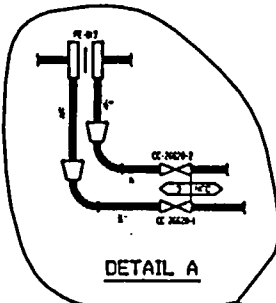
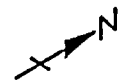
DATE	BY
DATE	BY
DATE	BY
DATE	BY

CAUTION

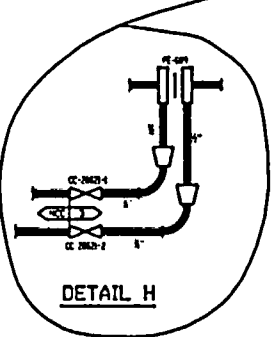
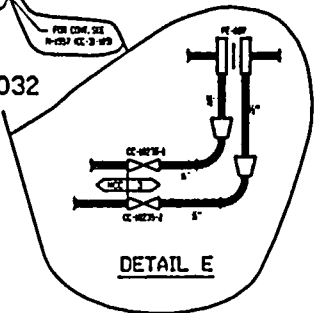
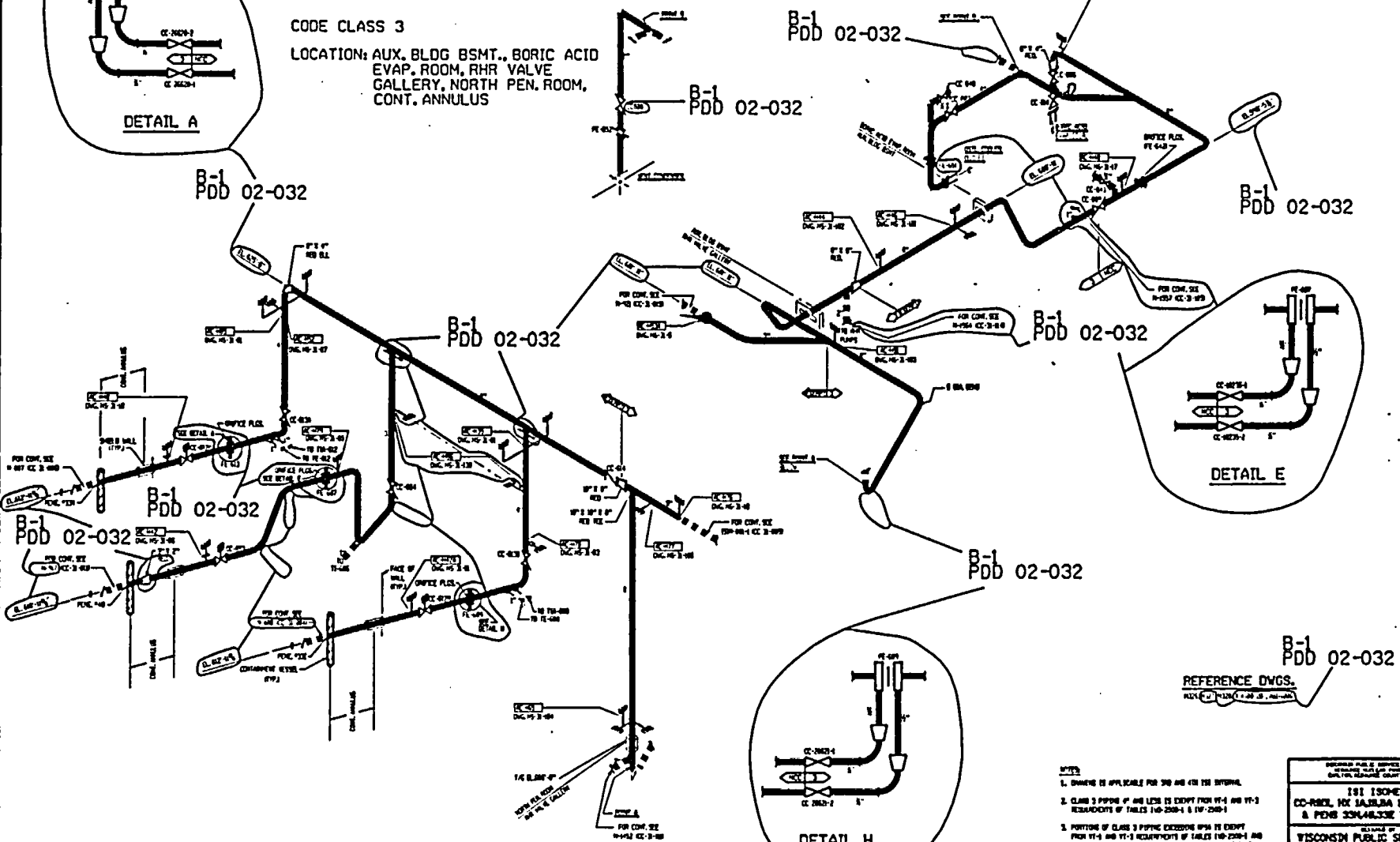
REVISIONS
NO. DATE BY
1 11/15/01 JLM
2 11/15/01 JLM
3 11/15/01 JLM
4 11/15/01 JLM
5 11/15/01 JLM
6 11/15/01 JLM
7 11/15/01 JLM
8 11/15/01 JLM
9 11/15/01 JLM
10 11/15/01 JLM

IS1H-685-2

IS1H-685-2



CODE CLASS 3
 LOCATION: AUX. BLDG BSMT., BORIC ACID
 EVAP. ROOM, RHR VALVE
 GALLERY, NORTH PEN. ROOM,
 CONT. ANNULUS



1. DRAWING IS APPLICABLE FOR 300 AND 400 PSI SYSTEMS.
 2. CLASS 3 PIPING OF AND LESS IS EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 & 140-2201.
 3. PORTIONS OF CLASS 3 PIPING EXCEEDING 400 PSI EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 AND 140-2201 IN ACCORDANCE WITH 140-122.1 AND 140-22.8.0.

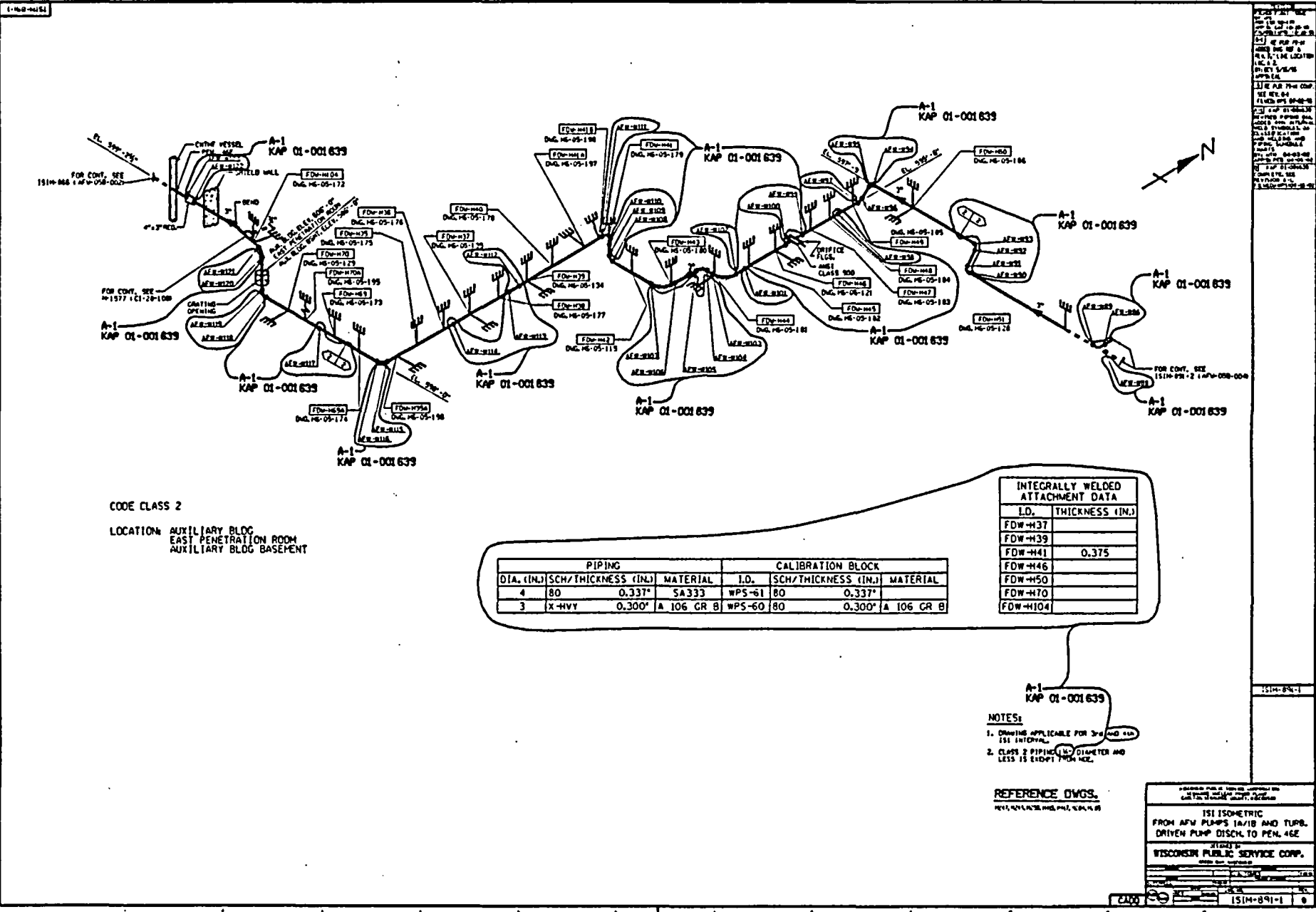
1. DRAWING IS APPLICABLE FOR 300 AND 400 PSI SYSTEMS.
 2. CLASS 3 PIPING OF AND LESS IS EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 & 140-2201.
 3. PORTIONS OF CLASS 3 PIPING EXCEEDING 400 PSI EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 AND 140-2201 IN ACCORDANCE WITH 140-122.1 AND 140-22.8.0.

1. DRAWING IS APPLICABLE FOR 300 AND 400 PSI SYSTEMS.
 2. CLASS 3 PIPING OF AND LESS IS EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 & 140-2201.
 3. PORTIONS OF CLASS 3 PIPING EXCEEDING 400 PSI EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 AND 140-2201 IN ACCORDANCE WITH 140-122.1 AND 140-22.8.0.

REFERENCE DWGS.
 140-2201, 140-2204, 140-2205, 140-2206

- NOTES
- DRAWING IS APPLICABLE FOR 300 AND 400 PSI SYSTEMS.
 - CLASS 3 PIPING OF AND LESS IS EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 & 140-2201.
 - PORTIONS OF CLASS 3 PIPING EXCEEDING 400 PSI EXCEPT FROM IT-1 AND IT-2 REQUIREMENTS OF TABLES 140-2204 AND 140-2201 IN ACCORDANCE WITH 140-122.1 AND 140-22.8.0.

151 ISOMETRIC	
CC-RHDL, RHR VALVE, BORIC ACID EVAP. ROOM, RHR VALVE GALLERY, NORTH PEN. ROOM, CONT. ANNULUS TO SLUDGE TK	
WISCONSIN PUBLIC SERVICE CORP.	
DATE	BY
SCALE	NO.
CDR. CA. TOWNE	ISTM-890



1. DRAWING APPLICABLE FOR 3/8" AND 1/2" IS1 INTERP.
 2. CLASS 2 PIPING (1/2" DIAMETER AND LESS IS EXCEPT FROM I.D.E.

CODE CLASS 2
 LOCATION: AUXILIARY BLDG.
 EAST PENETRATION ROOM
 AUXILIARY BLDG BASEMENT

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS (IN.)
FDW-H37	
FDW-H39	
FDW-H41	0.375
FDW-H46	
FDW-H50	
FDW-H70	
FDW-H104	

PIPING			CALIBRATION BLOCK		
DIA. (IN.)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
4	80	0.337" SA333	WPS-61	80	0.337"
3	X-HVY	0.300" A 106 GR B	WPS-60	80	0.300" A 106 GR B

- NOTES:**
- DRAWING APPLICABLE FOR 3/8" AND 1/2" IS1 INTERP.
 - CLASS 2 PIPING (1/2" DIAMETER AND LESS IS EXCEPT FROM I.D.E.

REFERENCE DWGS.
 WPS-60, WPS-61, WPS-62, WPS-63

151M-89-1

151 ISOMETRIC FROM AFW PUMPS (A/18 AND TURB. DRIVEN PUMP DISCH. TO PEN. 46E)

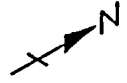
WISCONSIN PUBLIC SERVICE CORP.

151M-89-1

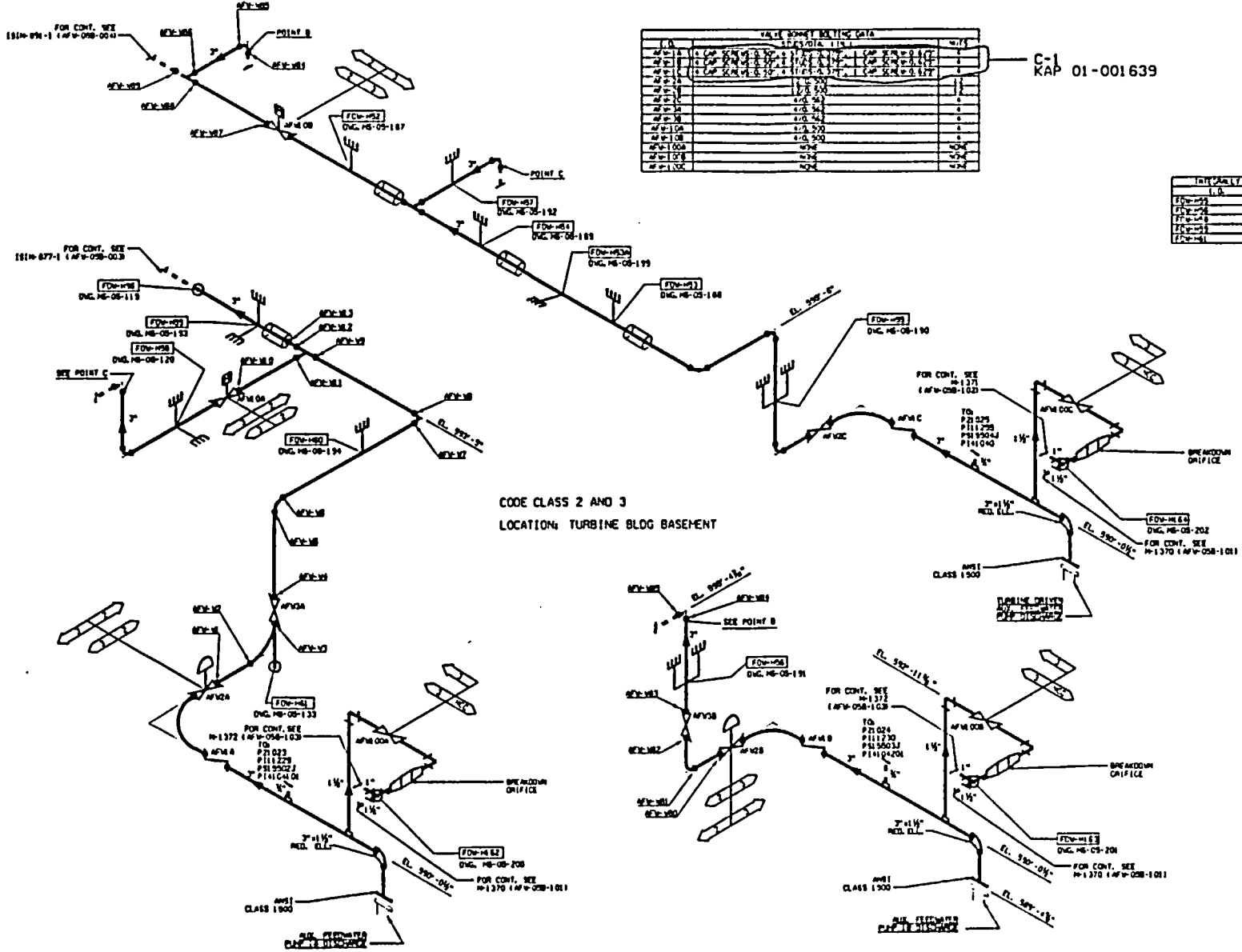
PIPE	SIZE	MATERIAL	CLASS	LOCATION	MARKING
100	12"	CS	1500	100	100
100	12"	CS	1500	100	100
100	12"	CS	1500	100	100

LINE	NO.	DESCRIPTION	SIZE	MATERIAL	CLASS	LOCATION	MARKING
100	1	100	12"	CS	1500	100	100
100	2	100	12"	CS	1500	100	100
100	3	100	12"	CS	1500	100	100

C-1 KAP 01-001 639



ITEM	DESCRIPTION	QTY
100	100	1
100	100	1
100	100	1



NOTES:
 1. DRAWING APPLICABLE FOR 3-4 AND 4-6
 2. CLASS 3 PIPING, 6" DIAMETER AND LVS
 3. EXCEPT FOR SEE

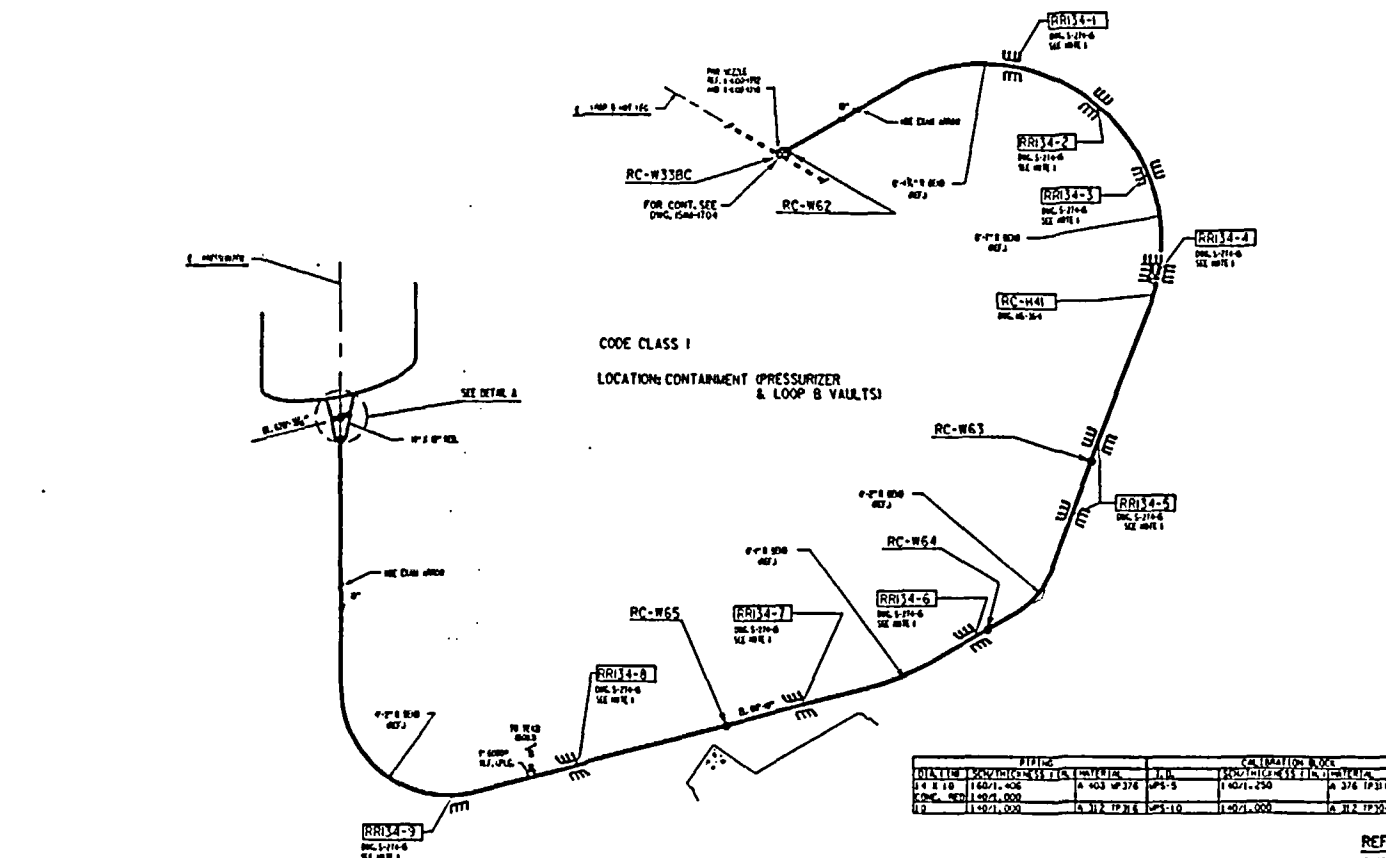
REFERENCE DWGS.
 100-058-101, 100-058-102, 100-058-103, 100-058-104, 100-058-105, 100-058-106, 100-058-107, 100-058-108, 100-058-109, 100-058-110, 100-058-111, 100-058-112, 100-058-113, 100-058-114, 100-058-115, 100-058-116, 100-058-117, 100-058-118, 100-058-119, 100-058-120, 100-058-121, 100-058-122, 100-058-123, 100-058-124, 100-058-125, 100-058-126, 100-058-127, 100-058-128, 100-058-129, 100-058-130

IS1 ISOMETRIC
 FROM AFM PUMPS 1A/18 AND TURBINE
 DRIVEN PUMP DISCH. TO PEN. 4GE

WISCONSIN PUBLIC SERVICE CORP.
 2000 WEST WISCONSIN AVENUE
 MILWAUKEE, WISCONSIN 53233

100-058-2

250-1953

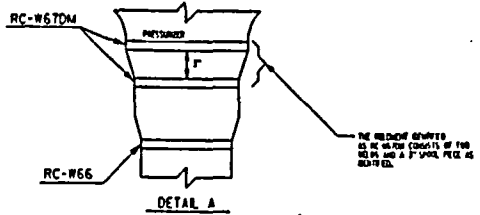


CODE CLASS I
 LOCATION: CONTAINMENT (PRESSURIZER & LOOP B VAULTS)

PIPING		CALCULATION CODE	
DIAMETER	LENGTH (FEET)	WATER	STEAM
1 1/2"	16071.406	A 403 TP 378	A 378 TP 318
2"	14071.000	A 312 TP 318	A 312 TP 304
3"	14071.000	A 312 TP 318	A 312 TP 304

REFERENCE DWGS.
 1 400 & 1 400 075, 076, 076, 077 & 1 400 08

- NOTES:
- MULTIPLE RESTRAINTS RRI34-1 THRU RRI34-9 HAVE BEEN PROVIDED FROM SERVICE PER DCA 12541 (REF. DWG. S-278-13). B-1
 - DRAWING AND TABLE FOR 3" Ø (2" I.D.) INTERVAL. KAP 01-001639
 - CLASS I PIPING 1" DIAMETER AND LESS EXEMPT FROM NOE.



THE RESTRAINTS SHOWN AS IN THE CORNER OF THE WELDS AND A 1" SPARE PIECE IS INDICATED.

1. THIS DRAWING IS THE PROPERTY OF WISCONSIN PUBLIC SERVICE CORP. IT IS TO BE KEPT IN THE OFFICE OF THE PROJECT ENGINEER. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF WISCONSIN PUBLIC SERVICE CORP.

2. THIS DRAWING IS THE PROPERTY OF WISCONSIN PUBLIC SERVICE CORP. IT IS TO BE KEPT IN THE OFFICE OF THE PROJECT ENGINEER. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF WISCONSIN PUBLIC SERVICE CORP.

3. THIS DRAWING IS THE PROPERTY OF WISCONSIN PUBLIC SERVICE CORP. IT IS TO BE KEPT IN THE OFFICE OF THE PROJECT ENGINEER. IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF WISCONSIN PUBLIC SERVICE CORP.

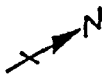
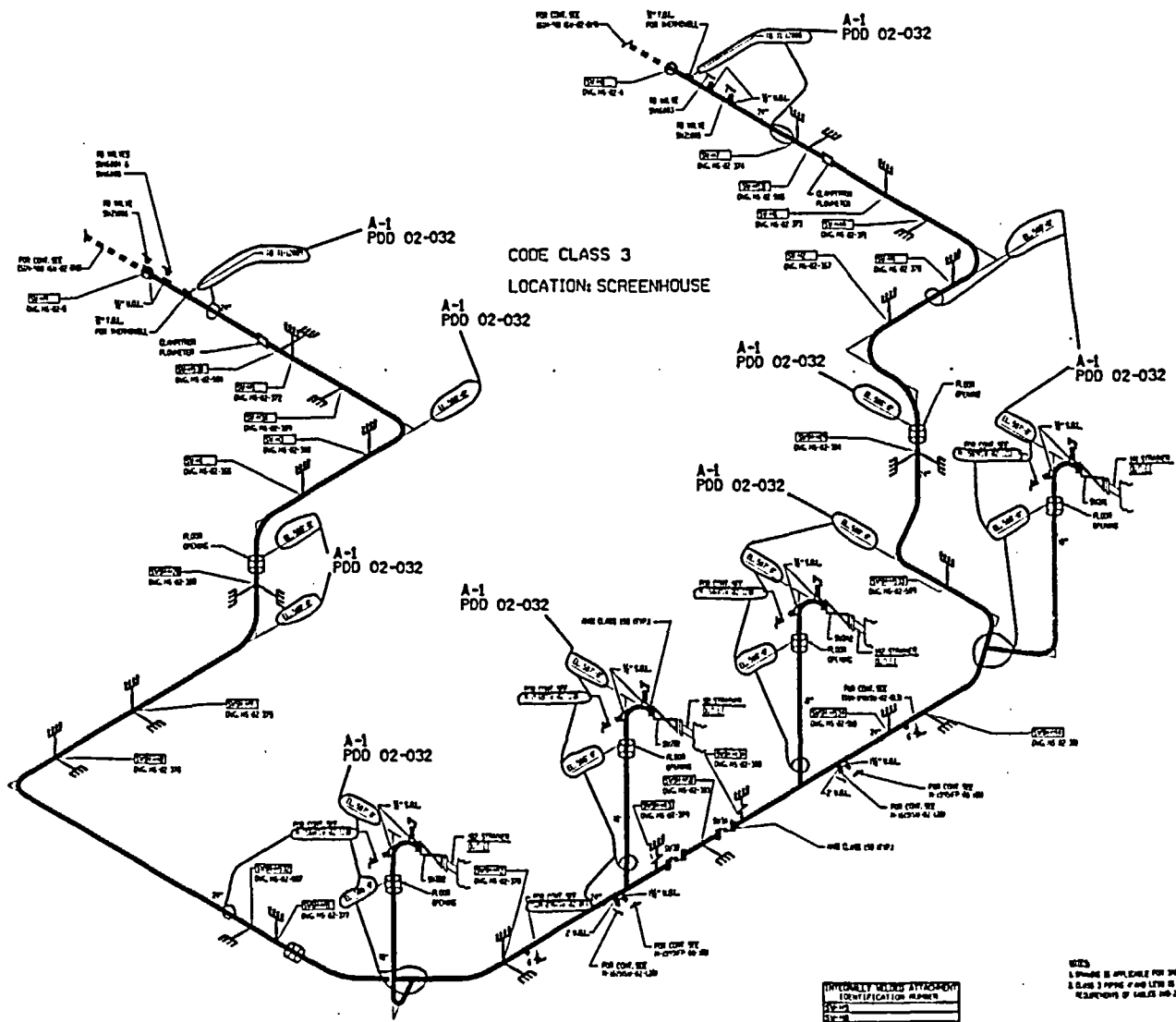
WISCONSIN PUBLIC SERVICE CORPORATION
 200 NORTH WISCONSIN STREET, MILWAUKEE, WISCONSIN 53202

ISOMETRIC
 PRESSURIZER SURGE LINE

DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 200 NORTH WISCONSIN STREET, MILWAUKEE, WISCONSIN 53202

DATE: 11/15/78
 DRAWN BY: J. J. HANCOCK
 CHECKED BY: J. J. HANCOCK
 SCALE: AS SHOWN
 SHEET NO.: 1 OF 1
 PROJECT NO.: 250-1953

CAD



FILED 7/18/10 10:00 AM
BY SPY FOR CSO-1032
PROJECT NO. 10-10-10-10
DATE 7/18/10
BY [Signature]
CHECKED BY [Signature]
DATE 7/18/10
SCALE 1\"/>

153-415

REFERENCE DWGS.
SEE REVISIONS

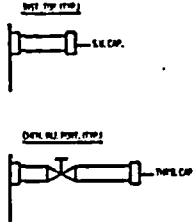
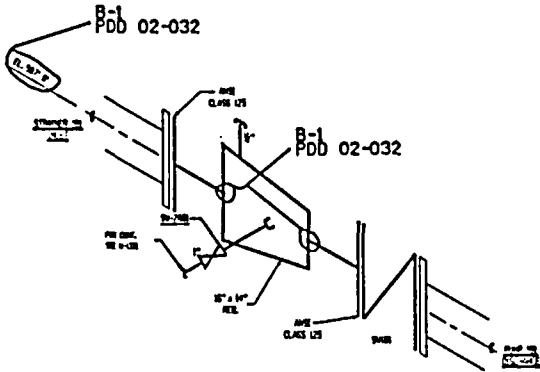
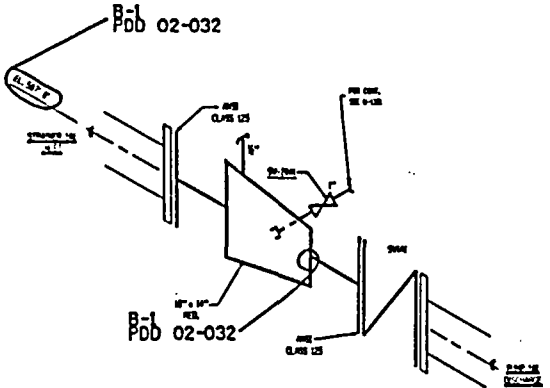
NOTES:
 1. GRADES ARE APPLICABLE FOR 36\"/>

UNUSUALLY WELDED APPROXIMATE IDENTIFICATION NUMBERS

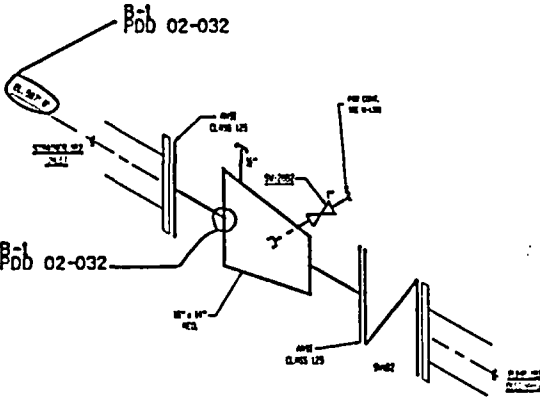
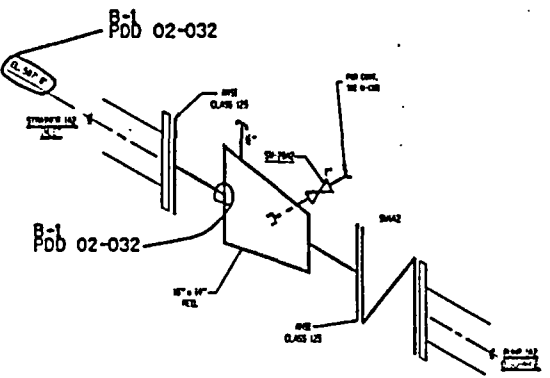
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CHECKED BY: [Signature]	
DATE: 7/18/10	
PROJECT NO.: 10-10-10-10	
DRAWING NO.: 153-415	
SHEET NO.: 1 OF 1	
WISCONSIN PUBLIC SERVICE CORP.	
153-415	



TITLE BLOCK
 1. PROJECT NO.
 2. SHEET NO.
 3. DATE
 4. DRAWN BY
 5. CHECKED BY
 6. APPROVED BY
 7. SCALE
 8. PROJECT NAME
 9. PROJECT ADDRESS
 10. PROJECT CITY
 11. PROJECT STATE
 12. PROJECT ZIP
 13. PROJECT PHONE
 14. PROJECT FAX
 15. PROJECT E-MAIL
 16. PROJECT WEBSITE
 17. PROJECT DESCRIPTION
 18. PROJECT NOTES
 19. PROJECT COMMENTS
 20. PROJECT SPECIFICATIONS
 21. PROJECT MATERIALS
 22. PROJECT EQUIPMENT
 23. PROJECT SCHEDULE
 24. PROJECT COST
 25. PROJECT RISK
 26. PROJECT LEGAL
 27. PROJECT ETHICAL
 28. PROJECT SUSTAINABLE
 29. PROJECT SOCIAL
 30. PROJECT ECONOMIC
 31. PROJECT ENVIRONMENTAL
 32. PROJECT CULTURAL
 33. PROJECT HISTORICAL
 34. PROJECT ARCHITECTURAL
 35. PROJECT ENGINEERING
 36. PROJECT CONSTRUCTION
 37. PROJECT OPERATION
 38. PROJECT MAINTENANCE
 39. PROJECT DEMOLITION
 40. PROJECT RECYCLING
 41. PROJECT ENERGY
 42. PROJECT WATER
 43. PROJECT AIR
 44. PROJECT SOIL
 45. PROJECT WASTE
 46. PROJECT CLIMATE
 47. PROJECT BIOLOGICAL
 48. PROJECT GEOLOGICAL
 49. PROJECT SEISMOLOGICAL
 50. PROJECT ACoustical



CODE CLASS 3
 LOCATION: SCREENHOUSE

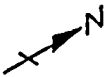


REFERENCE DWGS.
 B-1 Pdb 02-032
 EN-724

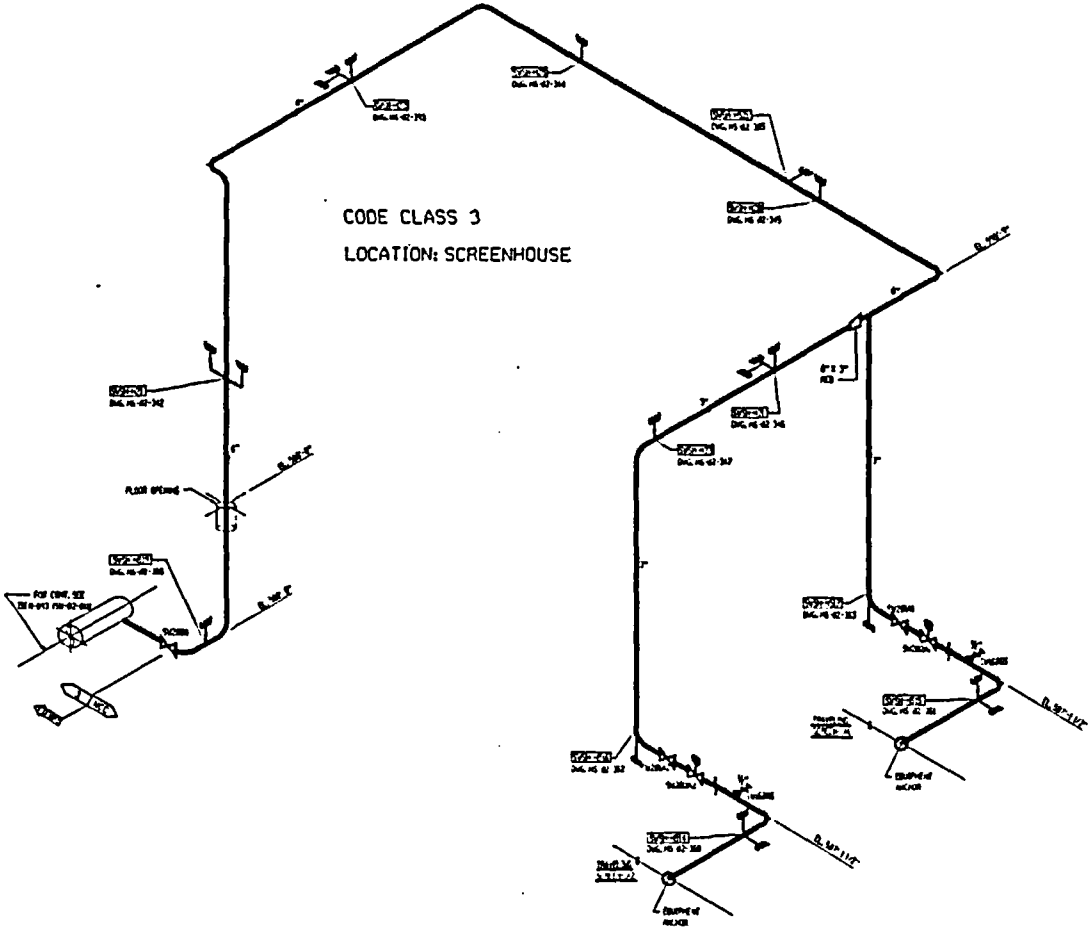
NOTES
 1) DRAWING IS APPLICABLE FOR 2HG AND 4HG 120 BURNING.
 2) CLASS 3 PIPING IS TO BE INSTALLED PER THE REQUIREMENTS OF TABLES 11P-2502-1 & 11P-2502-2.

WISCONSIN PUBLIC SERVICE CORP. 180 EAST WISCONSIN STREET MADISON, WISCONSIN 53703 (608) 248-1234	DATE: 5/16/02 DRAWN BY: [NAME] CHECKED BY: [NAME] APPROVED BY: [NAME]
PROJECT: [NAME] SHEET: [NUMBER] TOTAL SHEETS: [TOTAL]	

68-1151



CODE CLASS 3
LOCATION: SCREENHOUSE



1. 110-013 110-02-01
 2. 110-013 110-02-02
 3. 110-013 110-02-03
 4. 110-013 110-02-04
 5. 110-013 110-02-05
 6. 110-013 110-02-06
 7. 110-013 110-02-07
 8. 110-013 110-02-08
 9. 110-013 110-02-09
 10. 110-013 110-02-10
 11. 110-013 110-02-11
 12. 110-013 110-02-12
 13. 110-013 110-02-13
 14. 110-013 110-02-14
 15. 110-013 110-02-15
 16. 110-013 110-02-16
 17. 110-013 110-02-17
 18. 110-013 110-02-18
 19. 110-013 110-02-19
 20. 110-013 110-02-20

REFERENCE DWGS.
SEE NOTE 1111 PAGE

A-1
KAP 01-001639

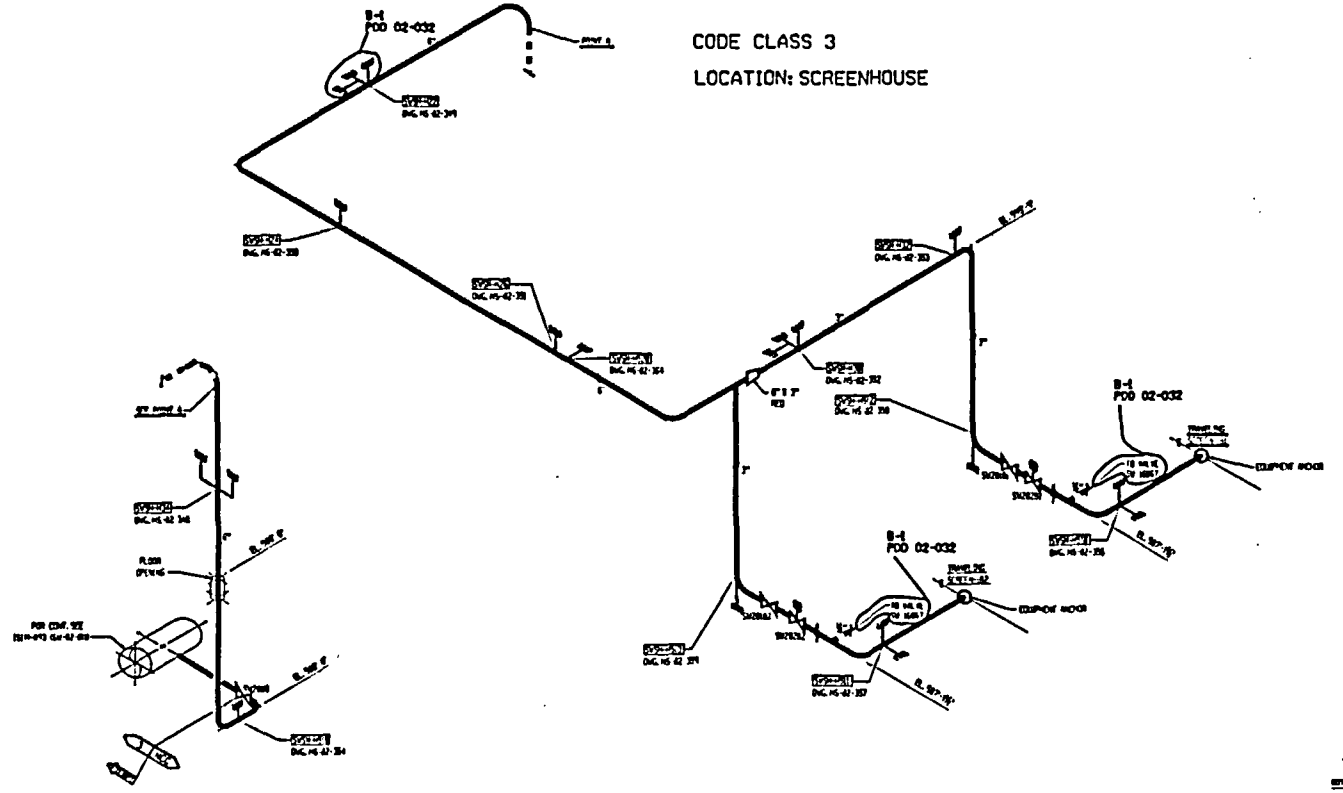
- NOTES
1. DRAWING IS APPLICABLE FOR SCREENHOUSE ISOMETRIC.
 2. CLASS 3 PIPING AND LEGS IS DRAWN FROM 110-013 REQUIREMENTS OF TABLES 110-7100-1 & 110-7100-2.
 3. PIPING IN CLASS 3 PIPING EXCEEDING THIS IS DRAWN FROM 110-013 REQUIREMENTS OF TABLES 110-7100-1 AND 110-7100-2 IN ACCORDANCE WITH 110-1122.1 AND 110-7100-2.

110-013 110-02-01 110-013 110-02-02 110-013 110-02-03 110-013 110-02-04 110-013 110-02-05 110-013 110-02-06 110-013 110-02-07 110-013 110-02-08 110-013 110-02-09 110-013 110-02-10 110-013 110-02-11 110-013 110-02-12 110-013 110-02-13 110-013 110-02-14 110-013 110-02-15 110-013 110-02-16 110-013 110-02-17 110-013 110-02-18 110-013 110-02-19 110-013 110-02-20	
ISI ISOMETRIC SERVICE WATER FROM 24" SUPPLY HEADER TO TRAVELING SCREENS 3M & 5M DRAWN BY WISCONSIN PUBLIC SERVICE CORP. DATE 11/15/68	
PROJECT NO. SHEET NO. TOTAL SHEETS	C.A. TORRES 110-013



FILED / 03/03/2004
 AT 03:00 PM
 OFFICE OF THE
 CLERK OF THE
 SUPERIOR COURT
 COUNTY OF WAUKESHA
 WISCONSIN
 WISCONSIN PUBLIC SERVICE CORPORATION
 151H-R96

CODE CLASS 3
 LOCATION: SCREENHOUSE



REFERENCE DWGS.
 SEE FILE 96-1151

151H-R96

- NOTES
1. DRAWING IS APPLICABLE FOR 24\"/>

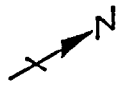
WISCONSIN PUBLIC SERVICE CORPORATION
 SERVICE WATER - FROM 24\"/>

RELEASED BY
WISCONSIN PUBLIC SERVICE CORP.

DATE	BY

CA TOMES
 151H-R96

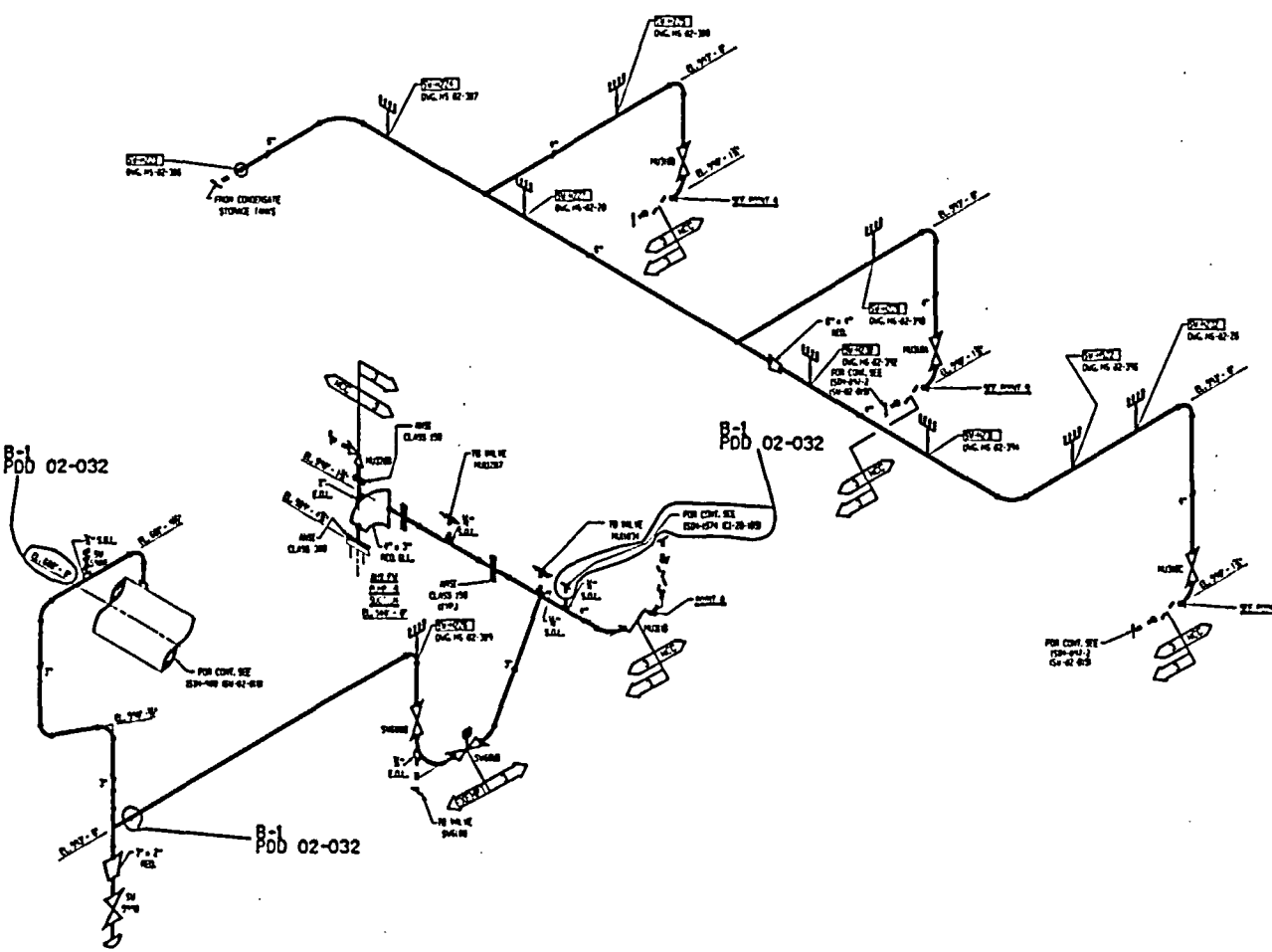
1-268-1151



1. ISOMETRIC DRAWING
 2. SEE DRAWING 151M-897-1
 3. SEE DRAWING 151M-897-2
 4. SEE DRAWING 151M-897-3
 5. SEE DRAWING 151M-897-4
 6. SEE DRAWING 151M-897-5
 7. SEE DRAWING 151M-897-6
 8. SEE DRAWING 151M-897-7
 9. SEE DRAWING 151M-897-8
 10. SEE DRAWING 151M-897-9
 11. SEE DRAWING 151M-897-10
 12. SEE DRAWING 151M-897-11
 13. SEE DRAWING 151M-897-12
 14. SEE DRAWING 151M-897-13
 15. SEE DRAWING 151M-897-14
 16. SEE DRAWING 151M-897-15
 17. SEE DRAWING 151M-897-16
 18. SEE DRAWING 151M-897-17
 19. SEE DRAWING 151M-897-18
 20. SEE DRAWING 151M-897-19
 21. SEE DRAWING 151M-897-20
 22. SEE DRAWING 151M-897-21
 23. SEE DRAWING 151M-897-22
 24. SEE DRAWING 151M-897-23
 25. SEE DRAWING 151M-897-24
 26. SEE DRAWING 151M-897-25
 27. SEE DRAWING 151M-897-26
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 29. SEE DRAWING 151M-897-28
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 31. SEE DRAWING 151M-897-30
 32. SEE DRAWING 151M-897-31
 33. SEE DRAWING 151M-897-32
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 42. SEE DRAWING 151M-897-41
 43. SEE DRAWING 151M-897-42
 44. SEE DRAWING 151M-897-43
 45. SEE DRAWING 151M-897-44
 46. SEE DRAWING 151M-897-45
 47. SEE DRAWING 151M-897-46
 48. SEE DRAWING 151M-897-47
 49. SEE DRAWING 151M-897-48
 50. SEE DRAWING 151M-897-49
 51. SEE DRAWING 151M-897-50
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 61. SEE DRAWING 151M-897-60
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 67. SEE DRAWING 151M-897-66
 68. SEE DRAWING 151M-897-67
 69. SEE DRAWING 151M-897-68
 70. SEE DRAWING 151M-897-69
 71. SEE DRAWING 151M-897-70
 72. SEE DRAWING 151M-897-71
 73. SEE DRAWING 151M-897-72
 74. SEE DRAWING 151M-897-73
 75. SEE DRAWING 151M-897-74
 76. SEE DRAWING 151M-897-75
 77. SEE DRAWING 151M-897-76
 78. SEE DRAWING 151M-897-77
 79. SEE DRAWING 151M-897-78
 80. SEE DRAWING 151M-897-79
 81. SEE DRAWING 151M-897-80
 82. SEE DRAWING 151M-897-81
 83. SEE DRAWING 151M-897-82
 84. SEE DRAWING 151M-897-83
 85. SEE DRAWING 151M-897-84
 86. SEE DRAWING 151M-897-85
 87. SEE DRAWING 151M-897-86
 88. SEE DRAWING 151M-897-87
 89. SEE DRAWING 151M-897-88
 90. SEE DRAWING 151M-897-89
 91. SEE DRAWING 151M-897-90
 92. SEE DRAWING 151M-897-91
 93. SEE DRAWING 151M-897-92
 94. SEE DRAWING 151M-897-93
 95. SEE DRAWING 151M-897-94
 96. SEE DRAWING 151M-897-95
 97. SEE DRAWING 151M-897-96
 98. SEE DRAWING 151M-897-97
 99. SEE DRAWING 151M-897-98
 100. SEE DRAWING 151M-897-99
 101. SEE DRAWING 151M-897-100

CODE CLASS 3

LOCATION: TURB. BLDG., SAFEGUARDS ALLEY



REFERENCE DWGS.
 151M-897-01-01, 151M-897-01-02, 151M-897-01-03, 151M-897-01-04, 151M-897-01-05, 151M-897-01-06, 151M-897-01-07, 151M-897-01-08, 151M-897-01-09, 151M-897-01-10, 151M-897-01-11, 151M-897-01-12, 151M-897-01-13, 151M-897-01-14, 151M-897-01-15, 151M-897-01-16, 151M-897-01-17, 151M-897-01-18, 151M-897-01-19, 151M-897-01-20, 151M-897-01-21, 151M-897-01-22, 151M-897-01-23, 151M-897-01-24, 151M-897-01-25, 151M-897-01-26, 151M-897-01-27, 151M-897-01-28, 151M-897-01-29, 151M-897-01-30, 151M-897-01-31, 151M-897-01-32, 151M-897-01-33, 151M-897-01-34, 151M-897-01-35, 151M-897-01-36, 151M-897-01-37, 151M-897-01-38, 151M-897-01-39, 151M-897-01-40, 151M-897-01-41, 151M-897-01-42, 151M-897-01-43, 151M-897-01-44, 151M-897-01-45, 151M-897-01-46, 151M-897-01-47, 151M-897-01-48, 151M-897-01-49, 151M-897-01-50, 151M-897-01-51, 151M-897-01-52, 151M-897-01-53, 151M-897-01-54, 151M-897-01-55, 151M-897-01-56, 151M-897-01-57, 151M-897-01-58, 151M-897-01-59, 151M-897-01-60, 151M-897-01-61, 151M-897-01-62, 151M-897-01-63, 151M-897-01-64, 151M-897-01-65, 151M-897-01-66, 151M-897-01-67, 151M-897-01-68, 151M-897-01-69, 151M-897-01-70, 151M-897-01-71, 151M-897-01-72, 151M-897-01-73, 151M-897-01-74, 151M-897-01-75, 151M-897-01-76, 151M-897-01-77, 151M-897-01-78, 151M-897-01-79, 151M-897-01-80, 151M-897-01-81, 151M-897-01-82, 151M-897-01-83, 151M-897-01-84, 151M-897-01-85, 151M-897-01-86, 151M-897-01-87, 151M-897-01-88, 151M-897-01-89, 151M-897-01-90, 151M-897-01-91, 151M-897-01-92, 151M-897-01-93, 151M-897-01-94, 151M-897-01-95, 151M-897-01-96, 151M-897-01-97, 151M-897-01-98, 151M-897-01-99, 151M-897-01-100

NOTES:
 1. DRAWING APPLICABLE FOR 3rd AND 4th FSI INTERNAL.
 2. NO INTEGRALLY WELDED ATTACHMENTS WITHIN THE HOSE BOUNDARY.

151M-897-1

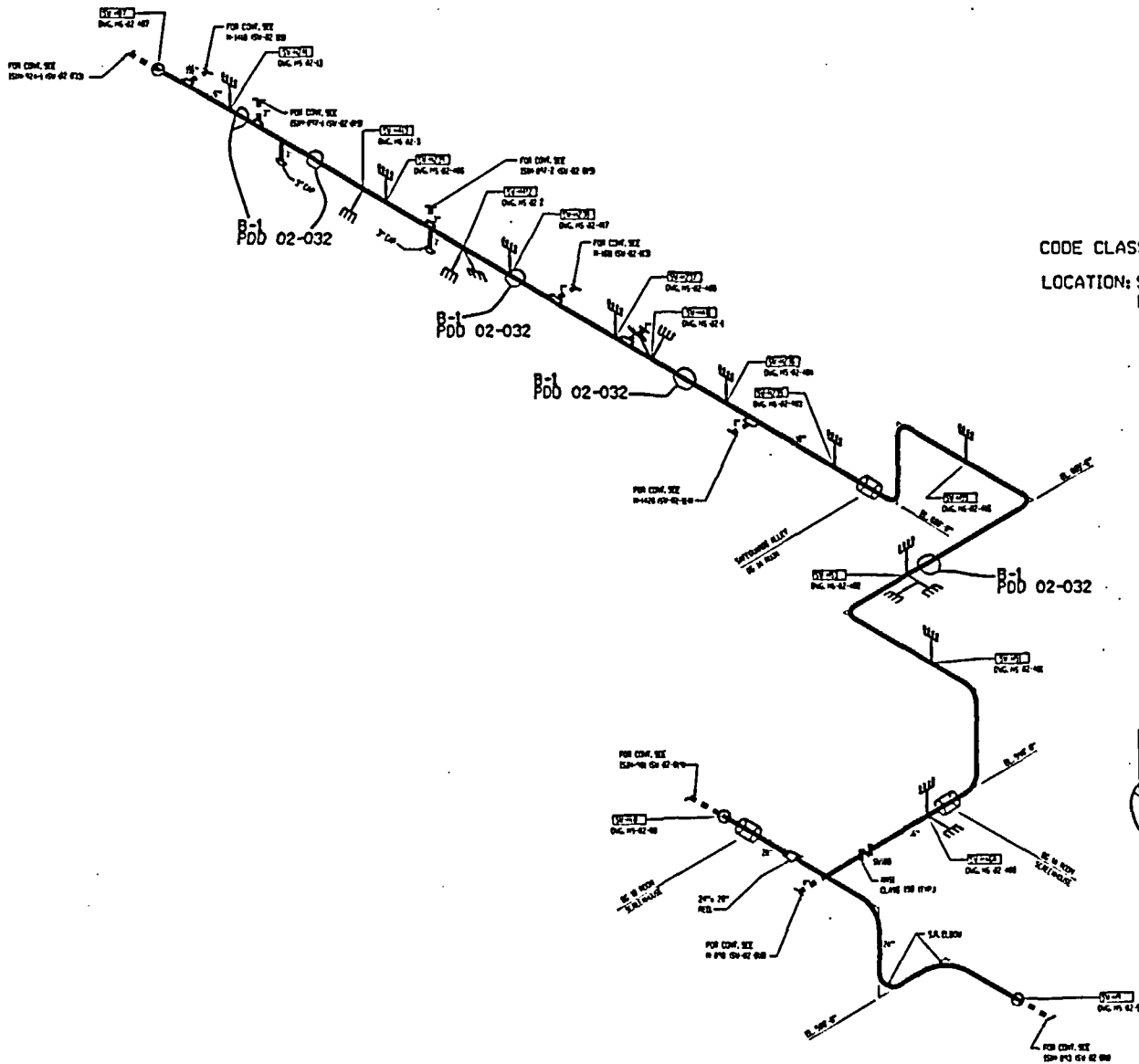
WISCONSIN PUBLIC SERVICE CORP.
 IS1 ISOMETRIC
 SERV. WTR. & FEEDWATER SUCT. TO AUX.
 FEEDWATER 1A, 1B, & TURB. GRV. PUMPS
 WISCONSIN PUBLIC SERVICE CORP.
 151M-897-1
 C

CADD

DOE-11511



FILED FOR SALE
BY THE FBI ON 07-27
APR 01 1968
163-1070 0-0-0
SEARCHED
SERIALIZED
INDEXED
FILED
FBI - MEMPHIS
APR 01 1968
163-1070 0-0-0
SEARCHED
SERIALIZED
INDEXED
FILED
FBI - MEMPHIS
APR 01 1968
163-1070 0-0-0
SEARCHED
SERIALIZED
INDEXED
FILED
FBI - MEMPHIS
APR 01 1968
163-1070 0-0-0



CODE CLASS 3
 LOCATION: SCREENHOUSE, TURBINE BLDG. DG 1A & 1B
 ROOMS, & SAFEGUARDS ALLEY

UNION PACIFIC
IDENTIFICATION NUMBER
1-100
1-100
1-100
1-100

REFERENCE DWGS.
 NO. 114-1070 (2) 114-1070 (2) 114-1070 (2)

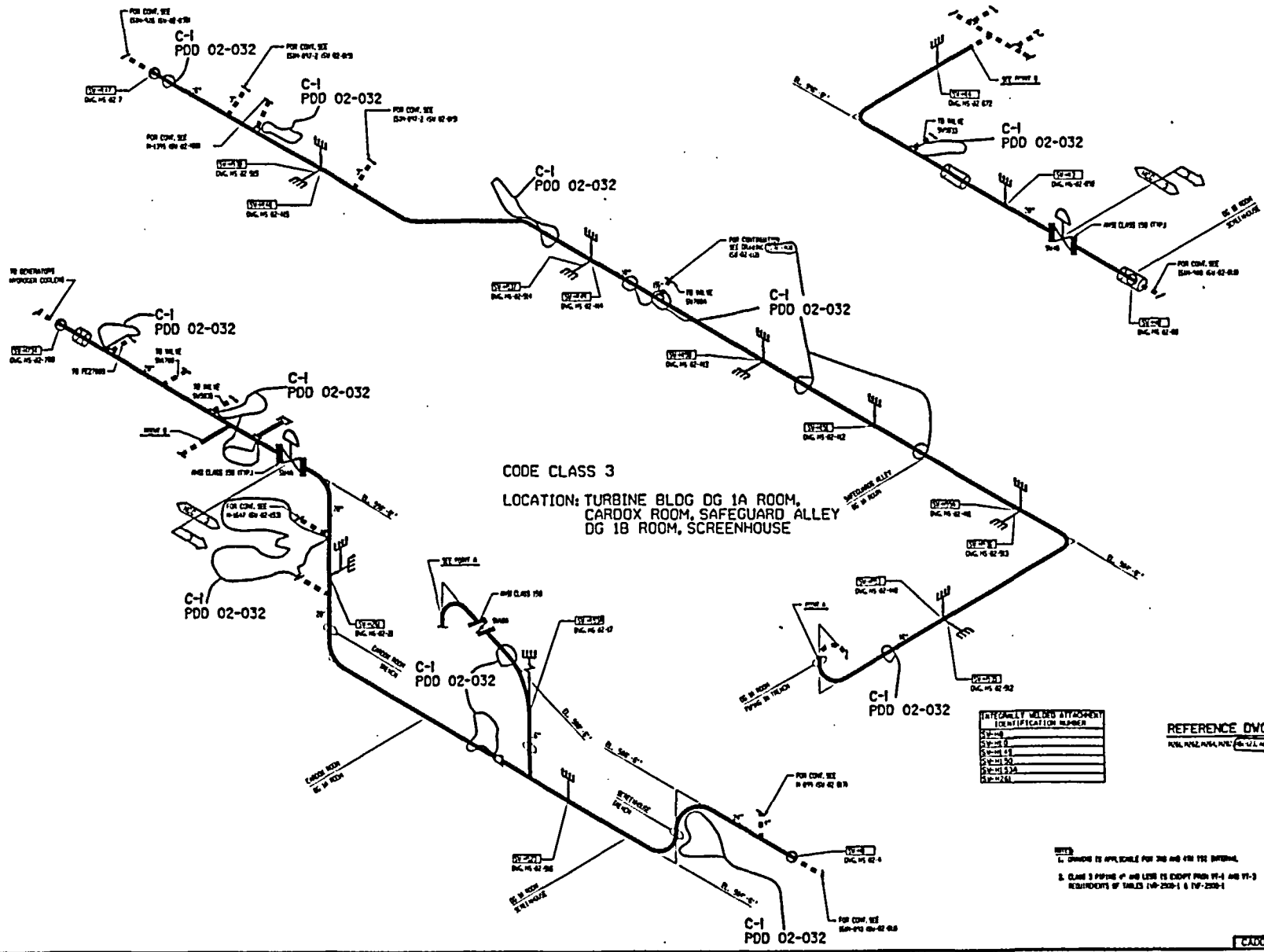
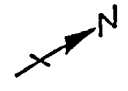
B-1 Pdb 02-032

ISIH-900

WISCONSIN PUBLIC SERVICE CORPORATION
 151 ISOMETRIC
 SEE FIRST INFORMATION SHEET ON SUPPLIER FOR
 APPROPRIATE JACKING OR SUPPORT DATA
 DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 DRAWN BY
 E.A. TOMES
 ISIH-900

NOTES:
 1. SCALE IS APPLICABLE FOR 3/4" AND 1/2" OR SMALLER.
 2. CLASS 3 PIPING IS NOT TO BE SUBJECT TO THE 10% AND 15%
 REQUIREMENTS OF TABLES SB-2380-1 & SB-2380-2

CLDD



CODE CLASS 3
 LOCATION: TURBINE BLDG DG 1A ROOM,
 CARBOX ROOM, SAFEGUARD ALLEY
 DG 1B ROOM, SCREENHOUSE

DATE	DESCRIPTION

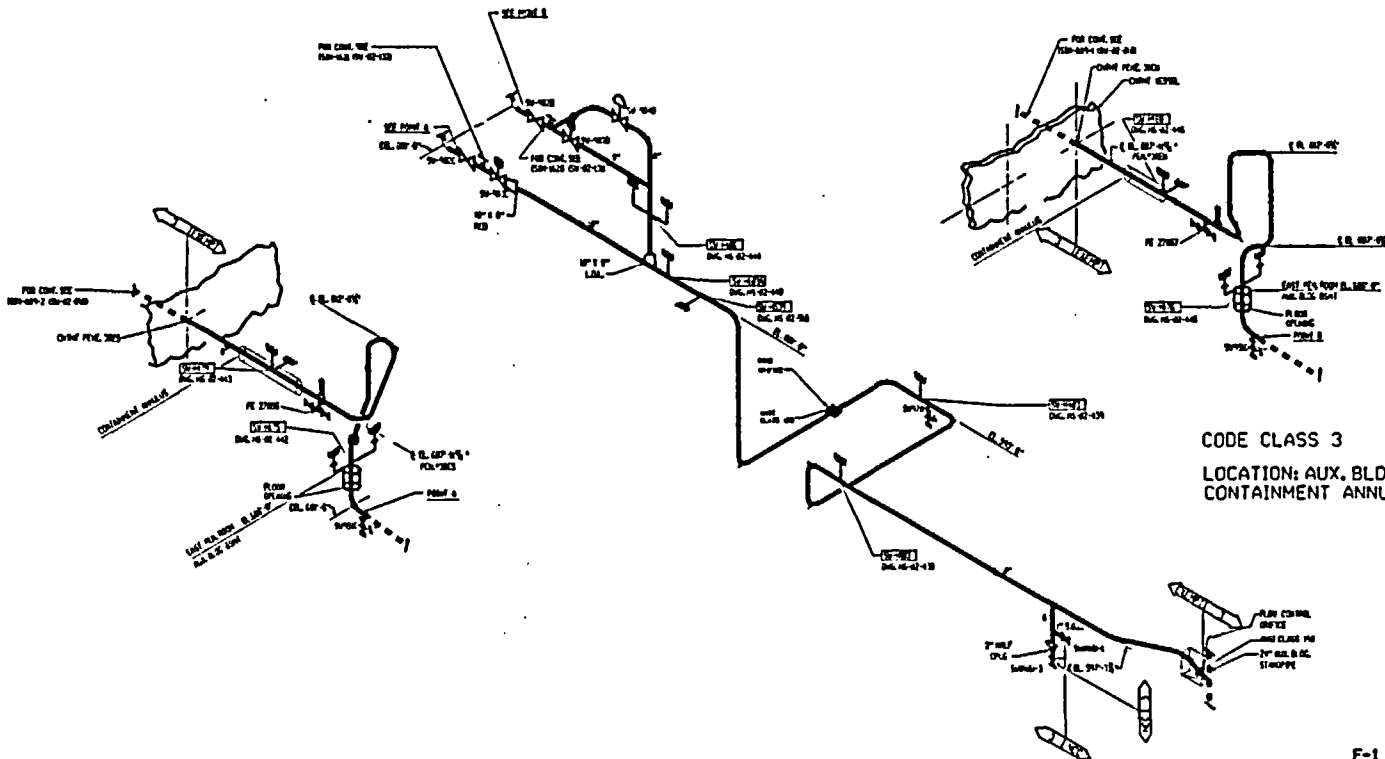
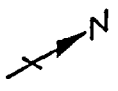
REFERENCE DWGS.
 P&ID, P&ID, P&ID (S&L, H&L, L&L)

NOTE:
 1. DIMENSIONS TO BE APPLIED FOR 2ND AND 4TH FLOOR INTERNALS.
 2. CLASS 3 PIPING AND LINES TO EXCEPT FROM V-1 AND V-3
 REQUIREMENTS OF TABLES 149-250-1 & 149-250-2

WISCONSIN PUBLIC SERVICE CORPORATION		
ISI ISOMETRIC		
SEE FIRST DIFFERENCE AND/OR SEE DRAWING FOR		
DIMENSIONS UNLESS OTHERWISE SPECIFIED		
DRAWING BY		
WISCONSIN PUBLIC SERVICE CORP.		

CADD

106-WIS1



CODE CLASS 3
 LOCATION: AUX. BLDG BSMT., EAST PEN. ROOM,
 CONTAINMENT ANNULUS

REFERENCE DWGS.
 P&ID: 208-4151, 208-4152, 208-4153, 208-4154, 208-4155, 208-4156, 208-4157, 208-4158, 208-4159, 208-4160, 208-4161, 208-4162, 208-4163, 208-4164, 208-4165, 208-4166, 208-4167, 208-4168, 208-4169, 208-4170, 208-4171, 208-4172, 208-4173, 208-4174, 208-4175, 208-4176, 208-4177, 208-4178, 208-4179, 208-4180, 208-4181, 208-4182, 208-4183, 208-4184, 208-4185, 208-4186, 208-4187, 208-4188, 208-4189, 208-4190, 208-4191, 208-4192, 208-4193, 208-4194, 208-4195, 208-4196, 208-4197, 208-4198, 208-4199, 208-4200

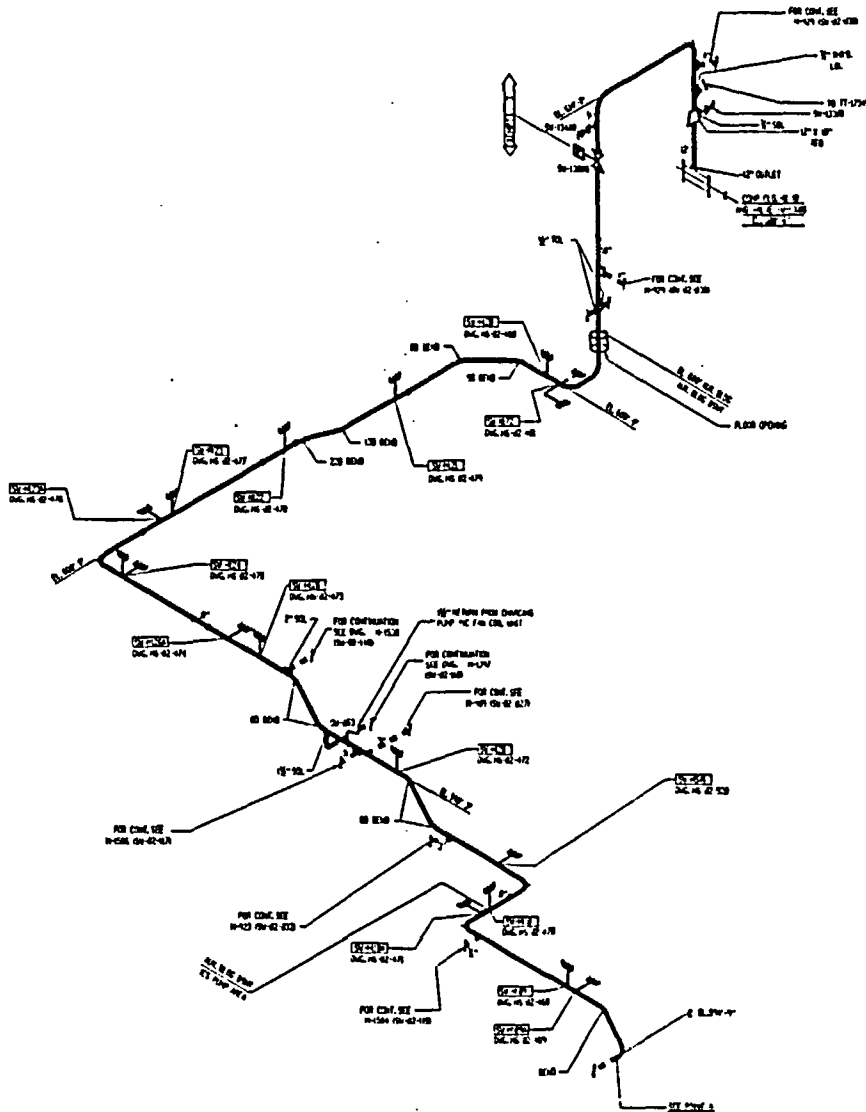
F-1
 KAP 01-001639

NOTES:
 1. DRAWING IS AVAILABLE FOR P&ID (1) ISOMETRIC
 2. CLASS 3 PIPING IS NOT LISTED IN ENDS FROM (1) ISOMETRIC
 3. PORTION OF CLASS 3 PIPING EXISTING WITHIN ISOMETRIC
 FROM (1) ISOMETRIC IS NOT SHOWN IN THIS ISOMETRIC AND
 IS NOT TO BE CONSIDERED WITH THIS ISOMETRIC AND P&ID.

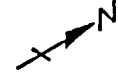
(1) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
(2) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
(3) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
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(47) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
(48) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
(49) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.
(50) CLASS 3 PIPING IS NOT TO BE CONSIDERED WITHIN THIS ISOMETRIC AND P&ID.

101 ISOMETRIC SV FROM CONTNIT PENN. BLDG & 300N TO AUX BLDG STAMPING	
WISCONSIN PUBLIC SERVICE CORP. 1514-302	
DATE:	DRAWN BY:
CHECKED BY:	SCALE:
APPROVED BY:	PROJECT NO:
TITLE:	SHEET NO:
TOTAL SHEETS:	OF:

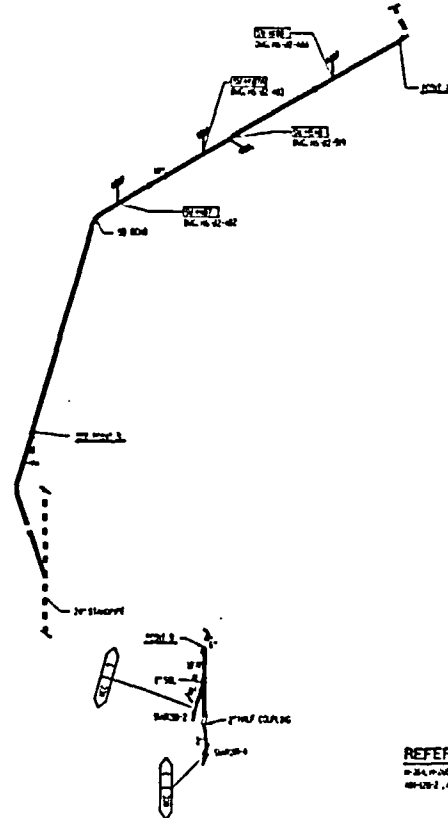
COE-W151



CODE CLASS 3
 LOCATION: AUX. BLDG. EL. 606,
 AUX. BLDG. BSMT. &
 ICS PUMP AREA



1.01	SHOWN
1.02	NOT SHOWN
1.03	NOT SHOWN
1.04	NOT SHOWN
1.05	NOT SHOWN
1.06	NOT SHOWN
1.07	NOT SHOWN
1.08	NOT SHOWN
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1.43	NOT SHOWN
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1.45	NOT SHOWN
1.46	NOT SHOWN
1.47	NOT SHOWN
1.48	NOT SHOWN
1.49	NOT SHOWN
1.50	NOT SHOWN



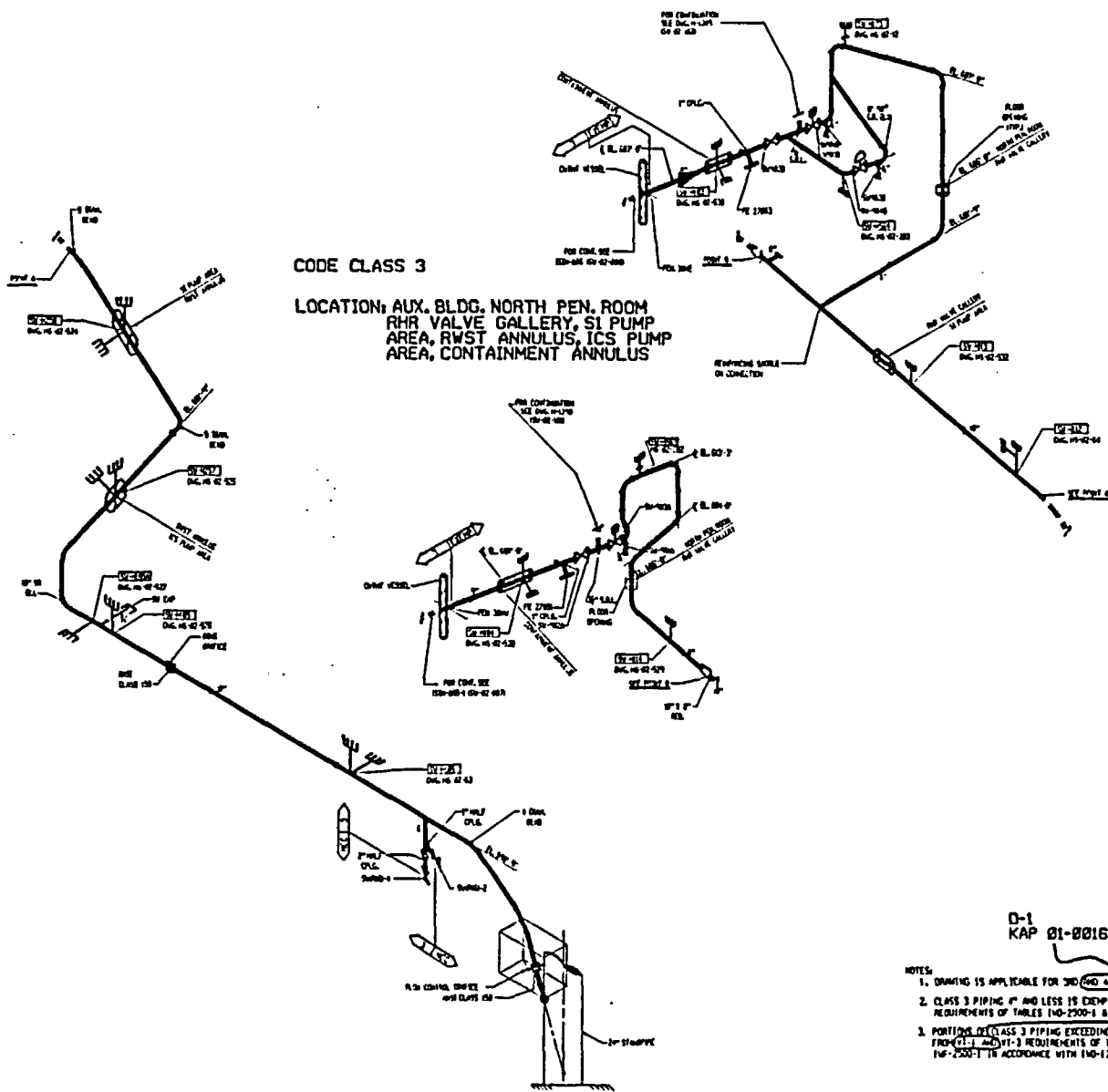
REFERENCE DWGS.
 151H-235, 151H-236, 151H-237, 151H-238, 151H-239, 151H-240, 151H-241, 151H-242, 151H-243, 151H-244, 151H-245, 151H-246, 151H-247, 151H-248, 151H-249, 151H-250, 151H-251, 151H-252, 151H-253, 151H-254, 151H-255, 151H-256, 151H-257, 151H-258, 151H-259, 151H-260, 151H-261, 151H-262, 151H-263, 151H-264, 151H-265, 151H-266, 151H-267, 151H-268, 151H-269, 151H-270, 151H-271, 151H-272, 151H-273, 151H-274, 151H-275, 151H-276, 151H-277, 151H-278, 151H-279, 151H-280, 151H-281, 151H-282, 151H-283, 151H-284, 151H-285, 151H-286, 151H-287, 151H-288, 151H-289, 151H-290, 151H-291, 151H-292, 151H-293, 151H-294, 151H-295, 151H-296, 151H-297, 151H-298, 151H-299, 151H-300

NOTES:
 1. DESIGN IS AVAILABLE FOR 3000 PSI SERVICE.
 2. CLASS 3 PIPING AND LEGS IS DOWNTOWN ONLY AND IS SUBJECT TO SPECIAL INSPECTION AND TESTING.
 3. PRINTING AT CLASS 3 PIPING EXCLUDING SPIN IS LIMITED TO 3000 PSI SERVICE ONLY AT 151H-235 TO 151H-300 AND IS SUBJECT TO SPECIAL INSPECTION AND TESTING.

151H-300

151H-300	
PROJECT	151H-300
DATE	
BY	
CHECKED BY	
APPROVED BY	
WISCONSIN PUBLIC SERVICE COMP.	
STATE OF WISCONSIN	
CAD	151H-300 0

06-1151



CODE CLASS 3
 LOCATION: AUX. BLDG. NORTH PEN. ROOM
 RHR VALVE GALLERY, SI PUMP
 AREA, RWST ANNULUS, ICS PUMP
 AREA, CONTAINMENT ANNULUS

REFERENCE DWGS.
 P&ID 100-1000-1000, 100-1000-2000, 100-1000-3000, 100-1000-4000, 100-1000-5000, 100-1000-6000, 100-1000-7000, 100-1000-8000, 100-1000-9000, 100-1000-10000

D-1
 KAP 01-001639

- NOTES:
1. DRAWING IS APPLICABLE FOR 300 (AND 410) IS1 INTERNAL.
 2. CLASS 3 PIPING 4" AND LESS IS EXEMPT FROM (1)-(1) AND (1)-(1)-(1) REQUIREMENTS OF TABLES 140-2500-1 & 140-2500-1.
 3. PORTIONS OF CLASS 3 PIPING EXCEEDING 4" IS EXEMPT FROM (1)-(1) AND (1)-(1) REQUIREMENTS OF TABLES 140-2500-1 AND 140-2500-1 IN ACCORDANCE WITH 140-1220.2 AND 140-2500-1.

<p>1. 100-1000-1000</p> <p>2. 100-1000-2000</p> <p>3. 100-1000-3000</p> <p>4. 100-1000-4000</p> <p>5. 100-1000-5000</p> <p>6. 100-1000-6000</p> <p>7. 100-1000-7000</p> <p>8. 100-1000-8000</p> <p>9. 100-1000-9000</p> <p>10. 100-1000-10000</p>
<p>11. 100-1000-11000</p> <p>12. 100-1000-12000</p> <p>13. 100-1000-13000</p> <p>14. 100-1000-14000</p> <p>15. 100-1000-15000</p> <p>16. 100-1000-16000</p> <p>17. 100-1000-17000</p> <p>18. 100-1000-18000</p> <p>19. 100-1000-19000</p> <p>20. 100-1000-20000</p>
<p>21. 100-1000-21000</p> <p>22. 100-1000-22000</p> <p>23. 100-1000-23000</p> <p>24. 100-1000-24000</p> <p>25. 100-1000-25000</p> <p>26. 100-1000-26000</p> <p>27. 100-1000-27000</p> <p>28. 100-1000-28000</p> <p>29. 100-1000-29000</p> <p>30. 100-1000-30000</p>
<p>31. 100-1000-31000</p> <p>32. 100-1000-32000</p> <p>33. 100-1000-33000</p> <p>34. 100-1000-34000</p> <p>35. 100-1000-35000</p> <p>36. 100-1000-36000</p> <p>37. 100-1000-37000</p> <p>38. 100-1000-38000</p> <p>39. 100-1000-39000</p> <p>40. 100-1000-40000</p>
<p>41. 100-1000-41000</p> <p>42. 100-1000-42000</p> <p>43. 100-1000-43000</p> <p>44. 100-1000-44000</p> <p>45. 100-1000-45000</p> <p>46. 100-1000-46000</p> <p>47. 100-1000-47000</p> <p>48. 100-1000-48000</p> <p>49. 100-1000-49000</p> <p>50. 100-1000-50000</p>

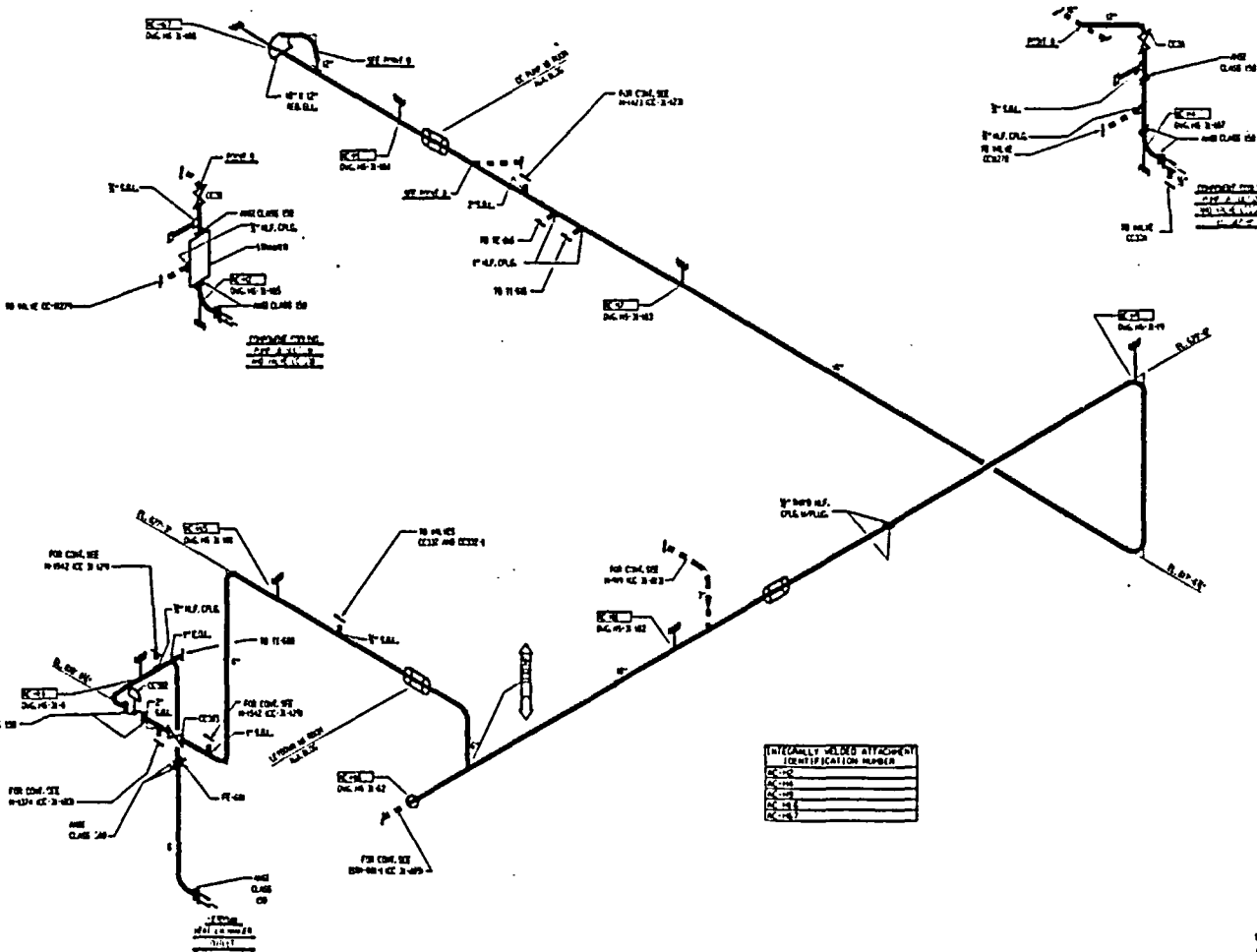
151H-304

<p>151 ISOMETRIC DWG-NUM FROM CIVIL PEN. ROOM & ZONE TO AUX BLDG STAIRWELL</p>	
<p>DESIGNED BY CHECKED BY DATE</p>	
<p>WISCONSIN PUBLIC SERVICE COMPANY</p>	
<p>DATE 12/1/63</p>	<p>SCALE AS SHOWN</p>
<p>BY J.A. FOWLER</p>	<p>151H-304</p>

15-4181



1. ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE SPECIFIED.
 2. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.



CODE CLASS 3
LOCATION: AUX. BLDG, LETDOWN HX ROOM, CC PUMP 1B ROOM

ITEM	DESCRIPTION

REFERENCE DWGS.
 15-4181, 15-4182, 15-4183, 15-4184, 15-4185

0-1
KAP 01-001639

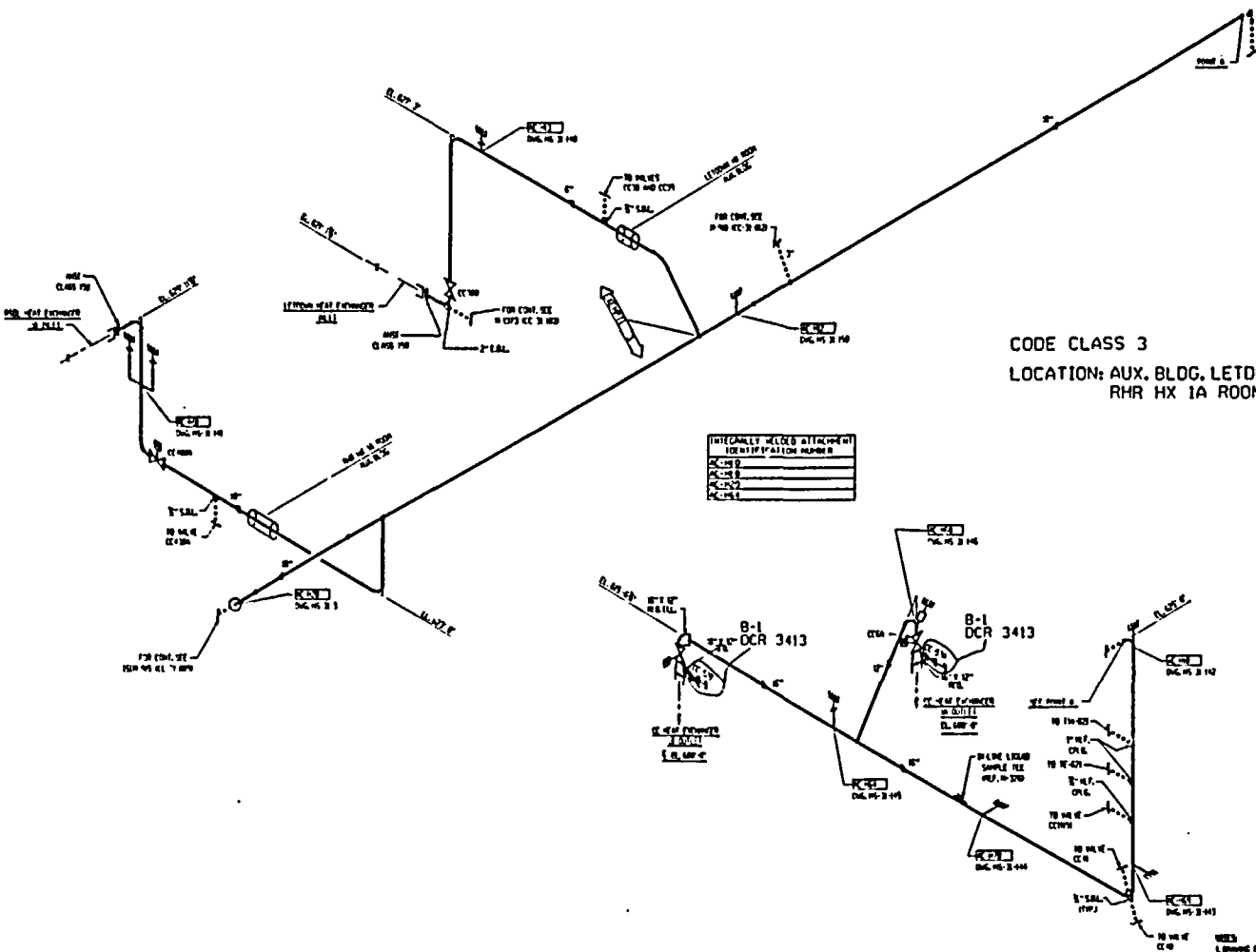
- NOTES**
1. DRAWING IS APPLICABLE FOR 30 AND 40 PSI SYSTEMS.
 2. CLASS 3 PIPING IS TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF TABLES 104-220-1 & 104-220-2.
 3. PARTIAL CLASS 3 PIPING EXCEEDING 40 PSI IS DEEMED TO BE CLASS 3 PIPING IN ACCORDANCE WITH TABLES 104-220-1 AND 104-220-2.

PROJECT NO. 15-4181 SHEET NO. 15-4181-1	
IS1 ISOMETRIC CC-FROM ANCHOR AND LETDOWN HX TO COND. CLS. PUMPS 1A/1B SECTION	
PREPARED BY WISCONSIN PUBLIC SERVICE COMP.	
DATE	BY

15-4181-1



1. THIS DRAWING IS TO BE USED FOR THE DESIGN AND CONSTRUCTION OF THE WIRE AND CABLE TRAYS, CONDUITS, AND CABLES FOR THE SYSTEMS DESCRIBED HEREIN. IT IS THE RESPONSIBILITY OF THE USER TO VERIFY THE ACCURACY OF THE DATA PROVIDED AND TO OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD AND FOR VERIFYING THE ACCURACY OF THE DATA PROVIDED. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION FROM THE FIELD AND FOR VERIFYING THE ACCURACY OF THE DATA PROVIDED.



CODE CLASS 3
 LOCATION: AUX. BLDG. LETDOWN HX ROOM,
 RHR HX 1A ROOM

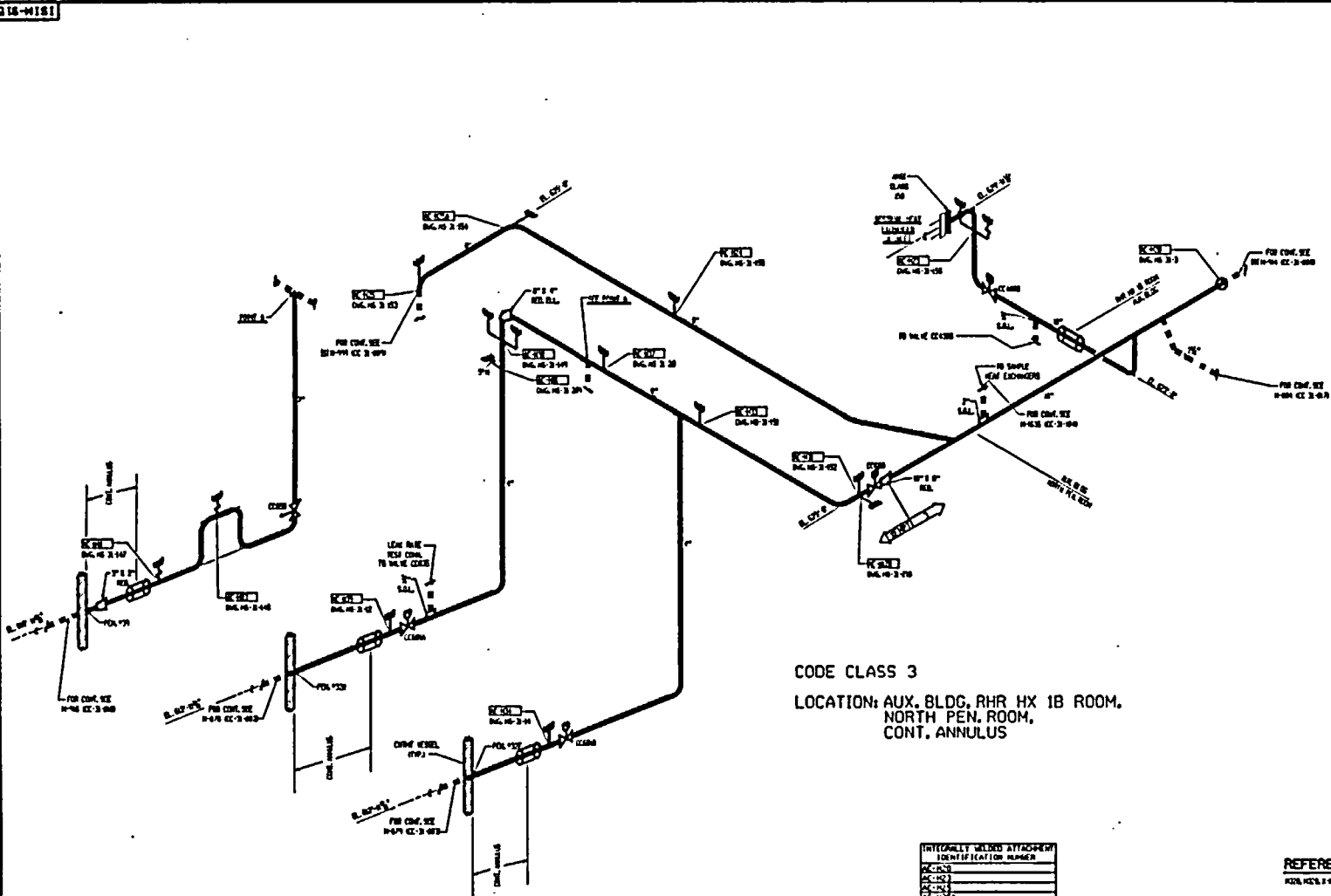
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER

REFERENCE DWGS.
 16-1181, 16-1182, 16-1183, 16-1184, 16-1185

- NOTES**
 1. DIMENSIONS ARE APPLICABLE FOR 300 AND 400 SIZE PIPEWORK.
 2. CLASS 3 PIPEWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF TABLES 700-710-1.1 AND 700-710-1.2.
 3. APPROVED BY CLASS 3 ENGINEER EXCEPT WHERE SHOWN OTHERWISE.
 FROM: 16-1 AND 16-2 REQUIREMENTS OF TABLES 700-710-1.1 AND 700-710-1.2 IN ACCORDANCE WITH 16-1181 AND 16-1182.

WISCONSIN PUBLIC SERVICE CORPORATION
 DIVISION OF ENGINEERING
 181 ISOMETRIC
 CC-FRM CC MX 1A/1B OUTLETS TO
 LETDOWN HX & RSLD. MX 1A
 DA DALETS
 DRAWING NO. 16-1181
 SHEET NO. 1
 DATE: 11/15/54
 BY: J. W. ...
 CHECKED: ...
 APPROVED: ...
 WISCONSIN PUBLIC SERVICE CORP.
 16-1181-914

518-1181



1. THIS PIPING IS TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 2. THE DESIGN OF THIS PIPING IS THE RESPONSIBILITY OF THE DESIGNER.
 3. THE INSTALLATION OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 4. THE MAINTENANCE OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 5. THE OPERATION OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.

CODE CLASS 3
 LOCATION: AUX. BLDG, RHR HX 1B ROOM,
 NORTH PEN. ROOM,
 CONT. ANNULUS

INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER

REFERENCE DWGS.
 SEE LIST OF REFERENCE DWGS.

518-1181

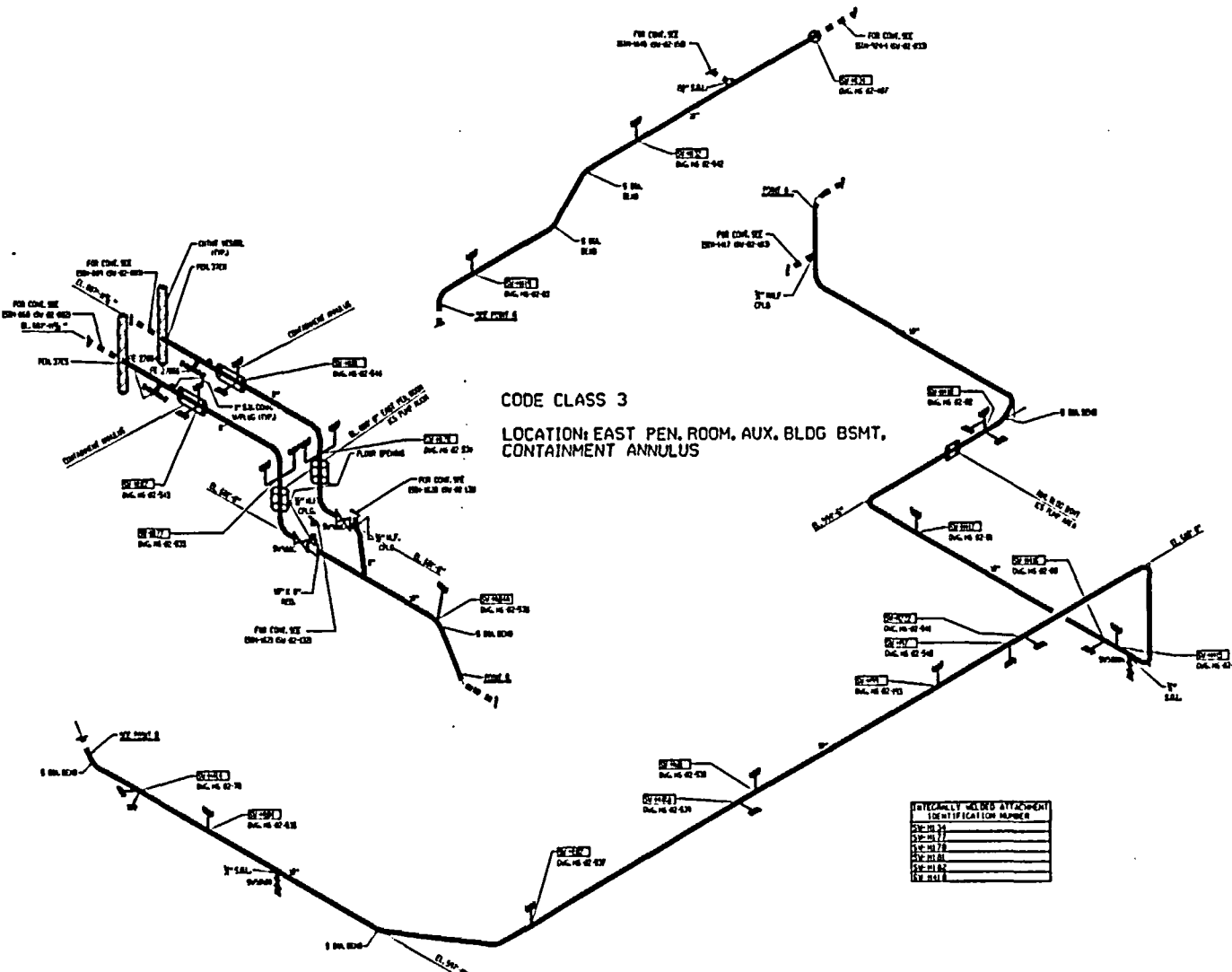
A-1
 KAP 01-001639

NOTES:
 1. DRAWING IS APPLICABLE FOR THE SYSTEM.
 2. CLASS 3 PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 3. THE DESIGN OF THIS PIPING IS THE RESPONSIBILITY OF THE DESIGNER.
 4. THE INSTALLATION OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 5. THE MAINTENANCE OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.
 6. THE OPERATION OF THIS PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CODES REFERENCED IN THIS DRAWING.

PROJECT: PUBLIC SERVICE CORPORATION DRAWING NO: 518-1181 SHEET NO: 01-001639	
ISOMETRIC CO-PHEN AMMONIA TO RHR HX 1B ROOM, NORTH PEN. ROOM & SA SWAP PIPING	
WISCONSIN PUBLIC SERVICE CORP. P.O. BOX 10000 MILWAUKEE, WISCONSIN 53210	
DATE: 10/15/81	DRAWN BY: [Signature]
CHECKED BY: [Signature]	SCALE: AS SHOWN



1) (P) 10-171 CHPT. 112 REV. 8-4
 2) (P) 10-171 CHPT. 112 REV. 8-4
 3) (P) 10-171 CHPT. 112 REV. 8-4
 4) (P) 10-171 CHPT. 112 REV. 8-4
 5) (P) 10-171 CHPT. 112 REV. 8-4
 6) (P) 10-171 CHPT. 112 REV. 8-4
 7) (P) 10-171 CHPT. 112 REV. 8-4
 8) (P) 10-171 CHPT. 112 REV. 8-4
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 12) (P) 10-171 CHPT. 112 REV. 8-4
 13) (P) 10-171 CHPT. 112 REV. 8-4
 14) (P) 10-171 CHPT. 112 REV. 8-4
 15) (P) 10-171 CHPT. 112 REV. 8-4
 16) (P) 10-171 CHPT. 112 REV. 8-4
 17) (P) 10-171 CHPT. 112 REV. 8-4
 18) (P) 10-171 CHPT. 112 REV. 8-4
 19) (P) 10-171 CHPT. 112 REV. 8-4
 20) (P) 10-171 CHPT. 112 REV. 8-4



CODE CLASS 3
 LOCATION: EAST PEN. ROOM, AUX. BLDG BSMT,
 CONTAINMENT ANNULUS

INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER

REFERENCE DWGS.
 181M-922, 181M-923, 181M-924, 181M-925, 181M-926, 181M-927 & 181M-928

181M-922

B-1
 KAP 01-001639

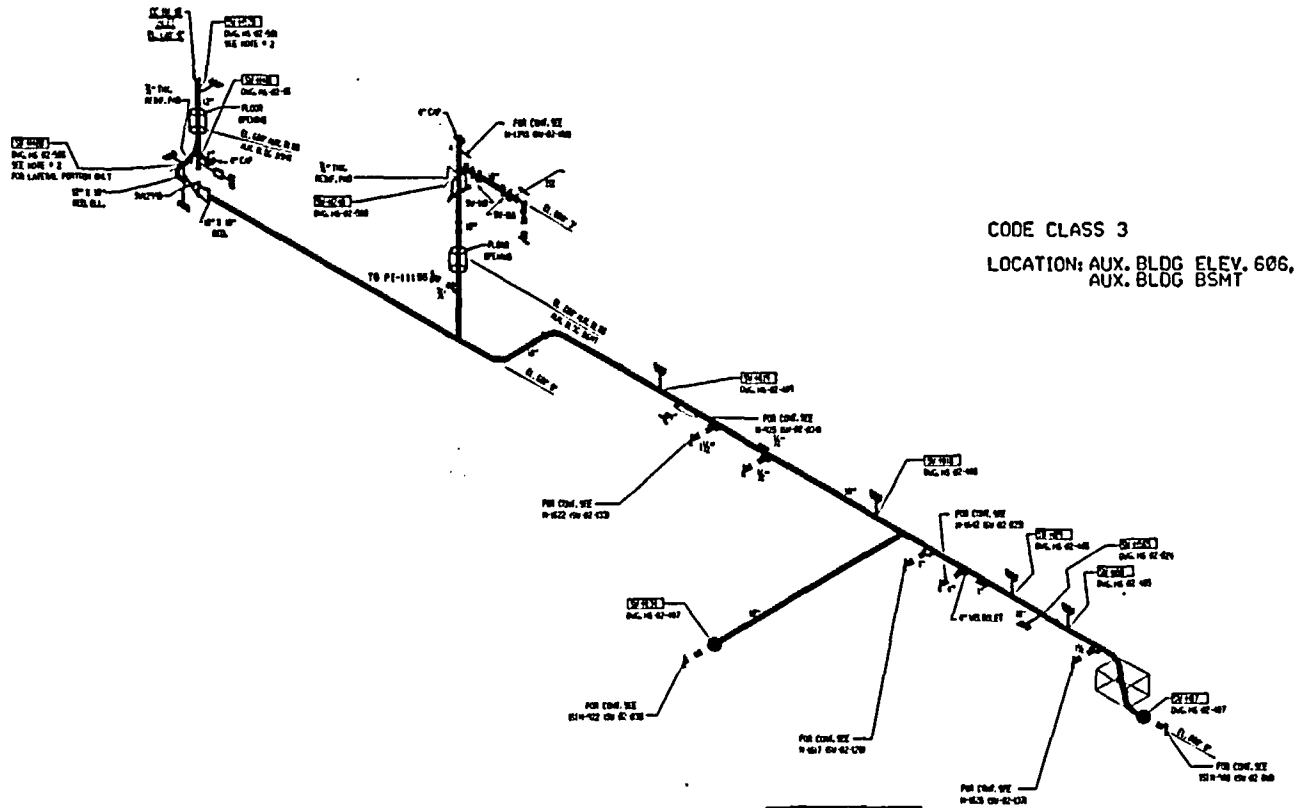
NOTES:
 1. DRAWING IS APPLICABLE FOR THE 181M-922 INSTALLATION.
 2. CLASH 3 PIPING OF THE 181M IS IDENTIFIED BY A '3' IN THE IDENTIFICATION NUMBER.
 3. FOR REMARKS OF THE 181M-922-101 & 181M-922-102

DESIGNED BY: P. G. TONES
 DRAWN BY: P. G. TONES
 CHECKED BY: P. G. TONES
 181 ISOMETRIC SERVICE WATER - FROM ANCHOR TO CITY PEN. SEVEN & SEVEN
 WISCONSIN PUBLIC SERVICE CORP.
 P. G. TONES
 181M-922

→28-1181



1. THIS PLAN IS FOR THE
 2. THE WORK IS TO BE
 3. THE WORK IS TO BE
 4. THE WORK IS TO BE
 5. THE WORK IS TO BE
 6. THE WORK IS TO BE
 7. THE WORK IS TO BE
 8. THE WORK IS TO BE
 9. THE WORK IS TO BE
 10. THE WORK IS TO BE



CODE CLASS 3
 LOCATION: AUX. BLDG ELEV. 606,
 AUX. BLDG BSMT

REFERENCE DWGS.
 1. 181H-92-1
 2. 181H-92-2
 3. 181H-92-3
 4. 181H-92-4
 5. 181H-92-5
 6. 181H-92-6
 7. 181H-92-7
 8. 181H-92-8
 9. 181H-92-9
 10. 181H-92-10

DATE	
BY	
CHECKED	
APPROVED	

A-1
 KAP 01-001639

NOTES:
 1. SEE DRAWING FOR DIMENSIONS
 2. SEE DRAWING FOR DIMENSIONS
 3. SEE DRAWING FOR DIMENSIONS
 4. SEE DRAWING FOR DIMENSIONS
 5. SEE DRAWING FOR DIMENSIONS
 6. SEE DRAWING FOR DIMENSIONS
 7. SEE DRAWING FOR DIMENSIONS
 8. SEE DRAWING FOR DIMENSIONS
 9. SEE DRAWING FOR DIMENSIONS
 10. SEE DRAWING FOR DIMENSIONS

181 ISOMETRIC	
BY ONLY TO BE KEPT OPEN FOR THE & EMERGENCY ONLY TO OPEN FOR THE	
WISCONSIN PUBLIC SERVICE CORP.	
DATE	
BY	
CHECKED	
APPROVED	
SCALE	
PROJECT	
DATE	
BY	
CHECKED	
APPROVED	

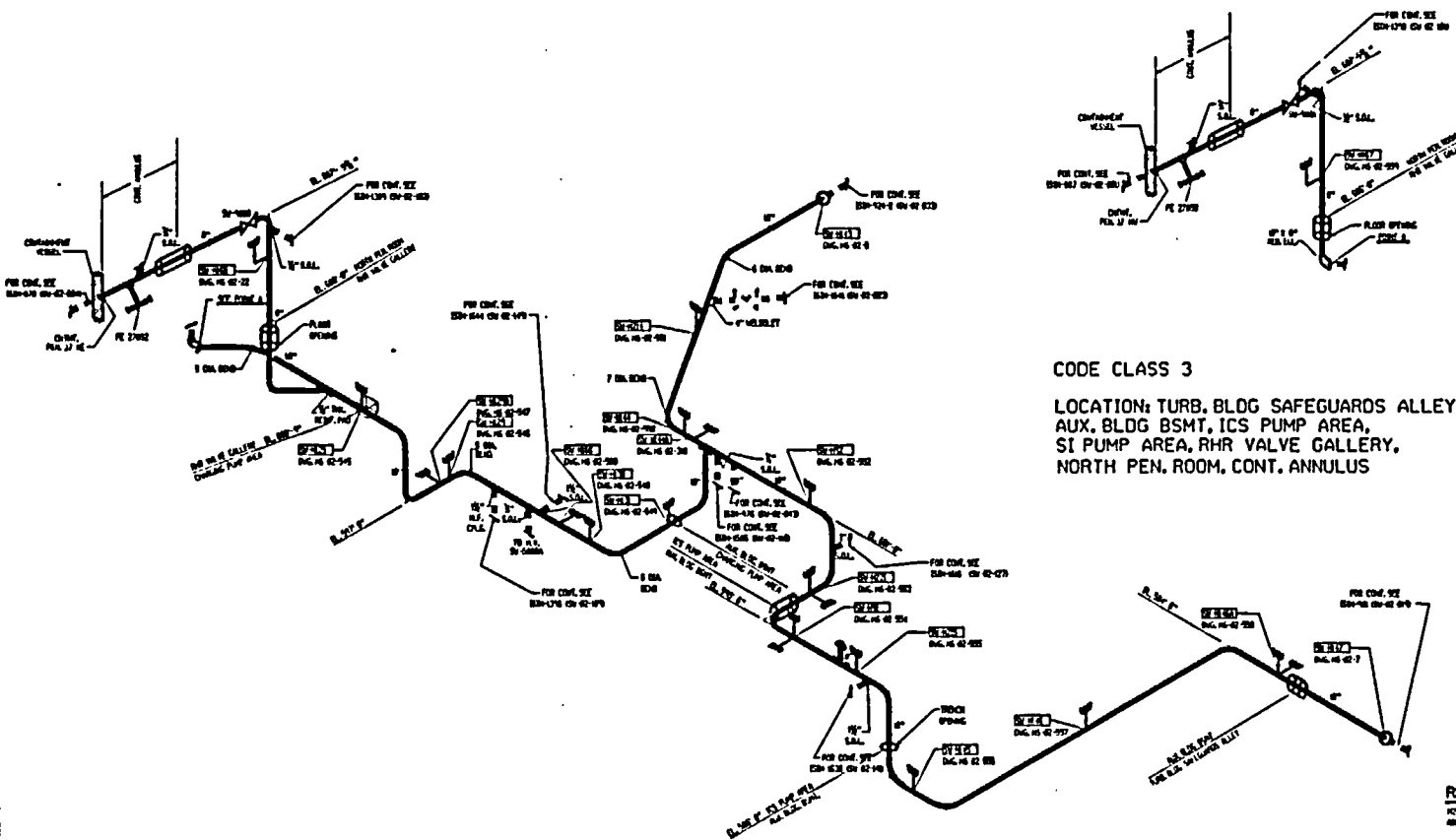
181H-92-1

181H-92-1

SCS-W181



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99	11/15/81
100	11/15/81



CODE CLASS 3
 LOCATION: TURB. BLDG SAFEGUARDS ALLEY,
 AUX. BLDG BSMT, ICS PUMP AREA,
 SI PUMP AREA, RHR VALVE GALLERY,
 NORTH PEN. ROOM, CONT. ANNULUS

REFERENCE DWGS.
 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

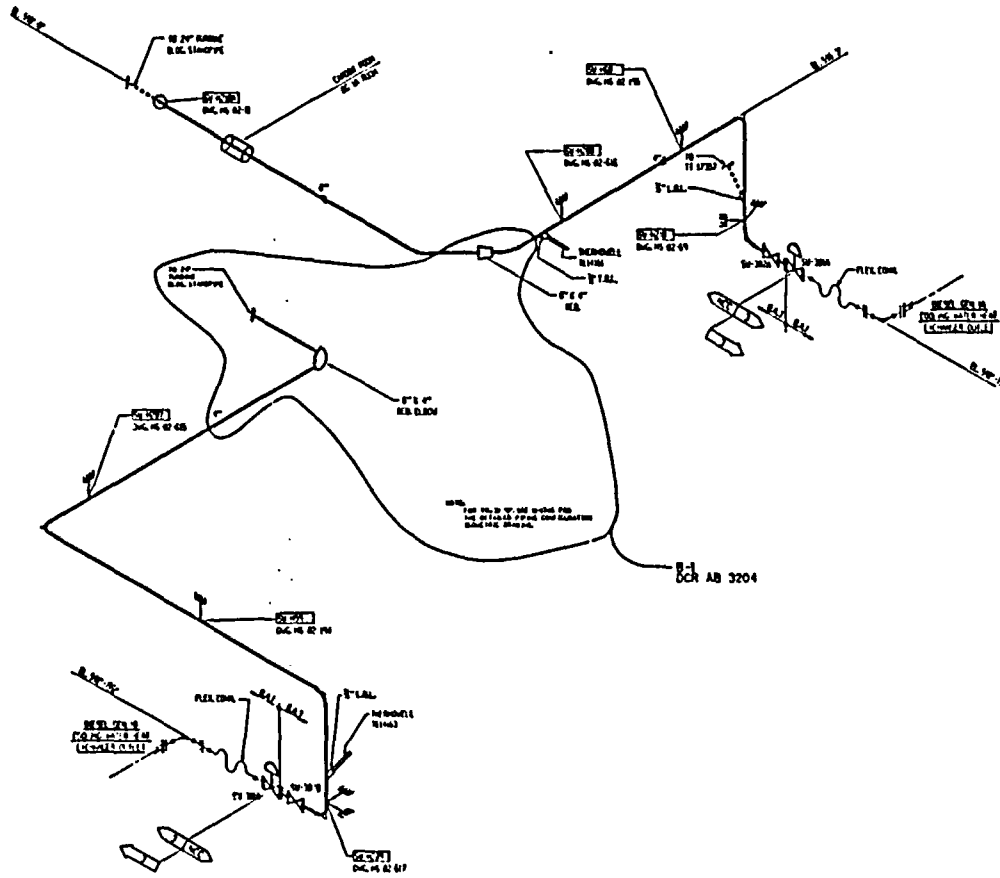
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
SY-M 43
SY-M 57
SY-M 54

B-1
 KAP 01-001639

NOTES
 1. CHECKED FOR APPLICABLE PER 305 AND 107 PER INTERNAL
 2. CLASS 3 FITTING AND LINES (S LEAKY FITTINGS) AND
 3. 3" NOMINALS OF VALVES PER 200-1 & 107-200-1

PROVIDED PUBLIC SERVICE CORPORATION
 WATER SERVICE DEPARTMENT
 181 ISOMETRIC
 SERVICE WATER
 ANCHORS TO EXISTING PIPING, 37963374M
 DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 DATE: 11/15/81
 DRAWN BY: J.A. TOWNS
 CHECKED BY: J.A. TOWNS
 SCALE: AS SHOWN
 SHEET NO. 181H-928
 OF 1

CODE CLASS 3
 LOCATION: TURB. BLDG. BSMT. EL. 586
 DG 1A & 1B ROOMS,
 CARBOX ROOM.



REVISIONS
 NO. DATE BY

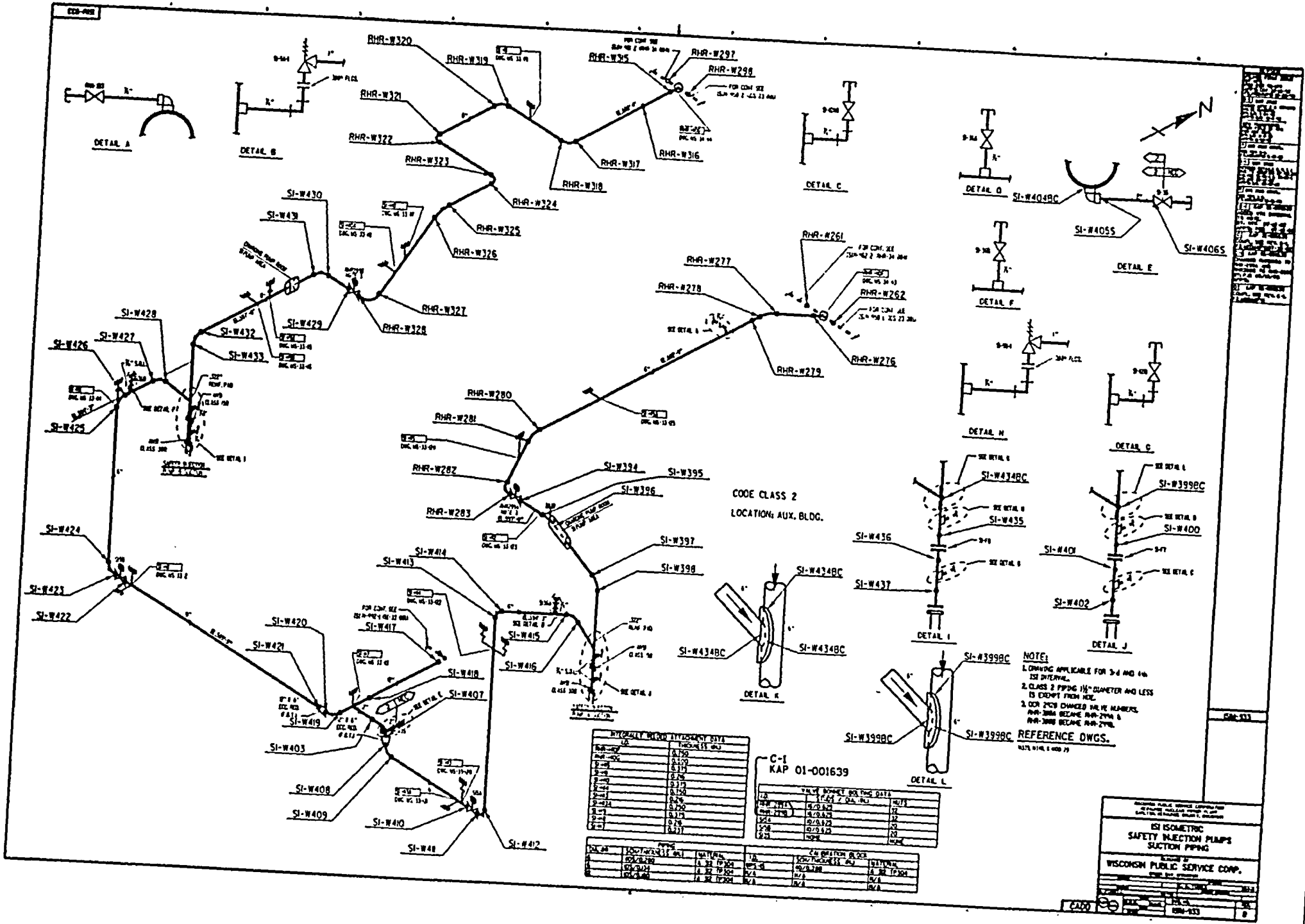
1	11/24/50	J.M.
2	11/24/50	J.M.
3	11/24/50	J.M.
4	11/24/50	J.M.
5	11/24/50	J.M.
6	11/24/50	J.M.
7	11/24/50	J.M.
8	11/24/50	J.M.
9	11/24/50	J.M.
10	11/24/50	J.M.
11	11/24/50	J.M.
12	11/24/50	J.M.
13	11/24/50	J.M.
14	11/24/50	J.M.
15	11/24/50	J.M.
16	11/24/50	J.M.
17	11/24/50	J.M.
18	11/24/50	J.M.
19	11/24/50	J.M.
20	11/24/50	J.M.
21	11/24/50	J.M.
22	11/24/50	J.M.
23	11/24/50	J.M.
24	11/24/50	J.M.
25	11/24/50	J.M.
26	11/24/50	J.M.
27	11/24/50	J.M.
28	11/24/50	J.M.
29	11/24/50	J.M.
30	11/24/50	J.M.

IS1H-932

REFERENCE DWGS.
 NWA 1054 1057

NOTES
 1. CLASS 3 PIPING PER 11.3 IS EXCEPT FROM 11.3 AND
 11.3 HEADINGS OF TABLES 11.3.1 AND 11.3.2.
 2. DRAWING IS APPLICABLE FOR 300 AND 400 PSI DESIGN.

DESIGNED BY		CHECKED BY	
IS1 ISOTHERM		IS1 ISOTHERM	
SU-FROM FLEX COILS ON DIESEL			
DG 1A & 1B EN HXS TO ANCHOR			
WISCONSIN PUBLIC SERVICE CORP.			
DATE		SCALE	
11/24/50		AS SHOWN	
BY		JOB NO.	
J.M.		11/24/50	
APP'D		SHEET NO.	
C.L. TONG		151H-932	
DRAWN		TOTAL SHEETS	
CADD		3	



CODE CLASS 2
LOCATION: AUX. BLDG.

NOTE:
1. CHANGING APPLICABLE FOR 3/4 AND 1/2
ISI INTERVAL.
2. CLASS 2 PIPING 1/2" DIAMETER AND LESS
IS EXCEPT FROM HERE.
3. DON FOR CHANGED VALVE NUMBERS
RHR-308A BECAME RHR-279A &
RHR-308B BECAME RHR-279B.
REFERENCE DWGS.
10/21/10, 1/10/11

WELDED BUTT JOINT DATA

WELD ID	THICKNESS (IN)
W-1	0.750
W-2	0.750
W-3	0.750
W-4	0.750
W-5	0.750
W-6	0.750
W-7	0.750
W-8	0.750
W-9	0.750
W-10	0.750
W-11	0.750
W-12	0.750
W-13	0.750
W-14	0.750
W-15	0.750
W-16	0.750
W-17	0.750
W-18	0.750
W-19	0.750
W-20	0.750
W-21	0.750
W-22	0.750
W-23	0.750
W-24	0.750
W-25	0.750
W-26	0.750
W-27	0.750
W-28	0.750
W-29	0.750
W-30	0.750
W-31	0.750
W-32	0.750
W-33	0.750
W-34	0.750
W-35	0.750
W-36	0.750
W-37	0.750
W-38	0.750
W-39	0.750
W-40	0.750
W-41	0.750
W-42	0.750
W-43	0.750
W-44	0.750
W-45	0.750
W-46	0.750
W-47	0.750
W-48	0.750
W-49	0.750
W-50	0.750

C-1
KAP 01-001639

VALVE NUMBER FOR PIPING DATA

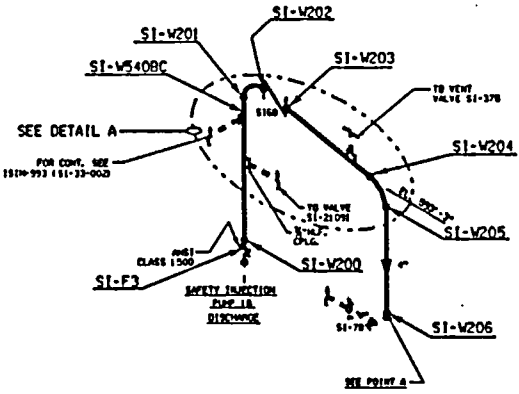
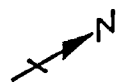
VALVE	DATE	BY
101	10/21/10	...
102	10/21/10	...
103	10/21/10	...
104	10/21/10	...
105	10/21/10	...
106	10/21/10	...
107	10/21/10	...
108	10/21/10	...
109	10/21/10	...
110	10/21/10	...
111	10/21/10	...
112	10/21/10	...
113	10/21/10	...
114	10/21/10	...
115	10/21/10	...
116	10/21/10	...
117	10/21/10	...
118	10/21/10	...
119	10/21/10	...
120	10/21/10	...

ISI ISOMETRIC
SAFETY INJECTION PUMPS
SUCTION PIPING

WISCONSIN PUBLIC SERVICE COMP.

DATE: 10/21/10
BY: ...
CHECKED: ...
APPROVED: ...

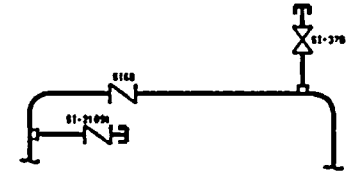
1. SEE FIELD FOR
 2. SEE FIELD FOR
 3. SEE FIELD FOR
 4. SEE FIELD FOR
 5. SEE FIELD FOR
 6. SEE FIELD FOR
 7. SEE FIELD FOR
 8. SEE FIELD FOR
 9. SEE FIELD FOR
 10. SEE FIELD FOR



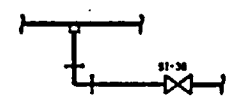
VALVE MODEL DATA		
I.D.	STROKE / DIA. (IN.)	UNIT
SI-28	1 1/2 / 8	12
SI-78	1 1/2 / 8	12
SI-16	1 1/2 / 8	12
SI-26	1 1/2 / 8	12
SI-36	1 1/2 / 8	12
SI-74	1 1/2 / 8	12
SI-24	1 1/2 / 8	12

HYDRAULIC VALVE ATTACHMENT DATA		
I.D.	TO (CONNECTION)	
SI-28	1 1/2 / 8	
SI-78	1 1/2 / 8	
SI-16	1 1/2 / 8	
SI-26	1 1/2 / 8	

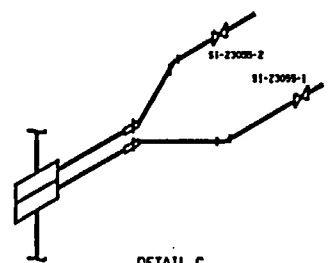
PIPE		CALCULATION VALUE	
DIA. (IN.)	SCHEDULE (WALL THICKNESS)	I.D.	BOU. (CONNECTION)
1.315	10	1.315	1.315
1.315	10	1.315	1.315
1.315	10	1.315	1.315



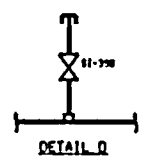
DETAIL A



DETAIL B

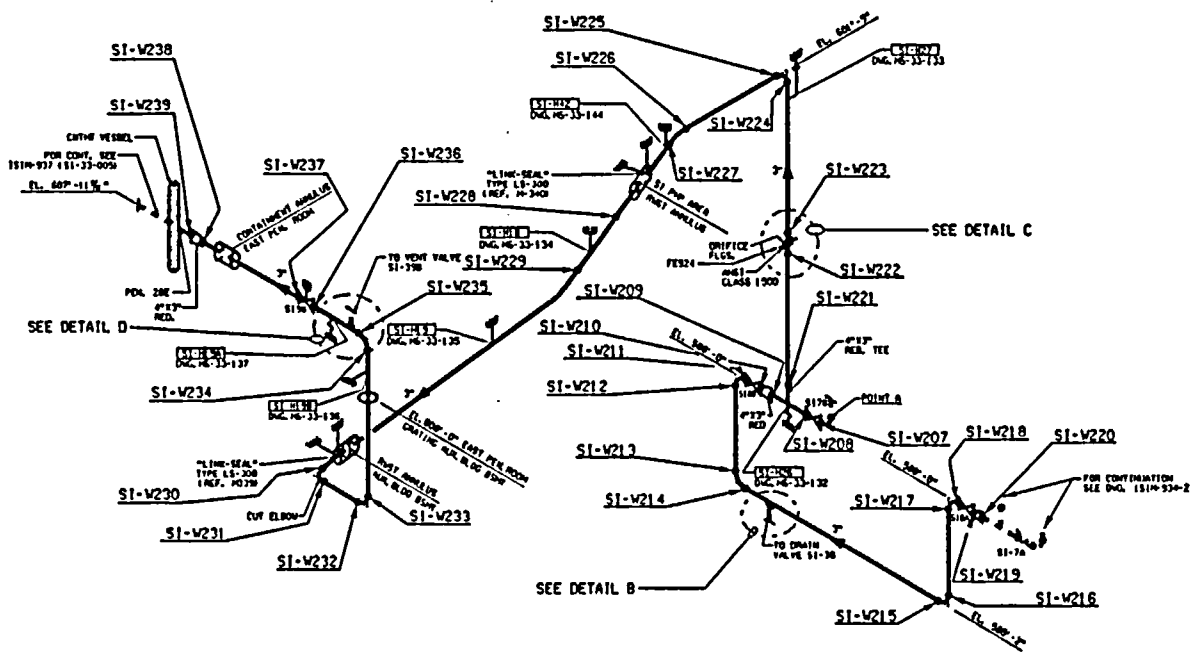


DETAIL C



DETAIL D

CODE CLASS 2
 LOCATION: AUX. BLDG, SI PUMP AREA, RWST ANNULUS, EAST PENETRATION ROOM, CONT. ANNULUS



REFERENCE DWGS.

1310-934-1, 1310-934-2, 1310-934-3, 1310-934-4

NOTES:

1. DRAWING APPLICABLE FOR 300 AND 700 TYP. 151 INTERVAL.

DESIGNED BY: JAMES H. ...
 DRAWN BY: ...
 CHECKED BY: ...
 APPROVED BY: ...
ISI ISOMETRIC SAFETY INJECTION PUMPS DISCH. PIPING TO PEN 28E & RWST
 WISCONSIN PUBLIC SERVICE CO.
 KAP 01-001639
 1310-934-1 A

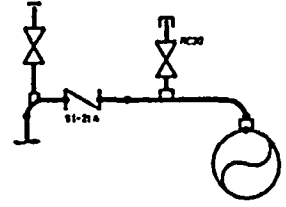
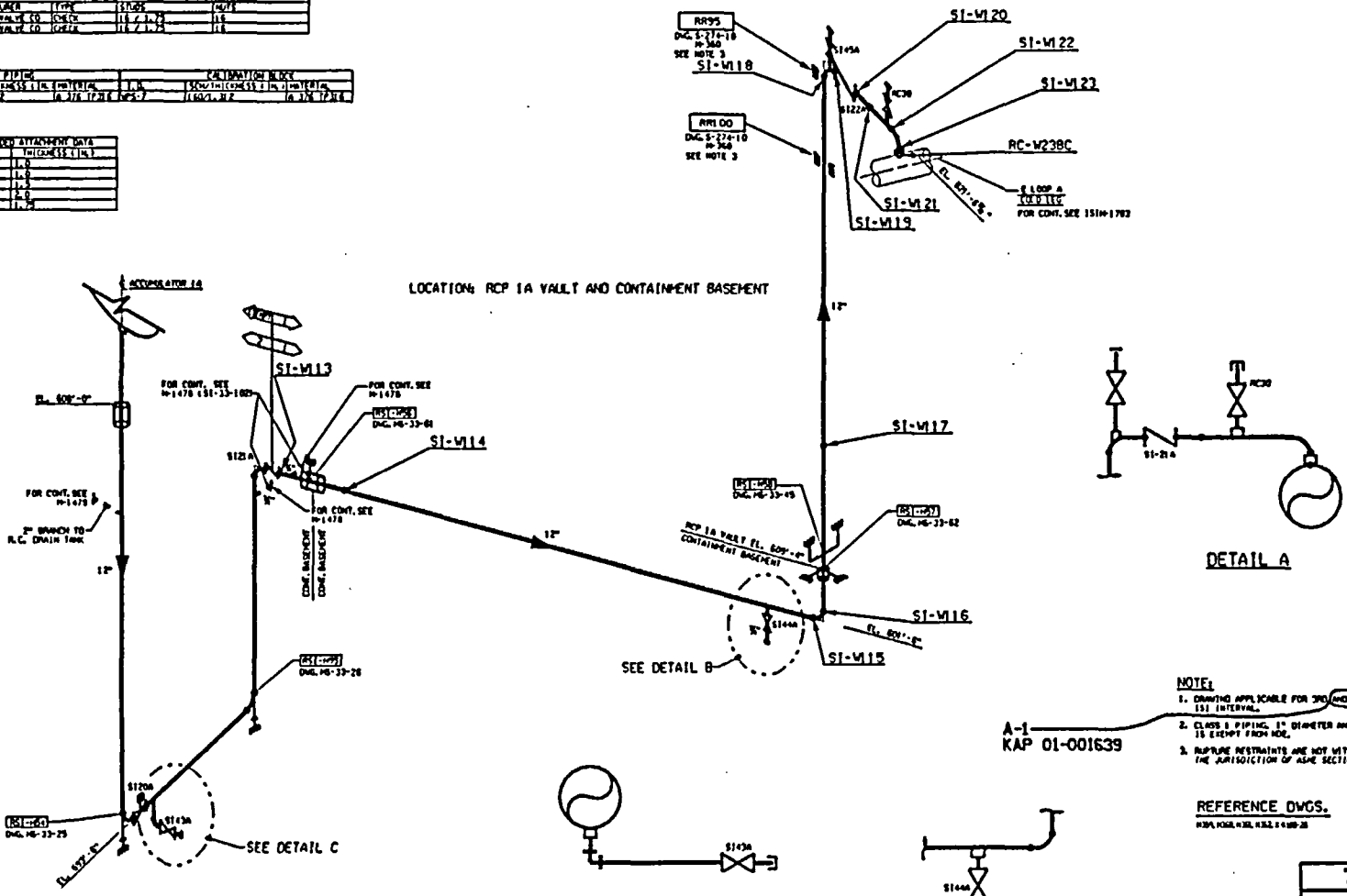


VALVE DATA			
VALVE ID	DESCRIPTION	TYPE	NOTE
SI20A	DRYING VALVE TO COOL	IS1	11/13/75
SI21A	DRYING VALVE TO WARM	IS1	11/13/75

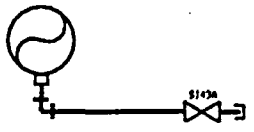
PIPING		CALCULATION BLOCK	
DIAMETER	SCHEMATIC SYMBOL	P.N.	SCHEMATIC SYMBOL
12"	12"	11602-317	12"

INTEGRIALLY SELECTED ATTACHMENT DATA	
IS1	IS1 (SEE 116)
IS1-20	IS1-20
IS1-21	IS1-21
IS1-22	IS1-22
IS1-23	IS1-23
IS1-24	IS1-24

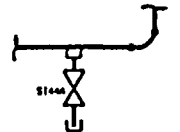
NOT TO SCALE
SEE NOTE 3
SEE NOTE 4
SEE NOTE 5
SEE NOTE 6
SEE NOTE 7
SEE NOTE 8
SEE NOTE 9
SEE NOTE 10
SEE NOTE 11
SEE NOTE 12
SEE NOTE 13
SEE NOTE 14
SEE NOTE 15
SEE NOTE 16
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SEE NOTE 96
SEE NOTE 97
SEE NOTE 98
SEE NOTE 99
SEE NOTE 100



DETAIL A



DETAIL B



DETAIL C

- NOTE:**
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
 2. CLASS B PIPING, 1" DIAMETER AND LESS IS EXEMPT FROM NDE.
 3. PIPELINE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION II.

A-1
KAP 01-001639

REFERENCE DWGS.
KAP 001-32, KAP 01-001-28

DESIGNED BY: WISCONSIN PUBLIC SERVICE CORP.
DRAWN BY: WISCONSIN PUBLIC SERVICE CORP.
CHECKED BY: WISCONSIN PUBLIC SERVICE CORP.
APPROVED BY: WISCONSIN PUBLIC SERVICE CORP.
PROJECT: SI ISOMETRIC
SI-FROM ACCUMULATOR 1A TO LOOP A COLD LEG
DATE: 11/13/75
SCALE: AS SHOWN
SHEET NO.: 150-130

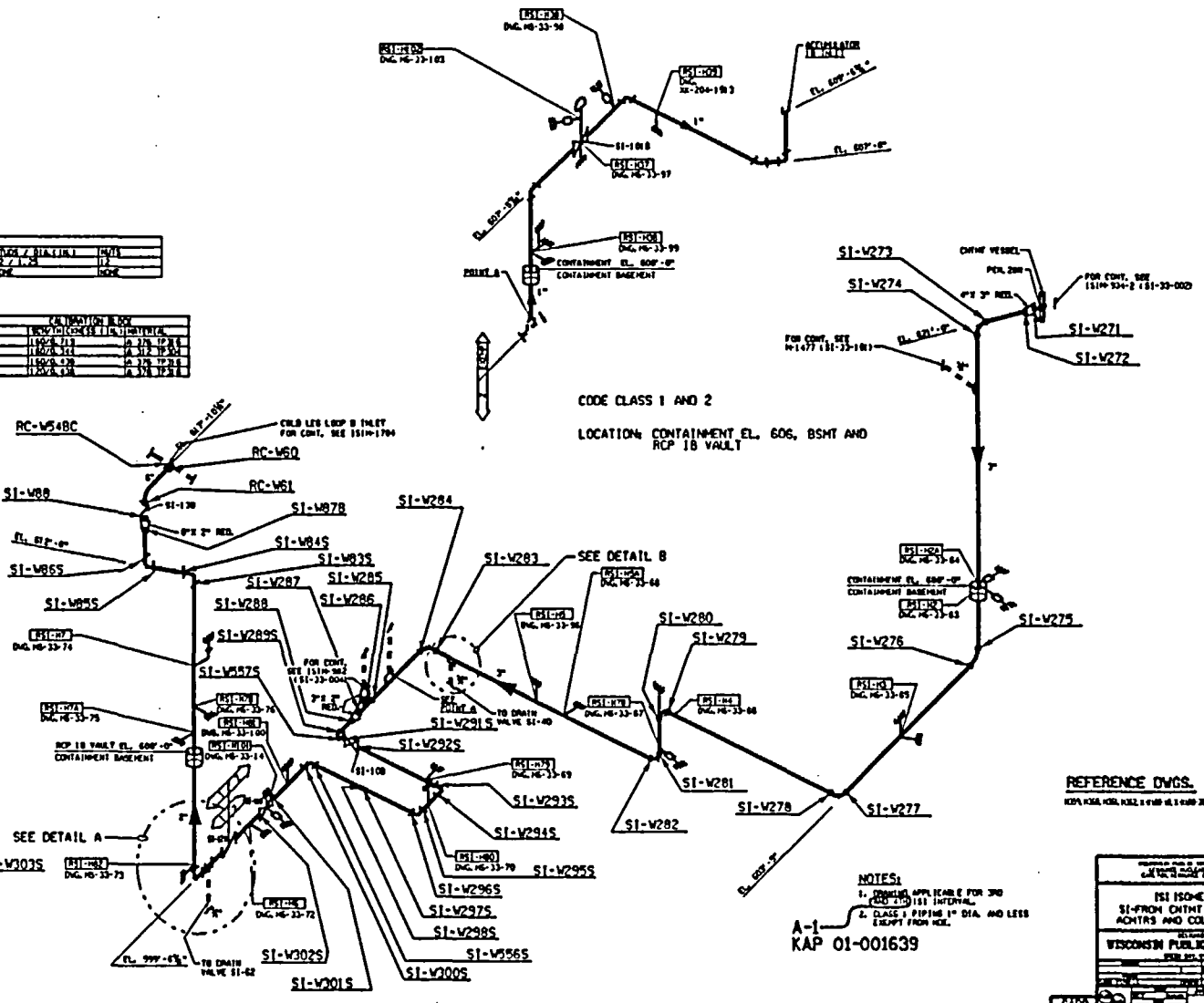
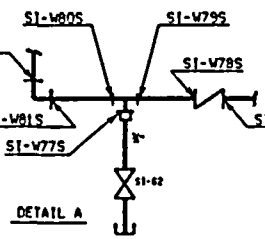
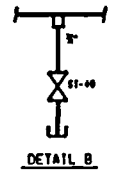


VALVE CHECKING DATA			
NO.	DATE	BY	REMARKS
SI-101	NOV	NOV	
SI-102	NOV	NOV	

VALVE DATA				
NO.	MANUFACTURER	TYPE	SIZE / DIA. (IN)	DATE
SI-101	VALVE MANUFACTURER	CHECK	12 / 1.5	12
SI-102	VALVE MANUFACTURER	CHECK	NOV	NOV

PIPE		CALCULATION	
DIAMETER	WALL THICKNESS	ALLOWED STRESS	ALLOWED PRESSURE
8	1/8	15000	1500
10	3/16	15000	2250
12	1/4	15000	3000
14	5/16	15000	3750
16	3/8	15000	4500
18	1/2	15000	6000

VALVE CHECKING DATA	
NO.	DATE
SI-101	NOV
SI-102	NOV



1511-936

1511-936

1511-936

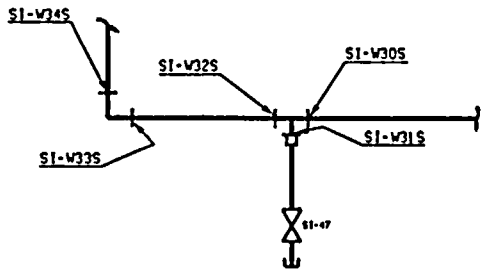
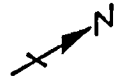
NOTES:
1. STANDARD APPLICABLE FOR 300 AND 480 IN. DIA. INTERNAL.
2. CLASS 1 PIPING 1/2" DIA. AND LESS EXEMPT FROM HCL.

A-1
KAP 01-001639

1511-936

1-200-W451

REVISIONS
 NO. DATE BY
 1 01-00-87
 2 01-00-87
 3 01-00-87
 4 01-00-87
 5 01-00-87
 6 01-00-87
 7 01-00-87
 8 01-00-87
 9 01-00-87
 10 01-00-87

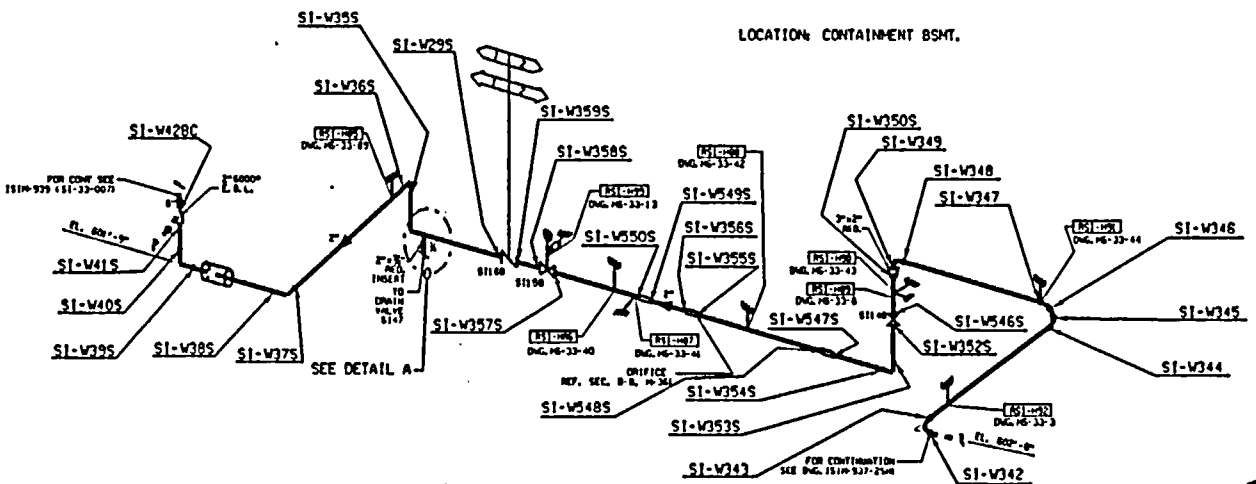


DETAIL A

PIPING		CALCULATION REF.	
DATE	DESCRIPTION	DATE	DESCRIPTION
11/20/84	A 376 17304	11/20/84	A 376 17304
11/20/84	A 376 17304	11/20/84	A 376 17304

VALVE SYMBOL DATA	
SYMBOL	DESCRIPTION
SI-47	ISOM
SI-138	ISOM
SI-139	ISOM
SI-140	ISOM

LOCATION: CONTAINMENT BSMT.



REFERENCE DWGS.
 151P-937-1

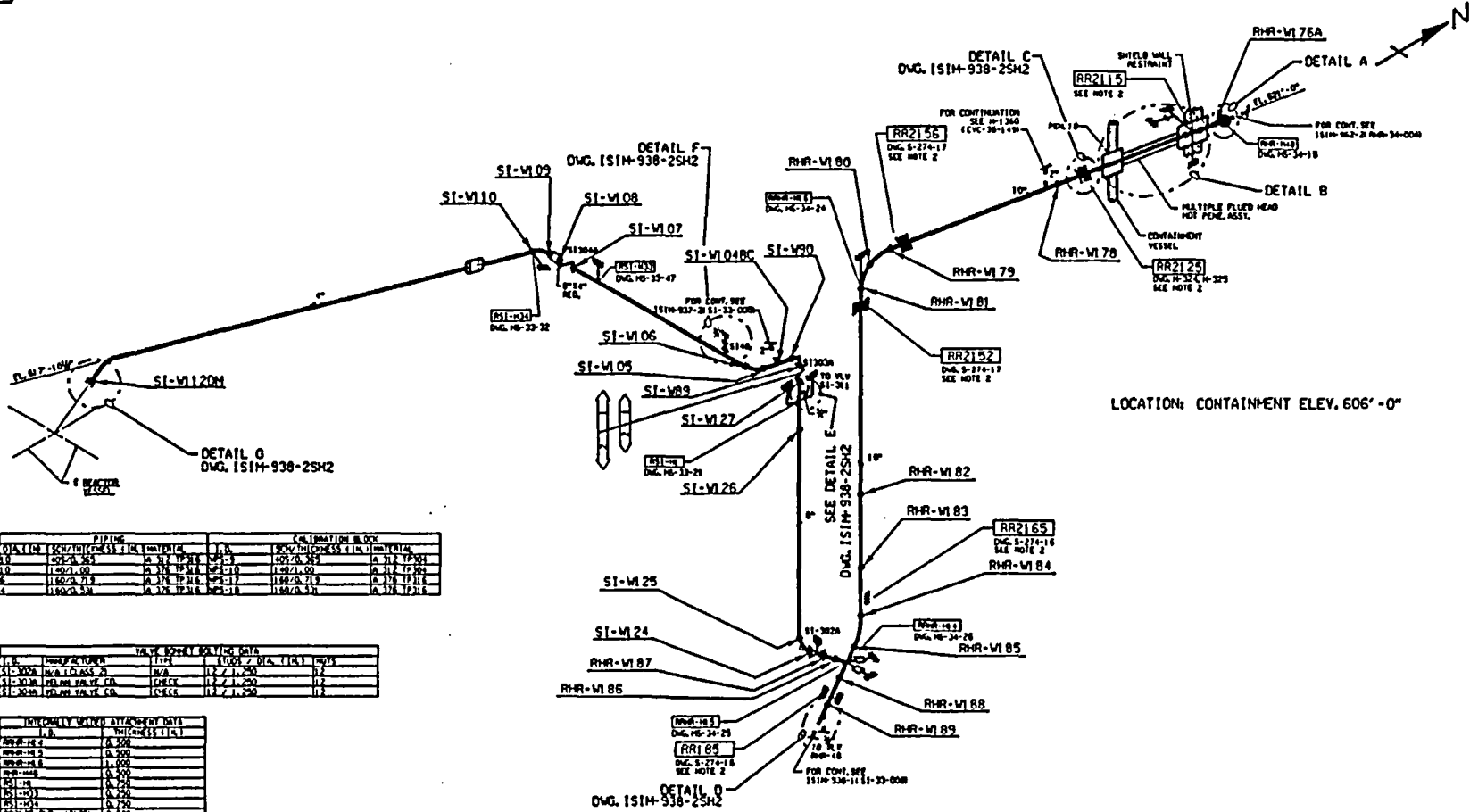
NOTES:
 1. DRAWING APPLICABLE FOR 3" & 4" (2) 151 INTERVAL.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS AND CLASS 2 PIPING 1/2" DIAMETER AND LESS IS EMPTY FROM HERE.

A-1
 DCR 01-001639

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 DATE: 01-00-87
 SCALE: AS SHOWN
 PROJECT: 151P-937-1

WISCONSIN PUBLIC SERVICE COMPANY
 151P-937-1

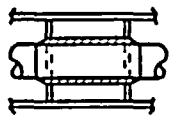
THIS DRAWING IS THE PROPERTY OF WISCONSIN PUBLIC SERVICE COMPANY. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREON. IT IS NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF WISCONSIN PUBLIC SERVICE COMPANY.



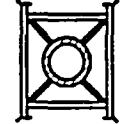
PIPING		CONTINUATION BLOCK	
DIAMETER	SCHEDULE	THICKNESS	DIAMETER
10"	40	0.515	10.315
8"	40	0.437	8.437
6"	40	0.359	6.359
4"	40	0.281	4.281
3"	40	0.203	3.203
2"	40	0.125	2.125

VALVE BODY DATA	
TYPE	CLASS
SI-M100	CLASS 2
SI-M108	CLASS 2
SI-M106	CLASS 2
SI-M105	CLASS 2

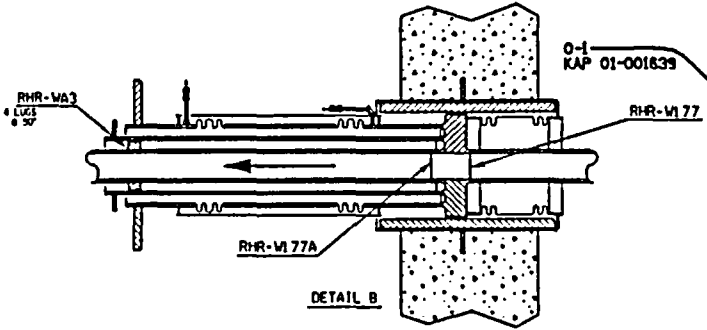
THICKNESS DATA	
DIAMETER	THICKNESS
10"	0.515
8"	0.437
6"	0.359
4"	0.281
3"	0.203
2"	0.125



DETAIL A



DETAIL B



REFERENCE DWGS.

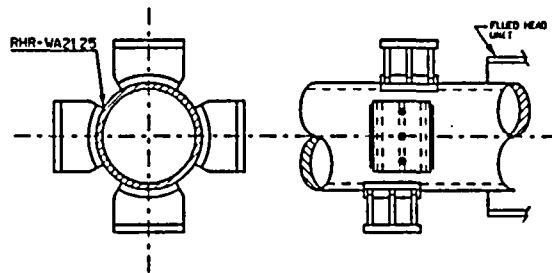
MSZ-938-25H2, MSZ-938-25H1, MSZ-938-25H3, MSZ-938-25H4, MSZ-938-25H5, MSZ-938-25H6, MSZ-938-25H7, MSZ-938-25H8, MSZ-938-25H9, MSZ-938-25H10, MSZ-938-25H11, MSZ-938-25H12, MSZ-938-25H13, MSZ-938-25H14, MSZ-938-25H15, MSZ-938-25H16, MSZ-938-25H17, MSZ-938-25H18, MSZ-938-25H19, MSZ-938-25H20, MSZ-938-25H21, MSZ-938-25H22, MSZ-938-25H23, MSZ-938-25H24, MSZ-938-25H25, MSZ-938-25H26, MSZ-938-25H27, MSZ-938-25H28, MSZ-938-25H29, MSZ-938-25H30, MSZ-938-25H31, MSZ-938-25H32, MSZ-938-25H33, MSZ-938-25H34, MSZ-938-25H35, MSZ-938-25H36, MSZ-938-25H37, MSZ-938-25H38, MSZ-938-25H39, MSZ-938-25H40, MSZ-938-25H41, MSZ-938-25H42, MSZ-938-25H43, MSZ-938-25H44, MSZ-938-25H45, MSZ-938-25H46, MSZ-938-25H47, MSZ-938-25H48, MSZ-938-25H49, MSZ-938-25H50, MSZ-938-25H51, MSZ-938-25H52, MSZ-938-25H53, MSZ-938-25H54, MSZ-938-25H55, MSZ-938-25H56, MSZ-938-25H57, MSZ-938-25H58, MSZ-938-25H59, MSZ-938-25H60, MSZ-938-25H61, MSZ-938-25H62, MSZ-938-25H63, MSZ-938-25H64, MSZ-938-25H65, MSZ-938-25H66, MSZ-938-25H67, MSZ-938-25H68, MSZ-938-25H69, MSZ-938-25H70, MSZ-938-25H71, MSZ-938-25H72, MSZ-938-25H73, MSZ-938-25H74, MSZ-938-25H75, MSZ-938-25H76, MSZ-938-25H77, MSZ-938-25H78, MSZ-938-25H79, MSZ-938-25H80, MSZ-938-25H81, MSZ-938-25H82, MSZ-938-25H83, MSZ-938-25H84, MSZ-938-25H85, MSZ-938-25H86, MSZ-938-25H87, MSZ-938-25H88, MSZ-938-25H89, MSZ-938-25H90, MSZ-938-25H91, MSZ-938-25H92, MSZ-938-25H93, MSZ-938-25H94, MSZ-938-25H95, MSZ-938-25H96, MSZ-938-25H97, MSZ-938-25H98, MSZ-938-25H99, MSZ-938-25H100.

NOTES:

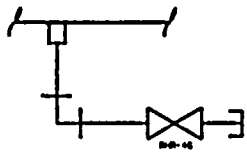
1. CRANING APPLICABLE FOR 300 LBS. TO 1500 LBS. INTERVAL.
2. PIPELINE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION VI.
3. CLASS 2 PIPING OF DIAMETER AND LESS IS EXCEPT FROM MSZ.

(SHT 1 OF 2)

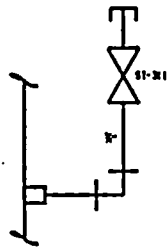
WISCONSIN PUBLIC SERVICE COMPANY
 ENGINEERING DEPARTMENT
 1000 WISCONSIN STREET, MILWAUKEE, WISCONSIN 53233
 PROJECT: MSZ-938-25H2
 DRAWING: SI-FROM CHNTMT PLEAD TO REACTOR FROM ACMTB TO LOOP B COLD LEG
 DESIGNED BY: [Name]
 CHECKED BY: [Name]
 DATE: [Date]
 SCALE: [Scale]
 SHEET NO.: [Number]
 TOTAL SHEETS: [Total]



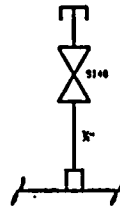
DETAIL C



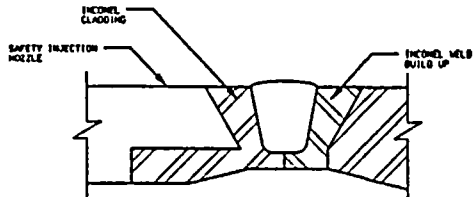
DETAIL D



DETAIL E



DETAIL F



DETAIL G

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NOTES:

0-1 KAP 01-001639

- 1. DRAWING APPLICABLE FOR 3RD CLASS 37" I.D. INTERNAL.
- 2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

(SHT 2 OF 2)

REVISIONS

NO.	DATE	DESCRIPTION

DESIGNED BY: []
 CHECKED BY: []
 DRAWN BY: []
 DATE: []

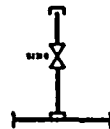
PROJECT: []
 SHEET: [] OF []

WISCONSIN PUBLIC SERVICE CORP.
 1541-938-254C A

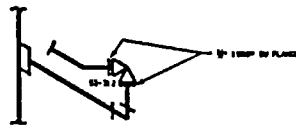
000000-0101



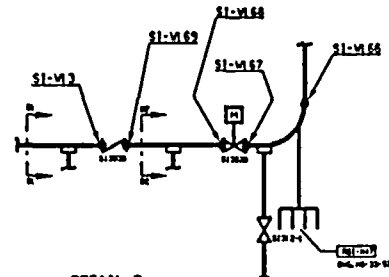
DETAIL A



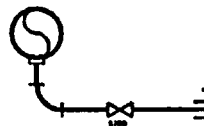
DETAIL B



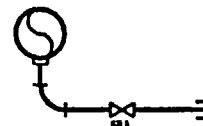
DETAIL C



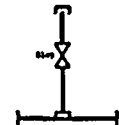
DETAIL D



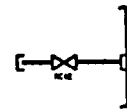
SECT. 01-01



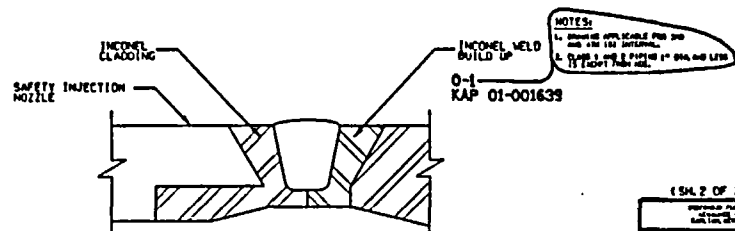
SECT. 02-02



DETAIL E



DETAIL F



DETAIL G

NOTES:
1. NUMBER OF AVAILABLE PIPES FOR 300 AND 400 IS 154 INTERNAL.
2. PIPES 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

O-1
KAP 01-001639

(SHEET 2 OF 2)

WISCONSIN PUBLIC SERVICE CORPORATION SAFETY INJECTION FROM DRIVE PER 40 TO REACTOR	
DRAWING NO. 01-001639	
DESIGNED BY J. A. DUNN	CHECKED BY J. A. DUNN
DATE 11/15/58	SCALE 1/2" = 1"
DRAWN BY J. A. DUNN	APPROVED BY J. A. DUNN
PROJECT NO. 11111-11111	SHEET NO. 2

CADD

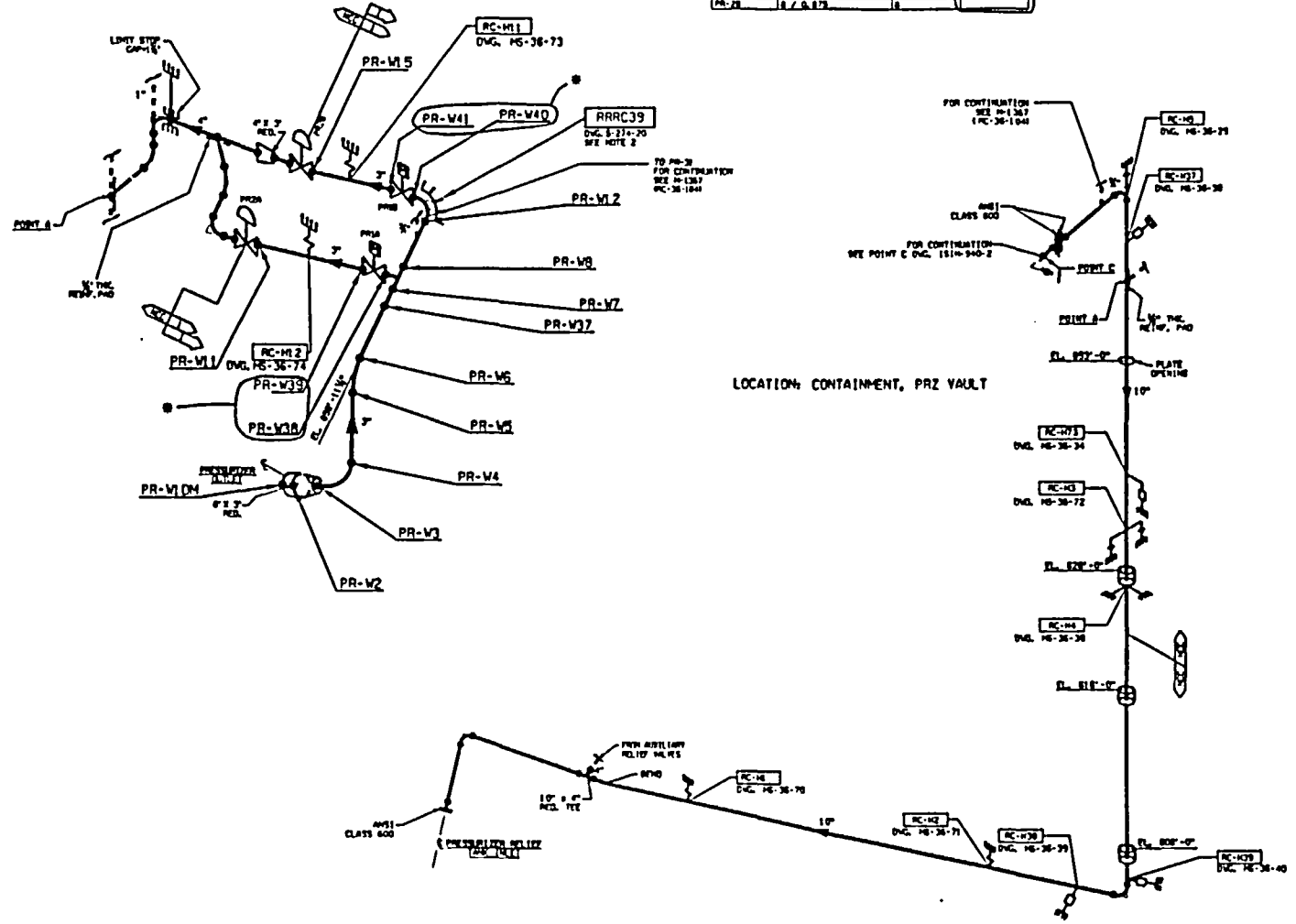
11111-11111

0-000-0011

ITEM	QUANTITY	UNIT	DESCRIPTION	DATE	BY	REVISION
1	1	EA	CLASS 1 PIPING	11/28/83	JL	1
2	1	EA	CLASS 2 PIPING	11/28/83	JL	1
3	1	EA	CLASS 3 PIPING	11/28/83	JL	1

ITEM	QUANTITY	UNIT	DESCRIPTION	DATE	BY	REVISION
1	1	EA	CLASS 1 PIPING	11/28/83	JL	1
2	1	EA	CLASS 2 PIPING	11/28/83	JL	1
3	1	EA	CLASS 3 PIPING	11/28/83	JL	1

A-1 W
KAP 01-001639



LOCATION: CONTAINMENT, PRZ VAULT

REFERENCE DWGS.

181M-940-1, 181M-940-2, 181M-940-3

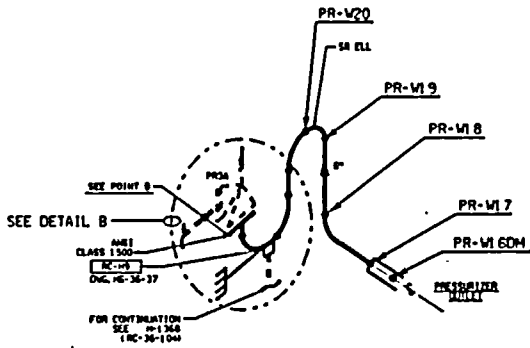
NOTES:

1. DRAWING APPLICABLE FOR 3" AND 4" IS 1/2 INTERNAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION.
3. CLASS 1 PIPING 1" DIA. & LESS IS EXCEPT FROM ROR.

ISSI ISOMETRIC
REACTOR COOLANT - FROM PRESSURIZER
TO PRESSURIZER RELIEF TANK

WISCONSIN PUBLIC SERVICE CORP.
181M-940-1

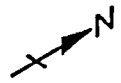
C-096-9451



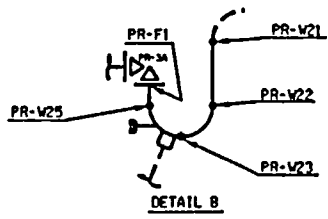
PIPES		VALVE POSITION & SIZE	
DIAG. NO.	151M-940-2	CLASS	1500
11628.73	11628.73	SIZE	1/2"

TEMPERALLY SCHEDULE ATTACHMENT DATA	
RC-19	151M-940-2
RC-19	151M-940-2

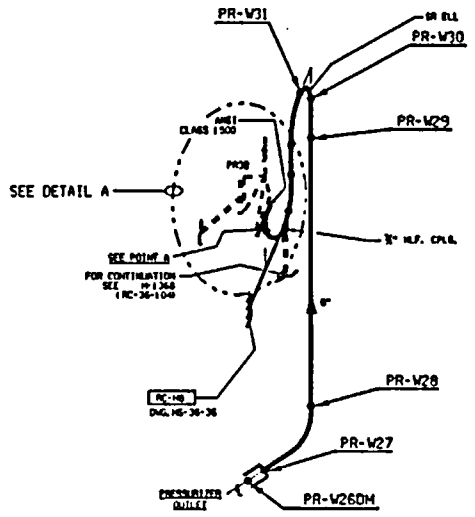
VALVE DATA			
DIAG. NO.	11628.73	VALVE NO.	151M-940-2
RC-19	151M-940-2	RC-19	151M-940-2
RC-19	151M-940-2	RC-19	151M-940-2
DIAG. NO.	11628.73	VALVE NO.	151M-940-2
RC-19	151M-940-2	RC-19	151M-940-2
RC-19	151M-940-2	RC-19	151M-940-2



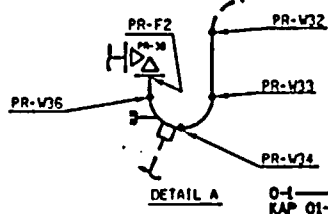
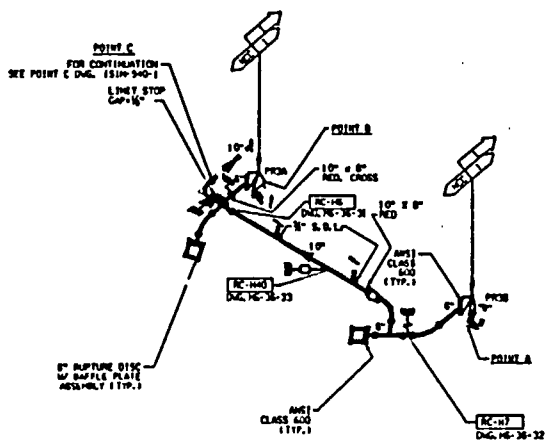
151M-940-2



LOCATION: CONTAINMENT, PRZ VAULT



REFERENCE DWGS.
151M-940-1, 151M-940-2, 151M-940-3



NOTES:
1. SCHEDULES APPLICABLE FOR 3/4\"/>

151M-940-2

151 ISOMETRIC
REACTOR COOLANT FROM PRESSURIZER
TO PRESSURIZER RELIEF TANK

WISCONSIN PUBLIC SERVICE CORP.
MILWAUKEE, WISCONSIN

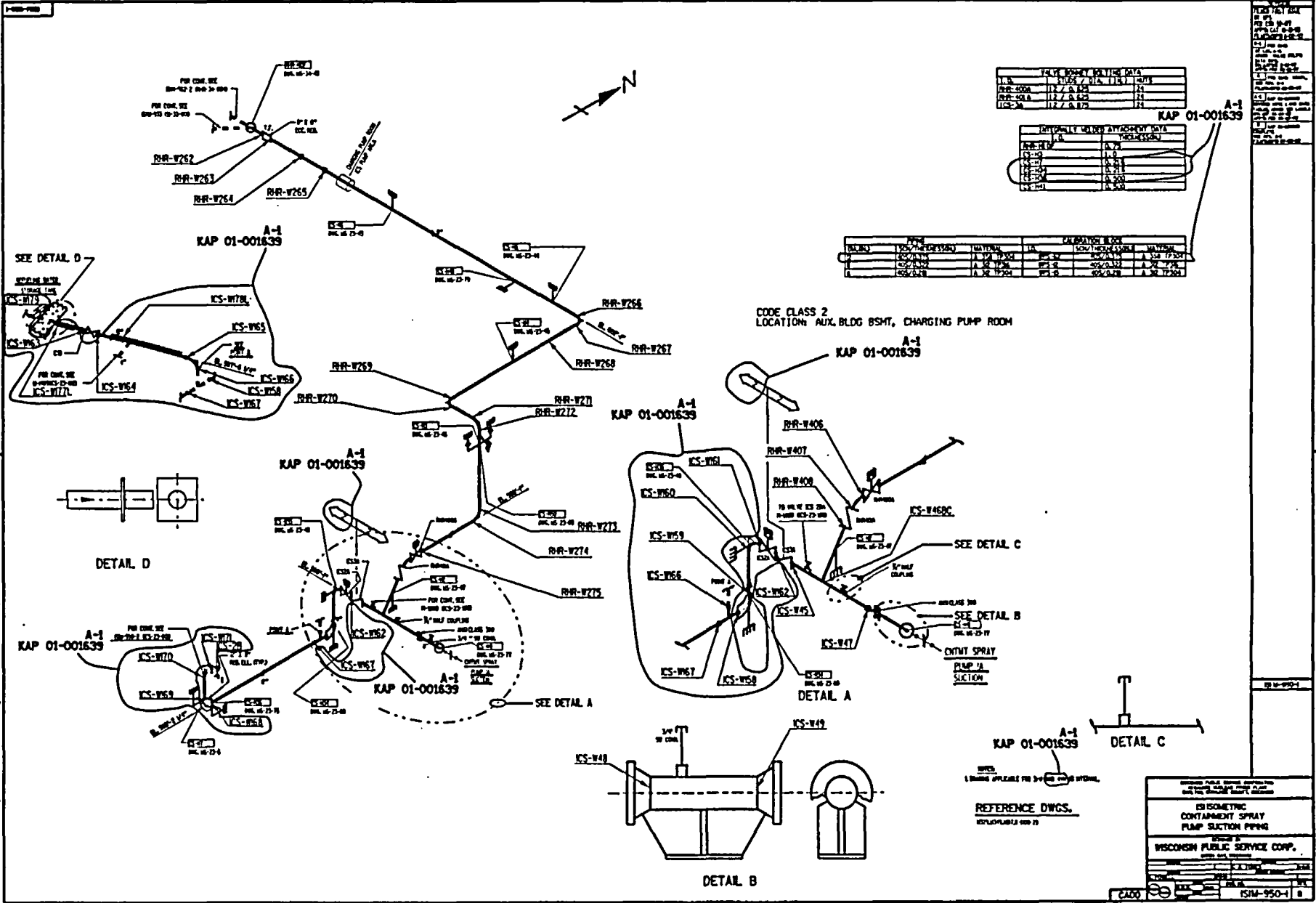
DATE: 11/2/68

BY: J. W. ...

SCALE: 1/4" = 1'-0"

151M-940-2

151M-940-2



VALVE SCHEDULE DATA			
NO.	TYPE / DIA. (IN.)	SIZE	LOCATION
RRR-400A	1 1/2" / A 425	1 1/2"	124
RRR-401A	1 1/2" / A 425	1 1/2"	124
RRR-402A	1 1/2" / A 425	1 1/2"	124

ELECTRICAL SCHEDULE DATA			
NO.	TYPE	SIZE	LOCATION
RRR-400	1 1/2"	1 1/2"	124
RRR-401	1 1/2"	1 1/2"	124
RRR-402	1 1/2"	1 1/2"	124

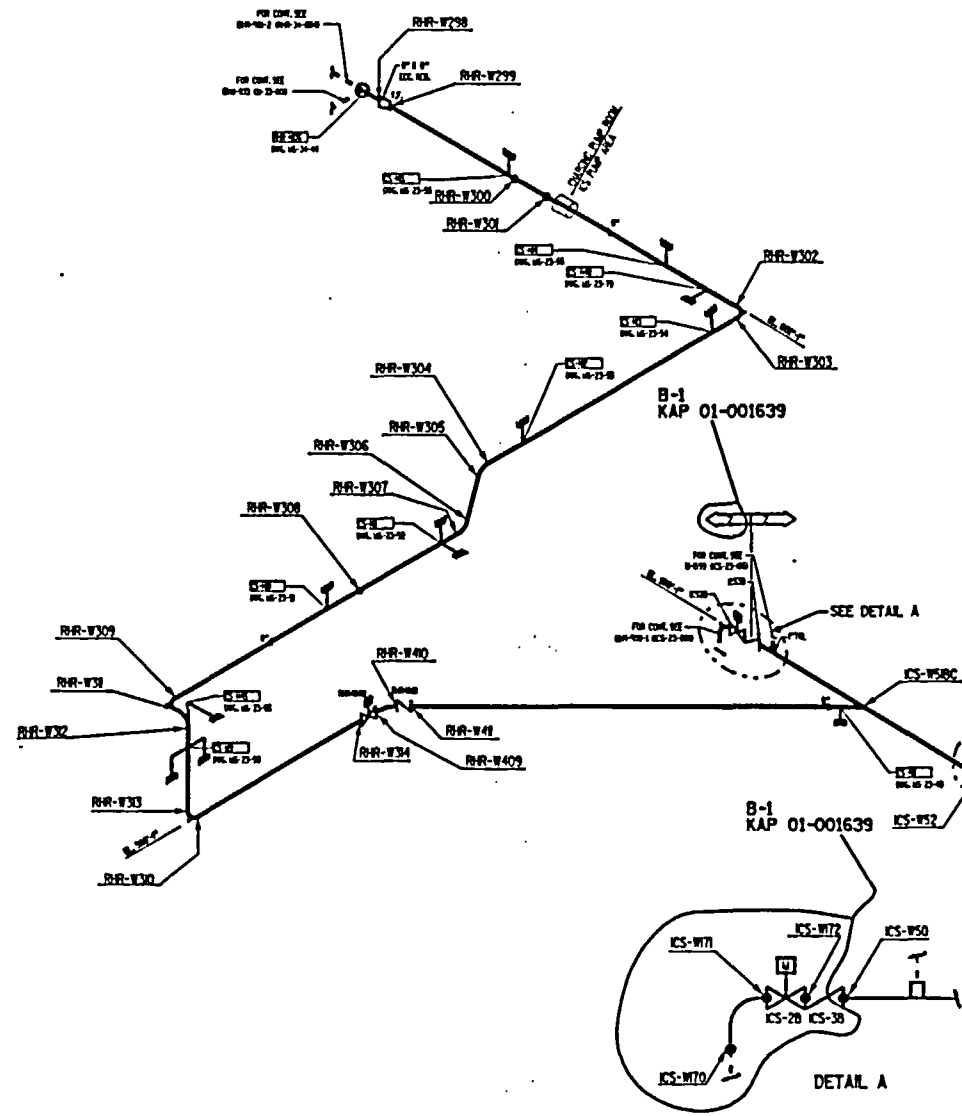
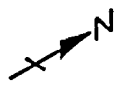
ELECTRICAL SCHEDULE DATA					
NO.	TYPE	SIZE	LOCATION	DESCRIPTION	REMARKS
RRR-400	1 1/2"	1 1/2"	124	1 1/2" / A 425	124
RRR-401	1 1/2"	1 1/2"	124	1 1/2" / A 425	124
RRR-402	1 1/2"	1 1/2"	124	1 1/2" / A 425	124

CODE CLASS 2
LOCATION: AUX. BLDG BSMT, CHARGING PUMP ROOM

ISOMETRIC
CONTAINMENT SPRAY
PUMP SECTION Piping

WISCONSIN PUBLIC SERVICE CORP.

ISIN-950-1 B

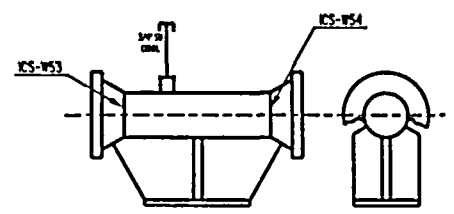


MATERIALS AND FINISHES DATA		
NO.	DESCRIPTION	FINISH
RRR-W50	1/2" S.S.	304
CS-W50	1/2" S.S.	304
CS-W51	1/2" S.S.	304
CS-W52	1/2" S.S.	304

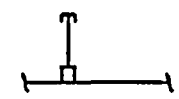
VALVE SCHEDULE DATA		
NO.	SIZE	TYPE
RRR-W50	1/2" S.S.	24
RRR-W51	1/2" S.S.	24
RRR-W52	1/2" S.S.	24

PIPE		VALVE	
NO.	DESCRIPTION	NO.	DESCRIPTION
RRR-W50	1/2" S.S.	RRR-W50	1/2" S.S.
RRR-W51	1/2" S.S.	RRR-W51	1/2" S.S.
RRR-W52	1/2" S.S.	RRR-W52	1/2" S.S.

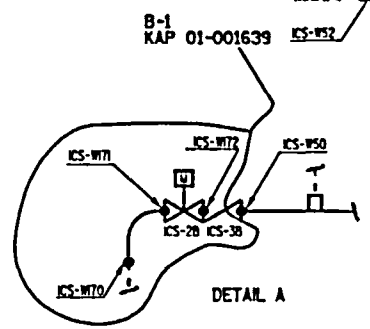
CODE CLASS 2
 LOCATION: AUX. BLDG BSMT, CHARGING PUMP ROOM



DETAIL C
ANCHOR ASSEMBLY



DETAIL B



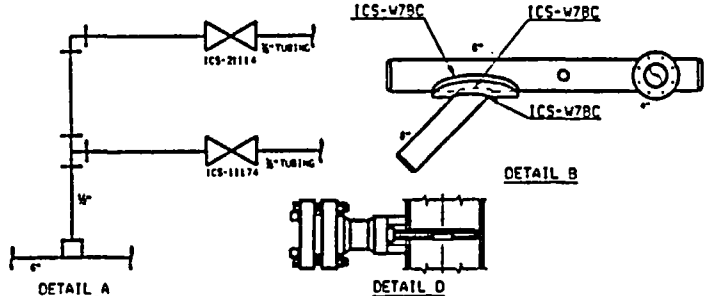
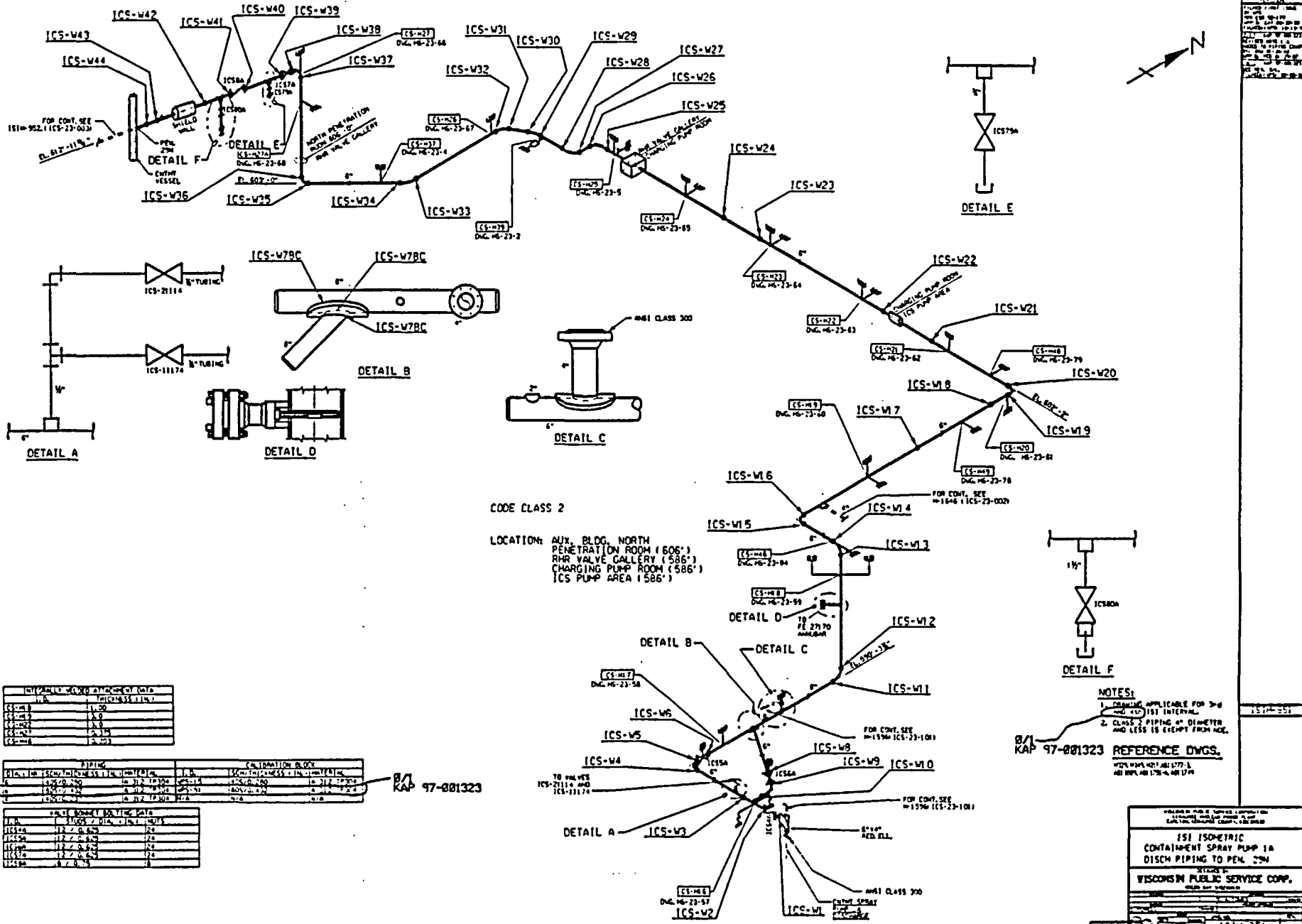
DETAIL A

NOTES:
 1. DRAWING APPLICABLE FOR 3" AND 4" DIAMETER
 REFERENCE DWGS.
 (EXPLANATION) 2-10-73

B-1 KAP 01-001639

REVISIONS
 NO. DATE BY
 1 10-10-73 J.S.
 2 10-10-73 J.S.
 3 10-10-73 J.S.
 4 10-10-73 J.S.
 5 10-10-73 J.S.
 6 10-10-73 J.S.
 7 10-10-73 J.S.
 8 10-10-73 J.S.
 9 10-10-73 J.S.
 10 10-10-73 J.S.

WISCONSIN PUBLIC SERVICE COMPANY 1200 WISCONSIN STREET MILWAUKEE, WISCONSIN 53233	
IS ISOMETRIC CONTAINMENT SPRAY PUMP SUCTION PIPING	
PROJECT NO. 151M-950-2	
DRAWING NO. 151M-950-2	
DATE 10-10-73	
SCALE	
SHEET NO. 1	
TOTAL SHEETS 1	
PROJECT ENGINEER J.S.	
PROJECT SUPERVISOR J.S.	
PROJECT MANAGER J.S.	
PROJECT CHECKER J.S.	
PROJECT DESIGNER J.S.	
PROJECT DRAFTER J.S.	
PROJECT INCHMAN J.S.	
PROJECT ESTIMATOR J.S.	
PROJECT ACCOUNTANT J.S.	
PROJECT CLERK J.S.	
PROJECT OPERATOR J.S.	
PROJECT MAINTENANCE J.S.	
PROJECT INSPECTOR J.S.	
PROJECT SAFETY J.S.	
PROJECT SECURITY J.S.	
PROJECT TRAINING J.S.	
PROJECT RESEARCH J.S.	
PROJECT DEVELOPMENT J.S.	
PROJECT TESTING J.S.	
PROJECT EVALUATION J.S.	
PROJECT COMMUNICATION J.S.	
PROJECT MANAGEMENT J.S.	
PROJECT LEADERSHIP J.S.	
PROJECT INFLUENCE J.S.	
PROJECT SUPPORT J.S.	
PROJECT COOPERATION J.S.	
PROJECT TEAMWORK J.S.	
PROJECT COMMITMENT J.S.	
PROJECT INTEGRITY J.S.	
PROJECT ETHICS J.S.	
PROJECT RESPECT J.S.	
PROJECT RESPONSIBILITY J.S.	
PROJECT ACCOUNTABILITY J.S.	
PROJECT TRANSPARENCY J.S.	
PROJECT HONESTY J.S.	
PROJECT FAITHFULNESS J.S.	
PROJECT COURAGE J.S.	
PROJECT PERSEVERANCE J.S.	
PROJECT DETERMINATION J.S.	
PROJECT RESOLVE J.S.	
PROJECT ENDURANCE J.S.	
PROJECT PATIENCE J.S.	
PROJECT KINDNESS J.S.	
PROJECT GENTLENESS J.S.	
PROJECT MILDNESS J.S.	
PROJECT MEANNESS J.S.	
PROJECT MODERATION J.S.	
PROJECT SELF-CONTROL J.S.	
PROJECT TEMPERANCE J.S.	
PROJECT SOBERNESS J.S.	
PROJECT SINGLESIMPLICITY J.S.	
PROJECT PATIENCE J.S.	
PROJECT GENTLENESS J.S.	
PROJECT MILDNESS J.S.	
PROJECT MEANNESS J.S.	
PROJECT MODERATION J.S.	
PROJECT SELF-CONTROL J.S.	
PROJECT TEMPERANCE J.S.	
PROJECT SOBERNESS J.S.	
PROJECT SINGLESIMPLICITY J.S.	



CODE CLASS 2
 LOCATION: AUX. BLDG. NORTH PENETRATION ROOM (606')
 RHR VALVE GALLERY (586')
 CHARGING PUMP ROOM (586')
 ICS PUMP AREA (586')

INTERLOCK VALVE ANCHORAGE DATA	
ICS	ANCHORAGE (LBS)
ICS-W1	1100
ICS-W2	1100
ICS-W3	1100
ICS-W4	1100
ICS-W5	1100
ICS-W6	1100

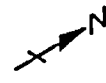
PIPING		CALCULATION BLOCK	
SIZE	SCHEDULE	THICKNESS	IN. DIMENSION
12"	40	0.515	12.515
10"	30	0.415	10.415
8"	20	0.315	8.315
6"	16	0.250	6.250

VALVE WEIGHT DATA	
ICS	WEIGHT (LBS)
ICS-W1	120
ICS-W2	120
ICS-W3	120
ICS-W4	120
ICS-W5	120
ICS-W6	120

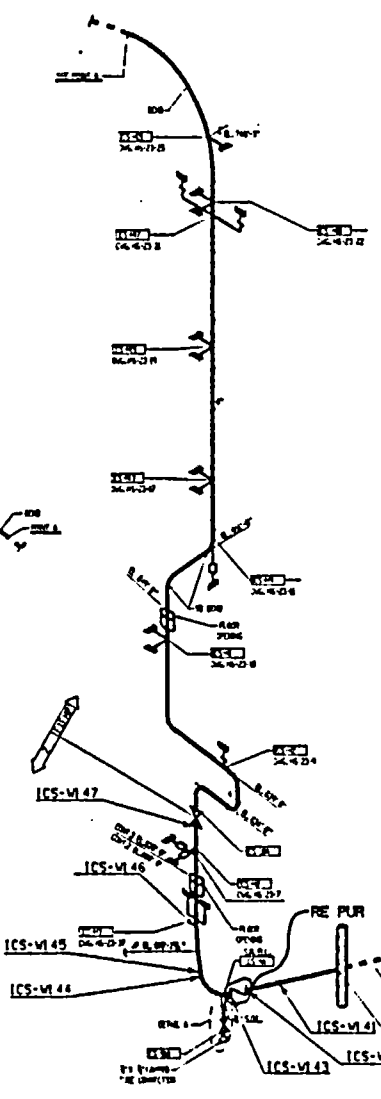
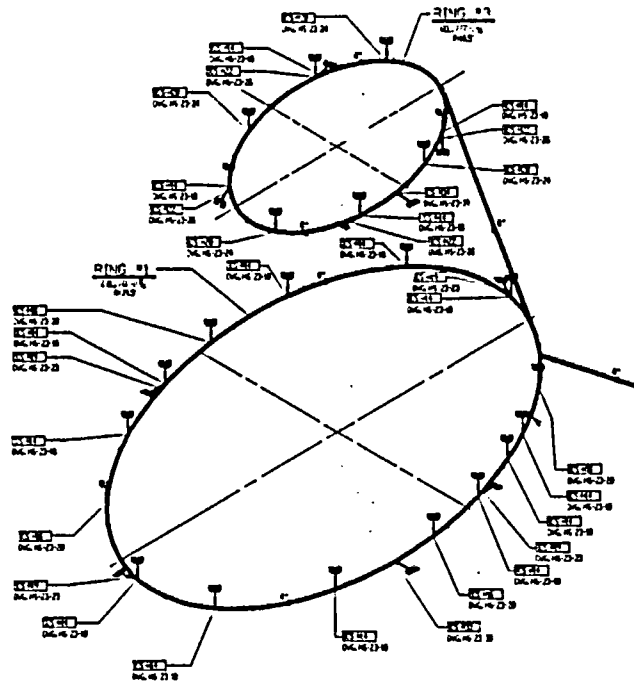
NOTES:
 1. CRANKING APPLICABLE FOR 3" & 4" INTERVAL.
 2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM AGE.
 B/1 KAP 97-081323 REFERENCE DWGS.
 151-W151

151 ISOMETRIC CONTAINMENT SPRAY PUMP IN DISCH PIPING TO PEN. 25W
 WISCONSIN PUBLIC SERVICE COMP.
 151-W151

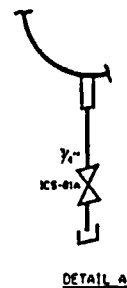
76-451



DATE	11/11/83
BY	J.M.
CHECKED BY	J.M.
SCALE	AS SHOWN
PROJECT NO.	15M-752
DRAWING NO.	15M-752-1
SHEET NO.	1
TOTAL SHEETS	1
DESIGNED BY	J.M.
DRAWN BY	J.M.
IN CHARGE	J.M.
APPROVED BY	J.M.



CODE CLASS 2
 LOCATION: CONTAINMENT
 CONT. 2 ELEV. 606'-0"
 CONT. 3 ELEV. 626'-0"



DATE	11/11/83
BY	J.M.
CHECKED BY	J.M.
SCALE	AS SHOWN

PROJECT NO.	15M-752
DRAWING NO.	15M-752-1
SHEET NO.	1
TOTAL SHEETS	1

ITEM NO.	DESCRIPTION	QTY	UNIT
1	VALVE	1	EA
2	PIPE	1	LN
3	FLANGE	1	EA
4	WELD	1	LN
5	ANCHOR BOLT	1	EA
6	NUT	1	EA
7	WASHER	1	EA
8	PIPE FITTING	1	EA
9	PIPE FITTING	1	EA
10	PIPE FITTING	1	EA
11	PIPE FITTING	1	EA
12	PIPE FITTING	1	EA
13	PIPE FITTING	1	EA
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26	PIPE FITTING	1	EA
27	PIPE FITTING	1	EA
28	PIPE FITTING	1	EA
29	PIPE FITTING	1	EA
30	PIPE FITTING	1	EA

A-1
 KAP 01-001639

REFERENCE DWGS.
 15M-752-1

- A-1
 KAP 01-001639
 NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH IS1 INTERVAL.
 2. CLASS 2 PIPING OF DIAMETER AND LESS IS EXEMPT FROM HOE.

15M-752

151 ISOMETRIC
 ONTNY SPRAY FROM ONTNY
 PEN 23N TO RING HEADERS 1 & 3

WISCONSIN PUBLIC SERVICE CORP.

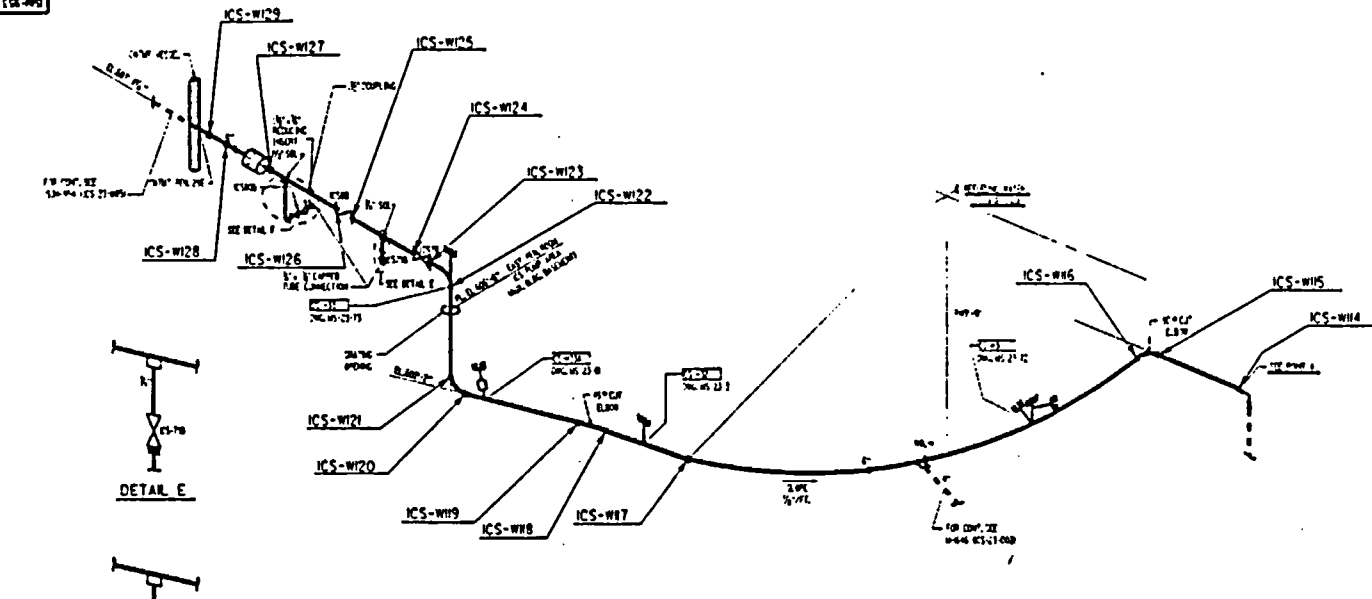
DATE: 11/11/83
 DRAWN BY: J.M.
 CHECKED BY: J.M.
 IN CHARGE: J.M.
 APPROVED BY: J.M.

15M-752-1

CSG-493

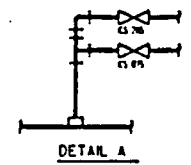


NO.	DATE	BY	CHKD.
1	10/15/83	J. J. ...	J. J. ...
2	10/15/83	J. J. ...	J. J. ...
3	10/15/83	J. J. ...	J. J. ...
4	10/15/83	J. J. ...	J. J. ...
5	10/15/83	J. J. ...	J. J. ...
6	10/15/83	J. J. ...	J. J. ...
7	10/15/83	J. J. ...	J. J. ...
8	10/15/83	J. J. ...	J. J. ...
9	10/15/83	J. J. ...	J. J. ...
10	10/15/83	J. J. ...	J. J. ...

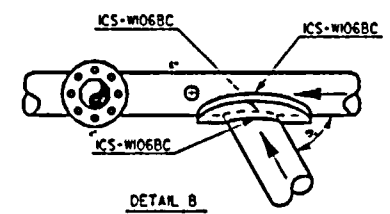


DETAIL E

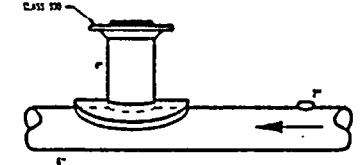
DETAIL F



DETAIL A



DETAIL B

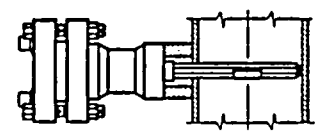
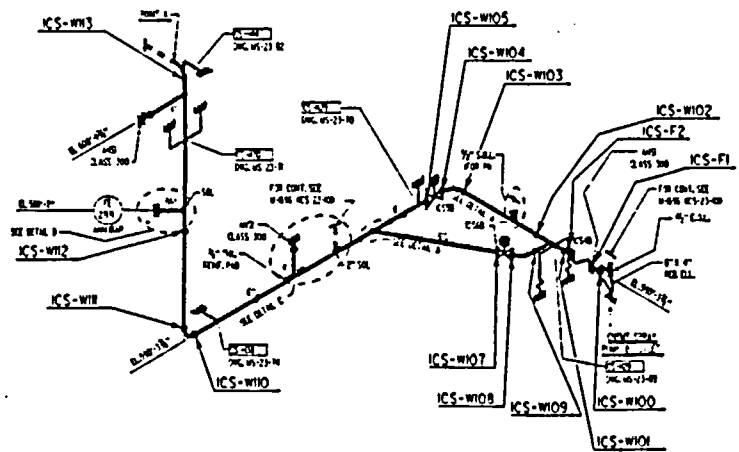


DETAIL C

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	CLASS 200	1	EA	100.00	100.00
2	CLASS 200	1	EA	100.00	100.00
3	CLASS 200	1	EA	100.00	100.00

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	CLASS 200	1	EA	100.00	100.00
2	CLASS 200	1	EA	100.00	100.00
3	CLASS 200	1	EA	100.00	100.00

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	PRICE	TOTAL
1	CLASS 200	1	EA	100.00	100.00
2	CLASS 200	1	EA	100.00	100.00
3	CLASS 200	1	EA	100.00	100.00



DETAIL D

CODE CLASS 2

LOCATION: AUX. BLDG. LEV. 606'-0"
EAST PENETRATION ROOM,
ICS PUMP AREA (AUX. BLDG. BSMT)

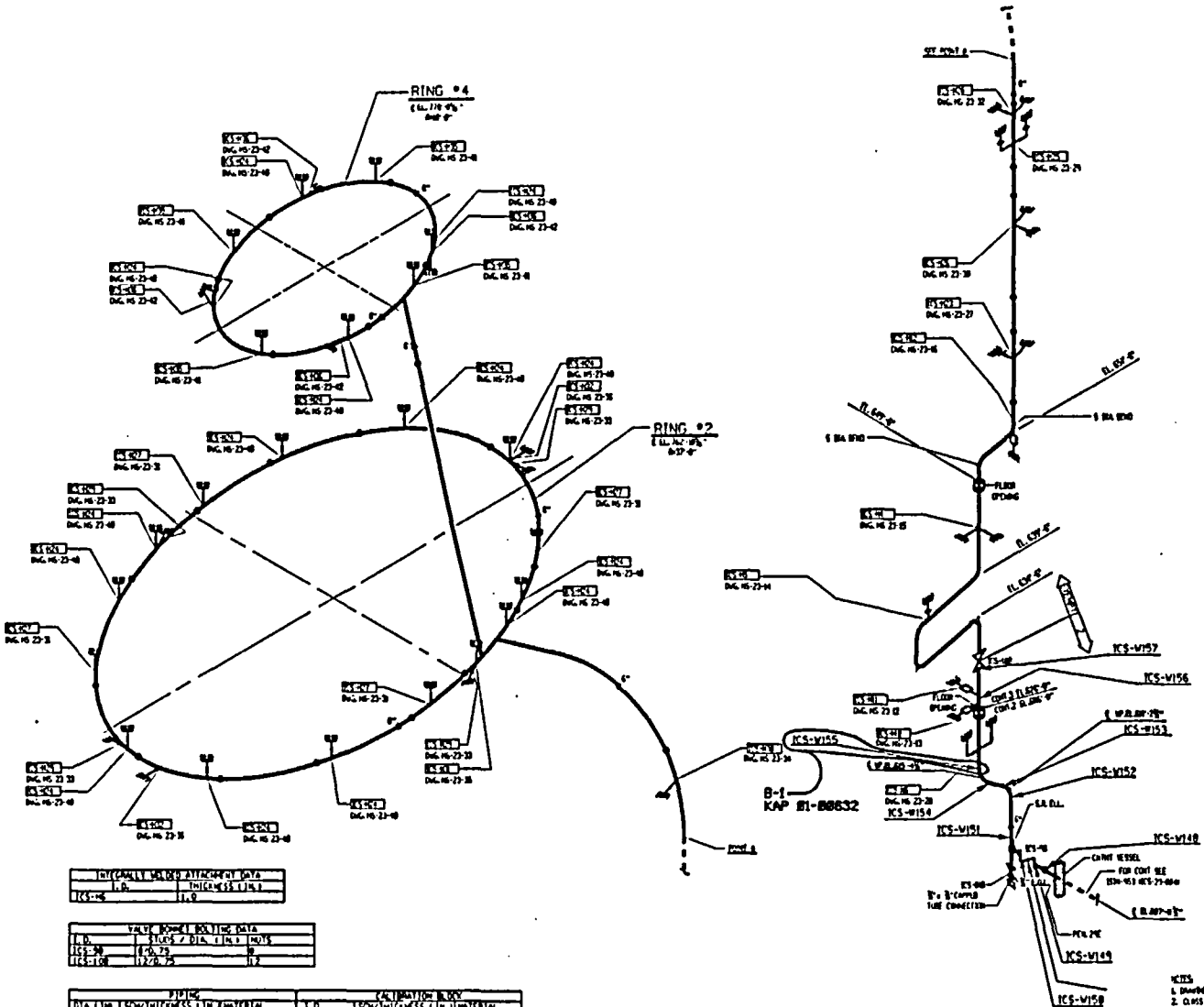
REFERENCE DWGS.

- NOTES:
1. DRAWING APPLICABLE FOR 3" AND 4" (1ST INTERNAL)
 2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM A.C.E.

CSG 97-00323

WISCONSIN PUBLIC SERVICE CORPORATION EAST PENETRATION ROOM, ICS PUMP AREA	
ISI ISOMETRIC CONTAINMENT SPRAY PUMP DISCH PIPING TO PELZSE	
WISCONSIN PUBLIC SERVICE CORP. 1000 WEST WISCONSIN AVENUE MILWAUKEE, WISCONSIN 53233	
DATE: 10/15/83	DRAWN BY: J. J. ...
CHECKED BY: J. J. ...	PROJECT NO.: 97-00323
SCALE: AS SHOWN	SHEET NO.: 1 OF 1

MS-1051



CODE CLASS 2
 LOCATION: CONTAINMENT
 CONT.2 ELEV. 606'-0"
 CONT.3 ELEV. 626'-0"

INTEGRALLY VALVED ATTACHMENT DATA

I.D.	THICKNESS (IN.)
KCS-16	1.0

VALVE SCHEDULE DATA

I.D.	SIZE / DIA. (IN.)	TYPE
KCS-30	6.75	0
KCS-10	12.0	12

PIPE SCHEDULE

DIA. (IN.)	SCHEDULE	THICKNESS (IN.)	I.D.	SCHEDULE	THICKNESS (IN.)
6	4020	2.875	6.312	4020	2.875
6	4020	2.875	6.312	4020	2.875
6	1800	1.125	6.312	1800	1.125

REFERENCE DWGS.
 K21, K22, K23, K24, K25, K26, K27, K28, K29, K30, K31, K32, K33, K34, K35, K36, K37, K38, K39, K40, K41, K42, K43, K44, K45, K46, K47, K48, K49, K50, K51, K52, K53, K54, K55, K56, K57, K58, K59, K60, K61, K62, K63, K64, K65, K66, K67, K68, K69, K70, K71, K72, K73, K74, K75, K76, K77, K78, K79, K80, K81, K82, K83, K84, K85, K86, K87, K88, K89, K90, K91, K92, K93, K94, K95, K96, K97, K98, K99, K100

NOTES
 1. DRAWING APPLICABLE FOR 30" AND 48" IS DITCHING.
 2. CLASS 2 PIPING AT 150 PSI AND LESS IS EQUIP. FROM SEE.

DESIGNED BY: []
 DRAWN BY: []
 CHECKED BY: []
 APPROVED BY: []
 DATE: []

IS1 ISOMETRIC
 CHNTM SPRAY FROM CHNTM
 PEN 29E TO RING HEADERS 2 & 4

DESIGNED BY:
 VISCONSIN PUBLIC SERVICE CORP.

SCALE: []
 SHEET NO. [] OF []
 PROJECT NO. []

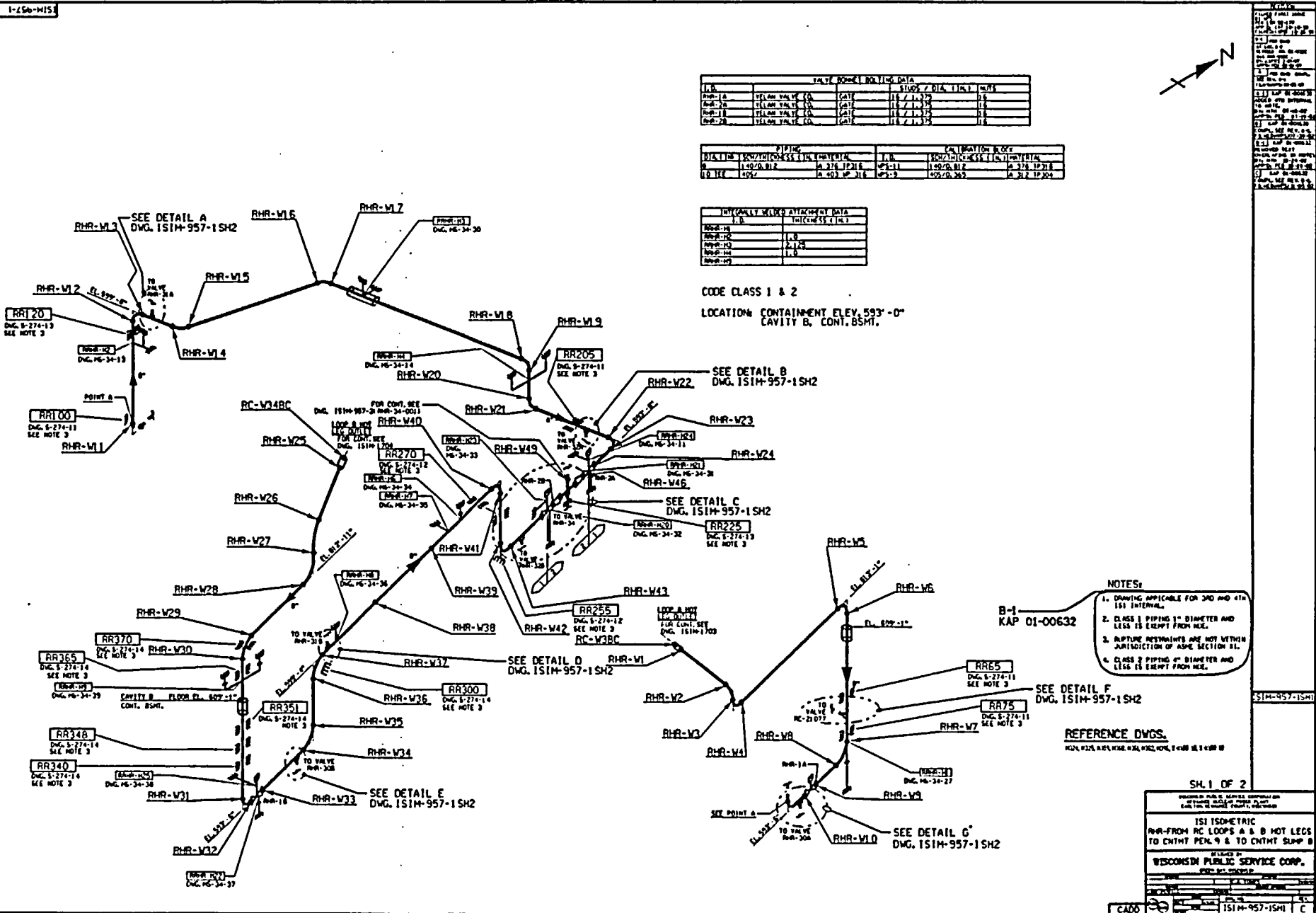
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 99. ISOMETRIC DRAWING
 100. ISOMETRIC DRAWING

CADD

VALVE ROOM IDENTIFICATION DATA			
V.R.	STATION VALUE CO.	DATE	SILOS / DIA. (IN.) / H/V
RHR-1A	SILO VALVE CO.	11 / 11 / 1978	11.8
RHR-1B	SILO VALVE CO.	11 / 11 / 1978	11.8
RHR-1C	SILO VALVE CO.	11 / 11 / 1978	11.8
RHR-1D	SILO VALVE CO.	11 / 11 / 1978	11.8

PIPELINE IDENTIFICATION DATA			
DIAMETER	SCHEDULE	THICKNESS	MATERIAL
1.000" O.D.	10	0.075	A 135
1.000" O.D.	10	0.075	A 135
1.000" O.D.	10	0.075	A 135

INTEGRITY PIPING ATTACHMENT DATA	
P.I.D.	THICKNESS (IN.)
RR-1A	1.0
RR-1B	1.0
RR-1C	1.0
RR-1D	1.0
RR-1E	1.0



CODE CLASS 1 & 2
 LOCATION: CONTAINMENT ELEV. 593'-0"
 CAVITY B, CONT. BSMT.

- NOTES:**
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERNAL.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM NDE.
 3. RUPTURE RESTRAINTS ARE NOT WITHIN JURISDICTION OF ASME SECTION XI.
 4. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

REFERENCE DWGS.
 H&B, R25, R26, R28, R30, R32, R34, R36, R38, R40, R42, R44, R46, R48, R50, R52, R54, R56, R58, R60, R62, R64, R66, R68, R70, R72, R74, R76, R78, R80, R82, R84, R86, R88, R90, R92, R94, R96, R98, R100

SH. 1 OF 2

PROJ. NO. B-3
 DRAWING NO. 151M-957-15H1
 DATE 01-06-82
 SHEET NO. 151M-957-15H1

ISI ISOMETRIC
 RHR FROM RC LOOPS A & B HOT LEGS TO ENTHT PER. A & TO ENTHT SLUMP B

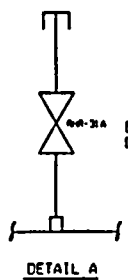
WISCONSIN PUBLIC SERVICE CORP.
 PROJECT CONTROL

DESIGNED BY: _____
 CHECKED BY: _____
 IN CHARGE: _____
 DATE: _____

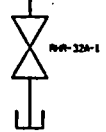
CADD

PWSI-46-MISI

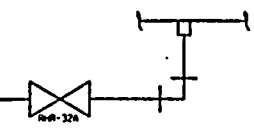
REVISIONS
NO. DATE BY
1 06-10-81 J.M.P.
2 06-10-81 J.M.P.
3 06-10-81 J.M.P.
4 06-10-81 J.M.P.
5 06-10-81 J.M.P.
6 06-10-81 J.M.P.
7 06-10-81 J.M.P.
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11 06-10-81 J.M.P.
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14 06-10-81 J.M.P.
15 06-10-81 J.M.P.



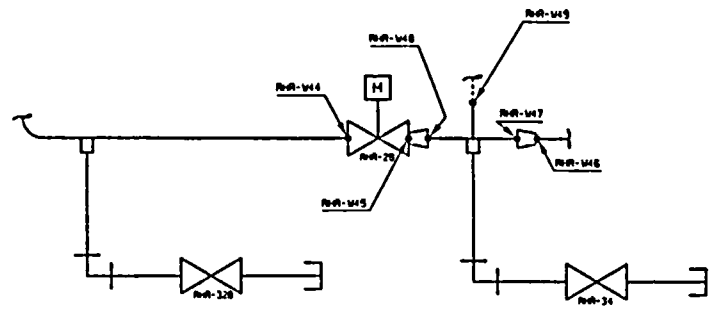
B-1
OCR AB 2911
RWR-320-3
RUPTURE
D154
TO EXPANSION TANK
SEE P-1770



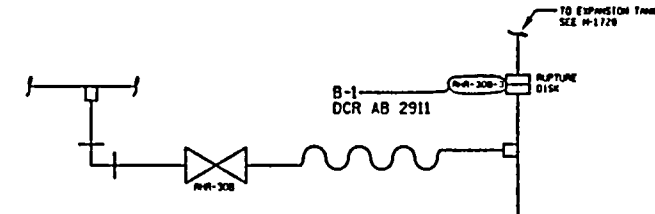
DETAIL B



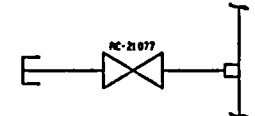
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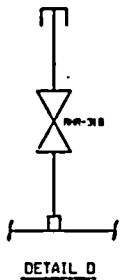
DETAIL D



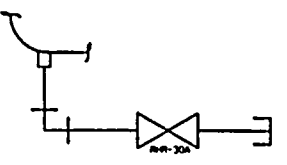
DETAIL E



DETAIL F



DETAIL G



DETAIL H

- NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM HOE.
 3. RUPTURE RESTRAINTS ARE NOT WITHIN JURISDICTION OF ASME SECTION XI.
 4. CLASS 2 PIPING 6" DIAMETER AND LESS IS EXEMPT FROM HOE.

ISIM-957-15H2

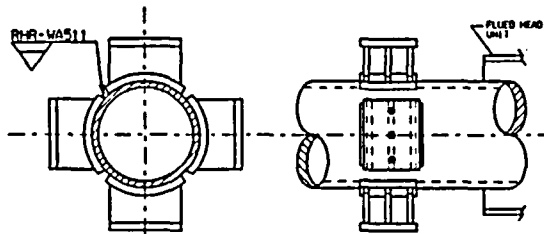
SH. 2 OF 2

WISCONSIN PUBLIC SERVICE CORPORATION
DESIGN: 0-1-1-15H2
IS1 DETAILS
RWR-FROM RC LOOPS A & B HOT LEGS
TO CNHTM PEN. 9 & TO CNHTM SUP# 8

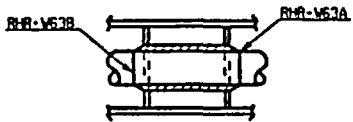
DATE	06-10-81
BY	J.M.P.
CHECKED	J.M.P.
APPROVED	J.M.P.

CADD ISIM-957-15H2 C

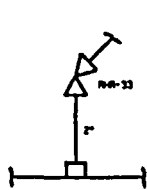
E-150-W134



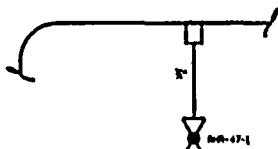
DETAIL A



DETAIL C



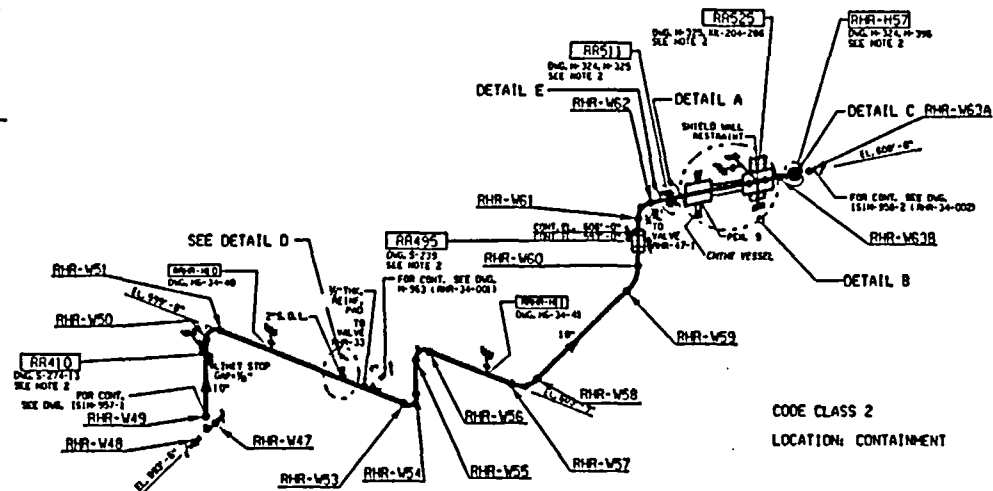
DETAIL D



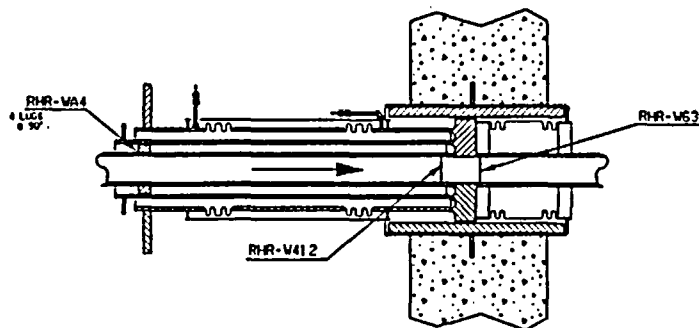
DETAIL E

INTERIALLY WELDED APPROXIMATE DATA	
WELDING PROCESS	WELDING MATERIAL
WELDING POSITION	WELDING SPEED
WELDING CURRENT	WELDING VOLTAGE

PIPE DATA		CALCULATION CHECK	
DIAMETER	13.000 (0.5118 IN)	W.T.	0.0625 (0.00248 IN)
W.T.	0.0625 (0.00248 IN)	W.T.	0.0625 (0.00248 IN)



CODE CLASS 2
LOCATION: CONTAINMENT



DETAIL B

0-1
KAP 01-001639

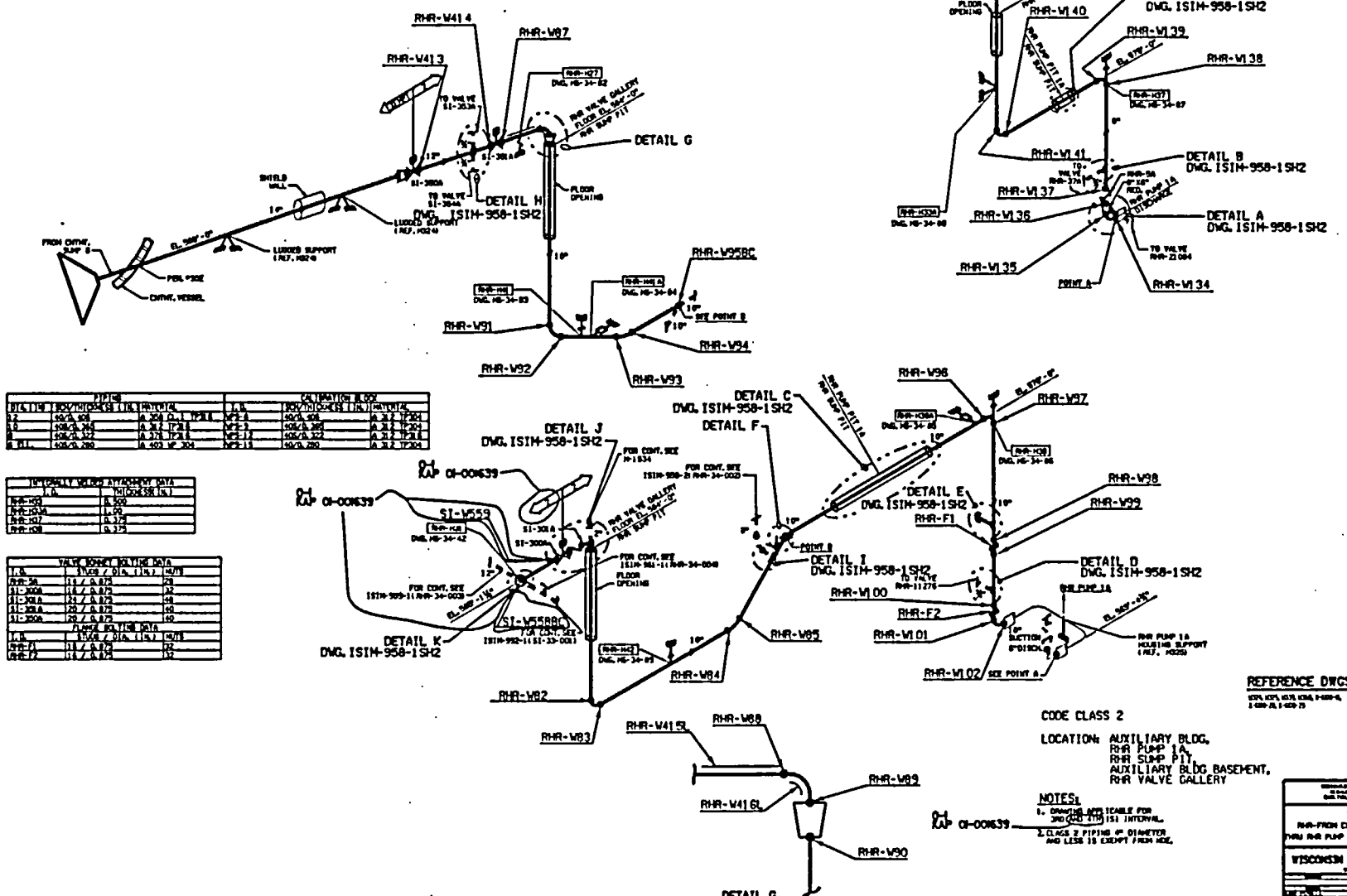
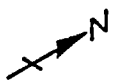
REFERENCE DWGS.
KAP 001, KAP 002, KAP 003, KAP 004, KAP 005, KAP 006, KAP 007, KAP 008

- NOTES:
1. DRAWING APPLICABLE FOR 30 AND 4TH 151 INTERVAL.
 2. PIPELINE RESTRAINTS ARE NOT WITHIN THE DIMENSION OF SOME SECTION #1.
 3. CLASS B PIPING OF DIAMETER AND LESS IS EXCEPT FROM ADE.

IS1 ISOMETRIC
RHR-FROM RC LOOPS A & B HOT LEGS
TO CHIMT PEAL 9 & TO CHIMT SLUMP B

DESIGNED BY
WISCONSIN PUBLIC SERVICE COMP.
151M-957-2

151M-957-2



ITEM	DESCRIPTION	QTY	UNIT	DATE	BY	CHKD
1	VALVE	1	EA	11/28/82	JL	JK
2	VALVE	1	EA	11/28/82	JL	JK
3	VALVE	1	EA	11/28/82	JL	JK
4	VALVE	1	EA	11/28/82	JL	JK
5	VALVE	1	EA	11/28/82	JL	JK

ITEM	DESCRIPTION	QTY	UNIT
1	VALVE	1	EA
2	VALVE	1	EA
3	VALVE	1	EA
4	VALVE	1	EA

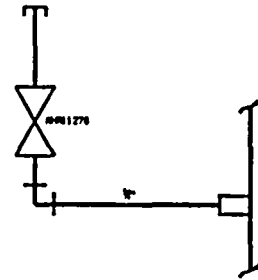
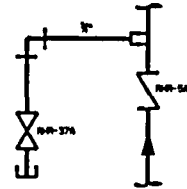
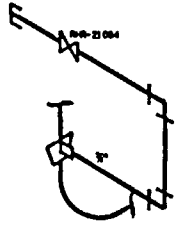
ITEM	DESCRIPTION	QTY	UNIT
1	VALVE	1	EA
2	VALVE	1	EA
3	VALVE	1	EA
4	VALVE	1	EA

CODE CLASS 2
 LOCATION: AUXILIARY BLDG.
 RHR PUMP 1A,
 RHR SUMP P11,
 AUXILIARY BLDG BASEMENT,
 RHR VALVE GALLERY

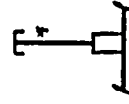
NOTES:
 1. DIMENSIONS ARE USABLE FOR
 2. CLASS 2 PIPING OF DIAMETER
 AND LESS IS EXEMPT FROM HAZ.

REFERENCE DWGS.
 ISIM-958-1S41
 1-958-1S41-1
 1-958-1S41-2

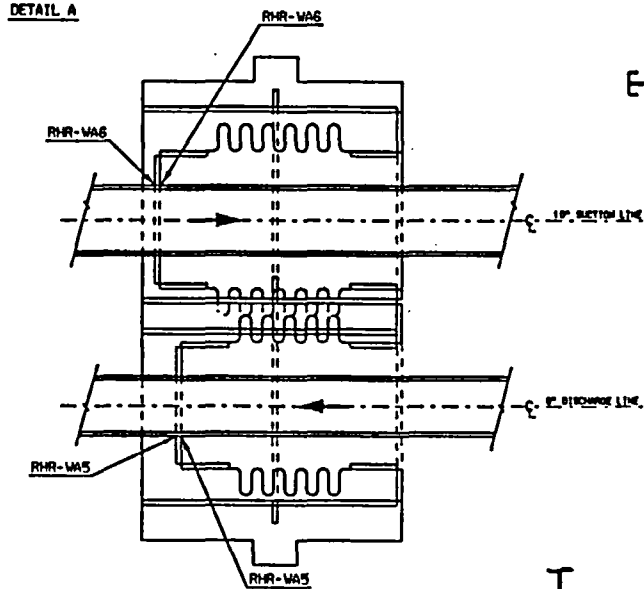
WISCONSIN PUBLIC SERVICE CORP.
 151 ISOMETRIC
 RHR FROM EXISTING PUMP 1A & ANCHORS
 FROM RHR PUMP 1A TO ANCHOR ON STEEL 1 IN
 WISCONSIN PUBLIC SERVICE CORP.
 151 ISOMETRIC
 RHR FROM EXISTING PUMP 1A & ANCHORS
 FROM RHR PUMP 1A TO ANCHOR ON STEEL 1 IN



DETAIL D



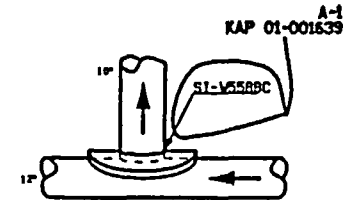
DETAIL E



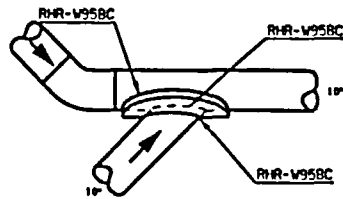
DETAIL C

A-1
KAP 01-001639

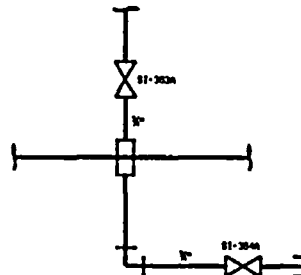
- NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISE INTERVAL.
 2. CLASS 2 PIPING 6" DIAMETER AND LESS IS EXEMPT FROM NDE



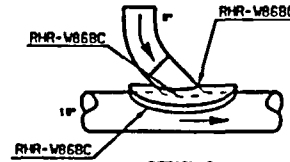
DETAIL K



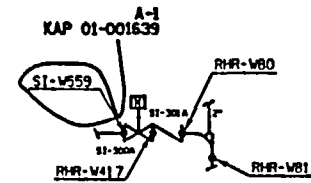
DETAIL F



DETAIL H



DETAIL I



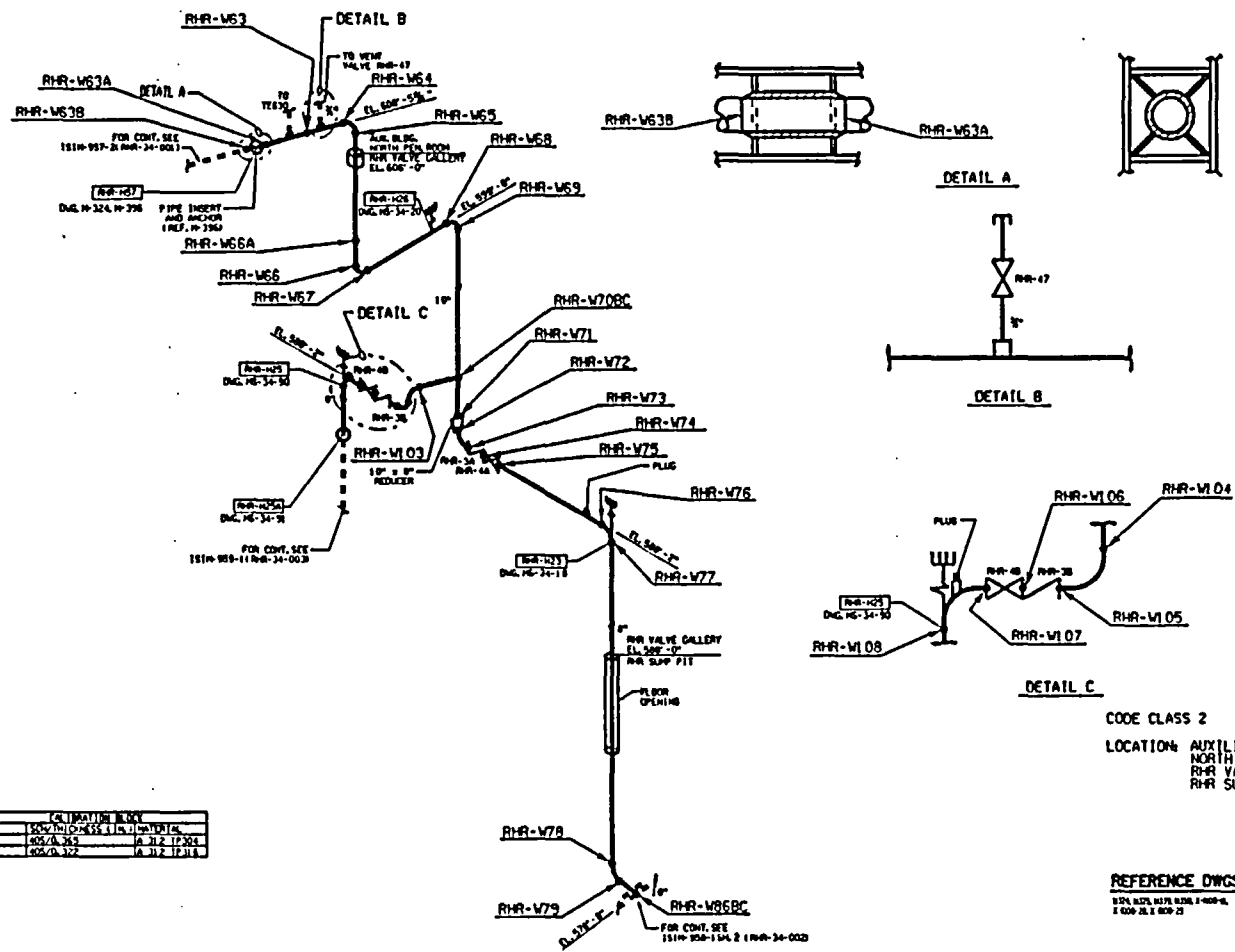
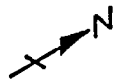
DETAIL J

151M-958-1 B&G

(SHEET 2 OF 2)

151 INDIANAPOLIS RHR FROM EXISTING SUMP B & ANCHORS THRU AIR PIP 1A TO ANCHOR ON DISCH. LINE			
PREPARED BY WISCONSIN PUBLIC SERVICE CORP. 1958-1963			
PROJECT NO. 151M-958-1	DATE 1/21/63	DRAWN BY E.C.	CHECKED BY J.C.
JOB NO. 151M-958-1-2	SHEET NO. 2	TOTAL SHEETS 2	TOTAL SHEETS 2

CADD



INITIALLY BELIEVE APPROXIMATE DATA

LINE NO.	SIZE	LENGTH	WEIGHT
101	10"	100	1000
102	8"	200	2000
103	6"	300	3000
104	4"	400	4000
105	3"	500	5000

PIPE SCHEDULE DATA

LINE NO.	SIZE	WEIGHT	LENGTH
101	10"	100	1000
102	8"	200	2000
103	6"	300	3000
104	4"	400	4000
105	3"	500	5000

PIPE SCHEDULE DATA

LINE NO.	SIZE	WEIGHT	LENGTH
101	10"	100	1000
102	8"	200	2000
103	6"	300	3000
104	4"	400	4000
105	3"	500	5000

NOTES:
 1. DRAWING APPLICABLE FOR 308
 2. CLASS 2 PIPING 4" DIAMETER
 AND LESS IS EXEMPT FROM INS.

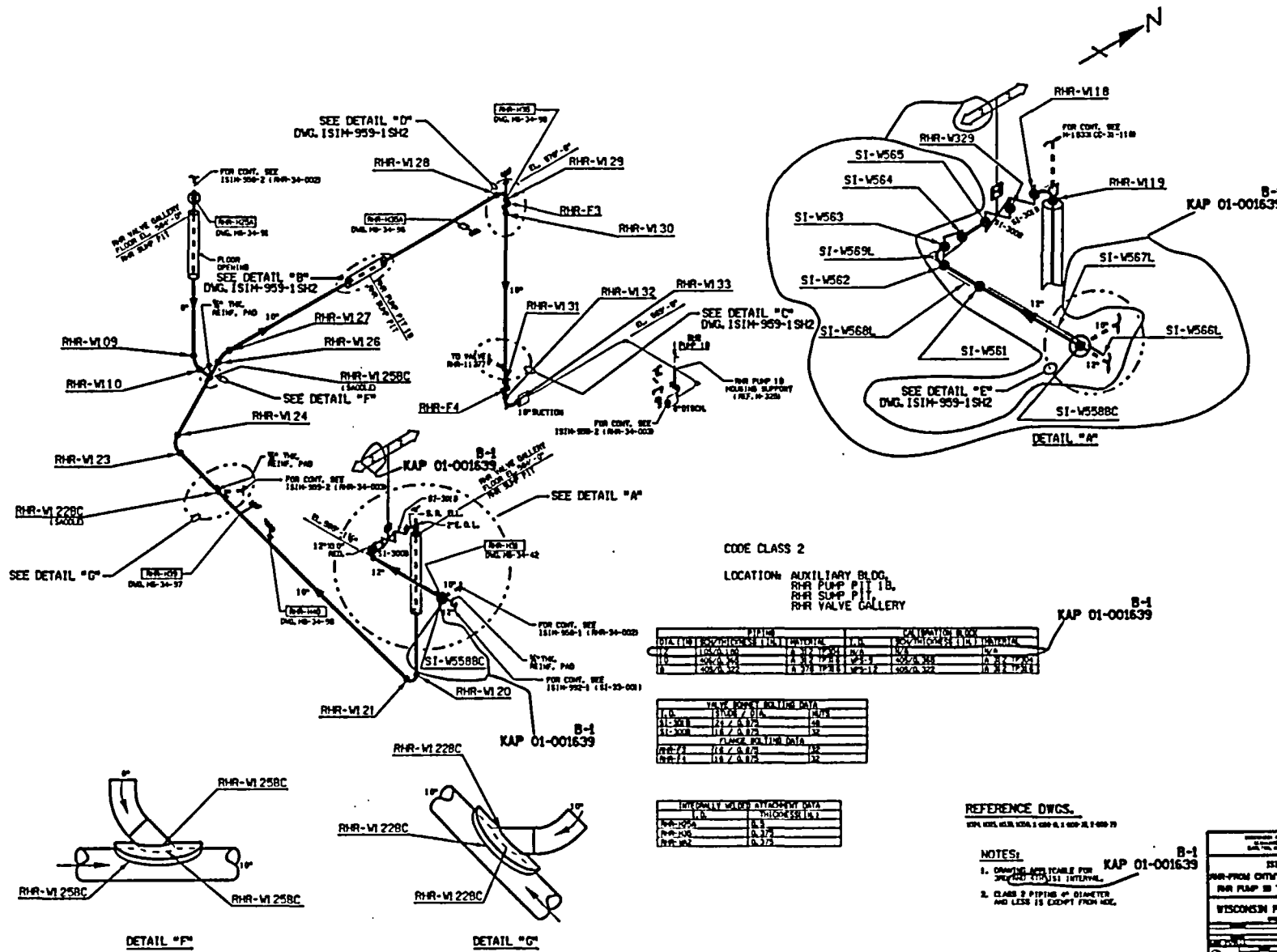
CODE CLASS 2
 LOCATION: AUXILIARY BLDG.
 NORTH PENETRATION ROOM
 RHR VALVE GALLERY,
 RHR SUPP PIT

REFERENCE DWGS.
 151P-220-2
 151P-220-2

WISCONSIN PUBLIC SERVICE CORP.
 151 ISOMETRIC
 RHR FROM CENTRAL SUPP. B. & ANCHORS
 THRU RHR PUMP 14 TO ANCHOR ON DISCH. LINE

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]
 DATE: [Date]

151P-220-2



CODE CLASS 2

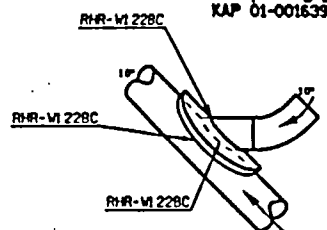
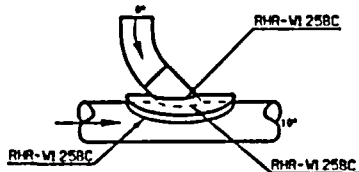
LOCATION: AUXILIARY BLDG.
RHR PUMP PIT 1B,
RHR SUMP PIT,
RHR VALVE GALLERY

B-1
KAP 01-001639

ITEM	SPECIFICATIONS	PIPE		CATLAYON BLOCK	
		SIZE	MATERIAL	SIZE	MATERIAL
1	12" O.D. x 0.3125	A	316 L	12" x 12"	316 L
2	10" O.D. x 0.3125	A	316 L	10" x 10"	316 L
3	8" O.D. x 0.3125	A	316 L	8" x 8"	316 L

ITEM	SPECIFICATIONS	VALVE	
		SIZE	MATERIAL
1	12" O.D. x 0.3125	A	316 L
2	10" O.D. x 0.3125	A	316 L
3	8" O.D. x 0.3125	A	316 L

ITEM	SPECIFICATIONS	INSTRUMENTATION	
		SIZE	MATERIAL
1	12" O.D. x 0.3125	A	316 L
2	10" O.D. x 0.3125	A	316 L
3	8" O.D. x 0.3125	A	316 L



REFERENCE DWGS.

ISIM-959-1SH2, ISM-34-18, ISM-34-19, ISM-34-20, ISM-34-21, ISM-34-22, ISM-34-23, ISM-34-24, ISM-34-25, ISM-34-26, ISM-34-27, ISM-34-28, ISM-34-29, ISM-34-30

- NOTES:
- CONFORM TO THE SPECIFICATIONS FOR KAP 01-001639
 - CLASS 2 PIPING OF DIAMETER AND LESS IS EXCEPT FROM IFC.

WISCONSIN PUBLIC SERVICE CORP.

PROJECT NO. 100-100000

DATE: 10/1/68

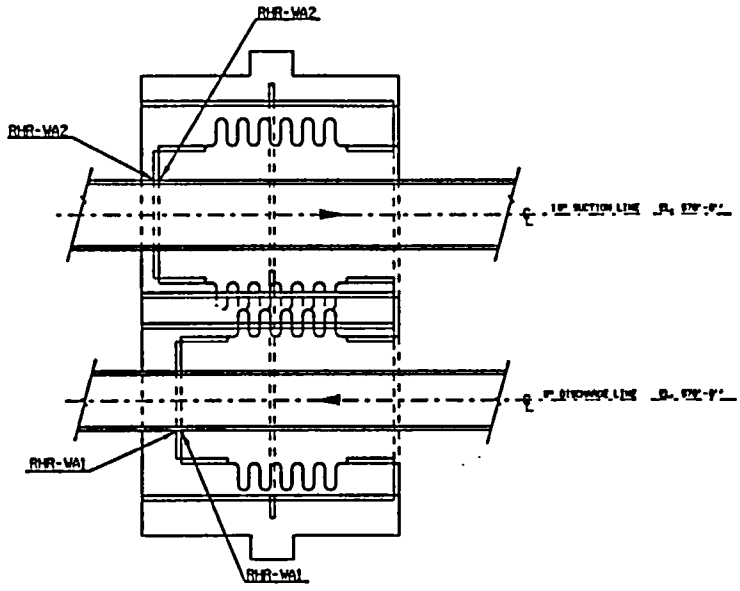
BY: J.S.

SCALE: 1/4" = 1'-0"

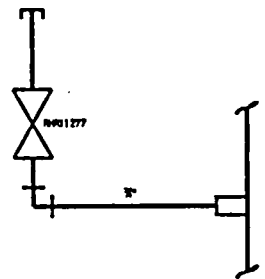
ISIM-959-14

C

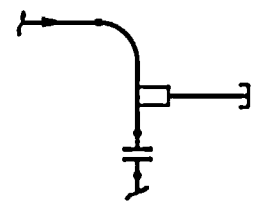
2-1-656-R13



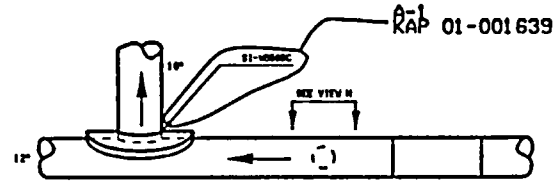
DETAIL "B"



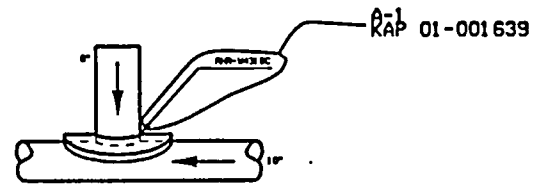
DETAIL "C"



DETAIL "D"



DETAIL "E"



VIEW "H"

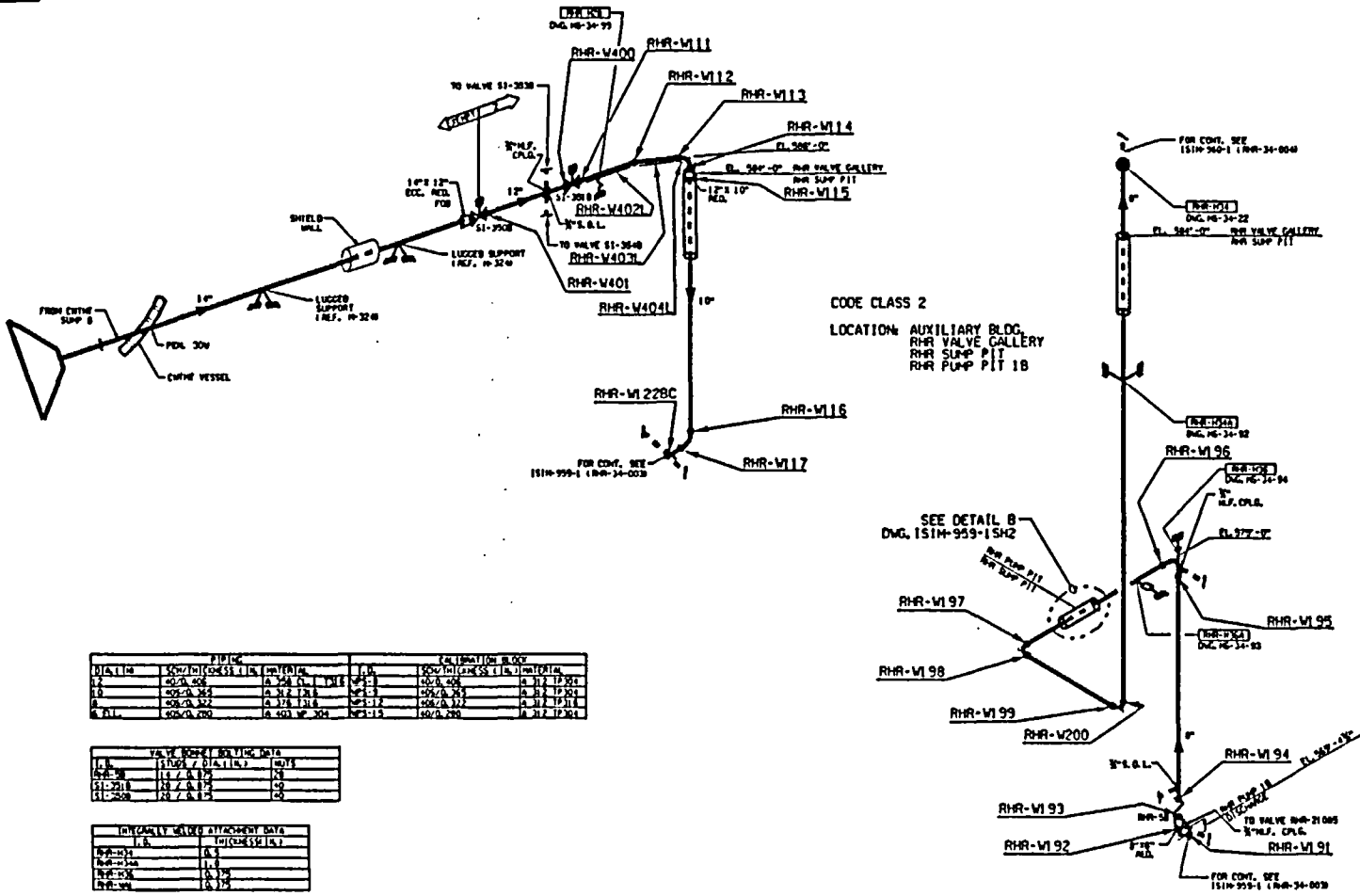
RAP 01-001639

NOTES:

- 1. DRAWING NOT SCALE FOR 3RD AND 4TH INTERVAL.
- 2. CLEAR 2 PIPING 2\"/>

15M-211-1-2

WISCONSIN PUBLIC SERVICE CORP.	
DESIGNED BY	DATE
DRAWN BY	CHECKED BY
APPROVED BY	SCALE
15M-209-4-2	



CODE CLASS 2
 LOCATION: AUXILIARY BLDG.
 RHR VALVE GALLERY
 RHR SLUMP PIT
 RHR PUMP PIT 1B

PIPING				EQUIPMENT			
SIZE	SCH. 40	SCH. 40S	STAINLESS	TYPE	SIZE	SCH. 40	SCH. 40S
12"	✓	✓	✓	1"	✓	✓	✓
10"	✓	✓	✓	3/4"	✓	✓	✓
8"	✓	✓	✓	1/2"	✓	✓	✓
6"	✓	✓	✓	3/8"	✓	✓	✓
4"	✓	✓	✓	1/4"	✓	✓	✓

VALVE BODY ATTACHMENT DATA	
SIZE	ATTACHMENT
12"	12"
10"	10"
8"	8"
6"	6"
4"	4"

INDICATED ATTACHMENT DATA	
SIZE	ATTACHMENT
12"	12"
10"	10"
8"	8"
6"	6"
4"	4"

SEE DETAIL B
 DWG. 151M-959-1SH2

REFERENCE DWGS.
 151M-959-1 (RHR-34-003)

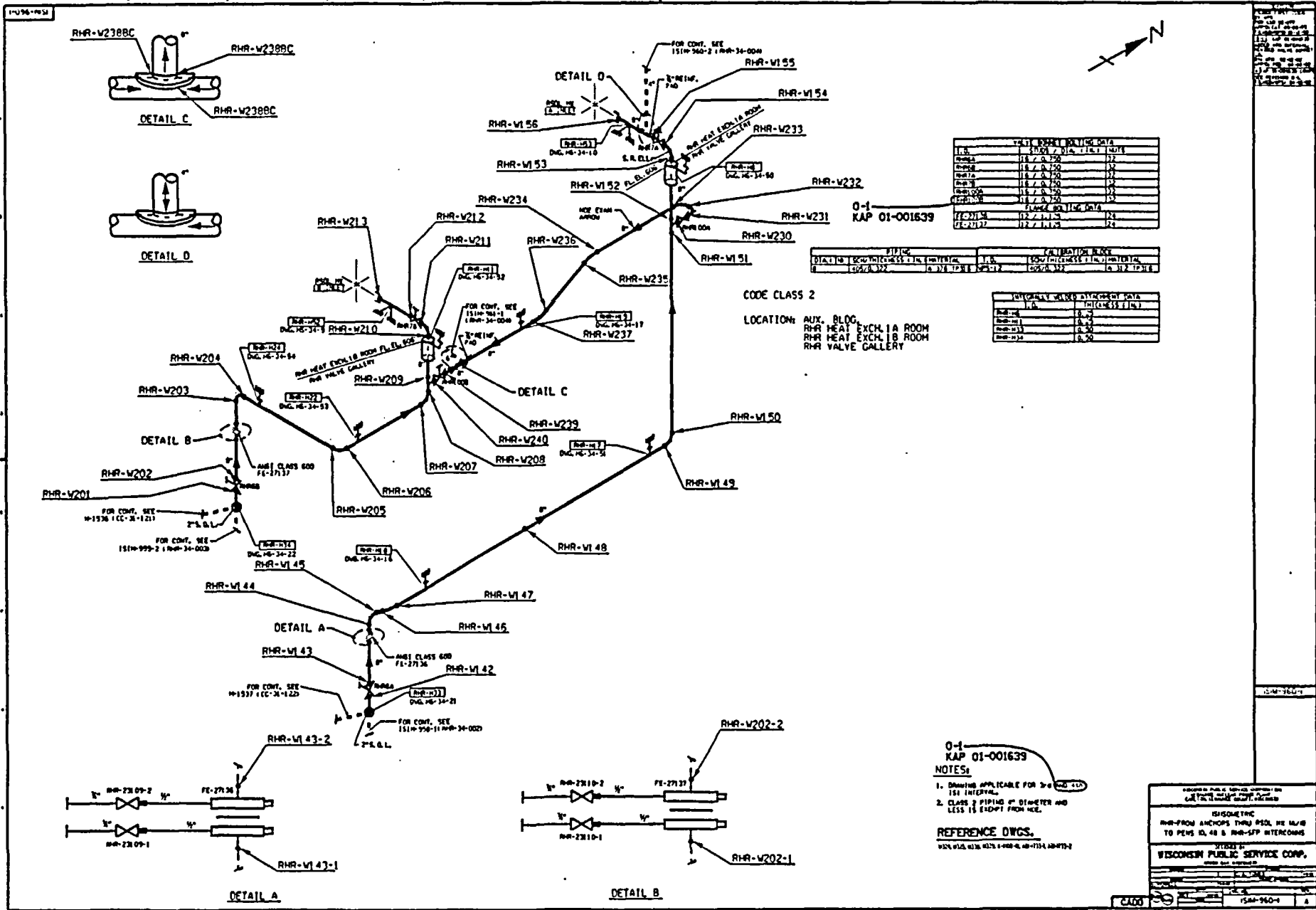
NOTE:
 1. CHANGES APPLICABLE FOR 90
 DEGREE FITTINGS

0-1
 KAP-01-001639

151M-959-2

ISOMETRIC
 RHR FROM CUTW/ SLUMP B & ANCHORS THRU
 RHR PUMP PIT TO ANCHOR ON DISCH LINE

WISCONSIN PUBLIC SERVICE CORP.
 151M-959-2



VALVE SCHEDULE DATA			
ITEM	DESCRIPTION / QTY	ITEM	QTY
RHR-VI 41	18 / 0.750	RHR-VI 42	12
RHR-VI 43	18 / 0.750	RHR-VI 44	12
RHR-VI 45	18 / 0.750	RHR-VI 46	12
RHR-VI 47	18 / 0.750	RHR-VI 48	12
RHR-VI 49	18 / 0.750	RHR-VI 50	12
RHR-VI 51	18 / 0.750	RHR-VI 52	12
RHR-VI 53	18 / 0.750	RHR-VI 54	12
RHR-VI 55	18 / 0.750		

FITTING		CALCULATION BOOK	
ITEM	DESCRIPTION / QTY	ITEM	DESCRIPTION / QTY
RHR-VI 41	18 / 0.750	RHR-VI 42	12 / 1.125
RHR-VI 43	18 / 0.750	RHR-VI 44	12 / 1.125

HEATING VALVE SCHEDULE DATA	
ITEM	DESCRIPTION / QTY
RHR-W201	1 / 0.50
RHR-W202	1 / 0.50
RHR-W203	1 / 0.50
RHR-W204	1 / 0.50

CODE CLASS 2

LOCATION: AUX. BLDG.
RHR HEAT EXCH. 1A ROOM
RHR HEAT EXCH. 1B ROOM
RHR VALVE GALLERY

O-1
KAP 01-001639

- NOTES:
1. DRAWING APPLICABLE FOR 3/4" AND 1" INTERVAL.
 2. CLASS 2 PIPING OF DIAMETER AND LESS IS EXCEPT FROM HERE.

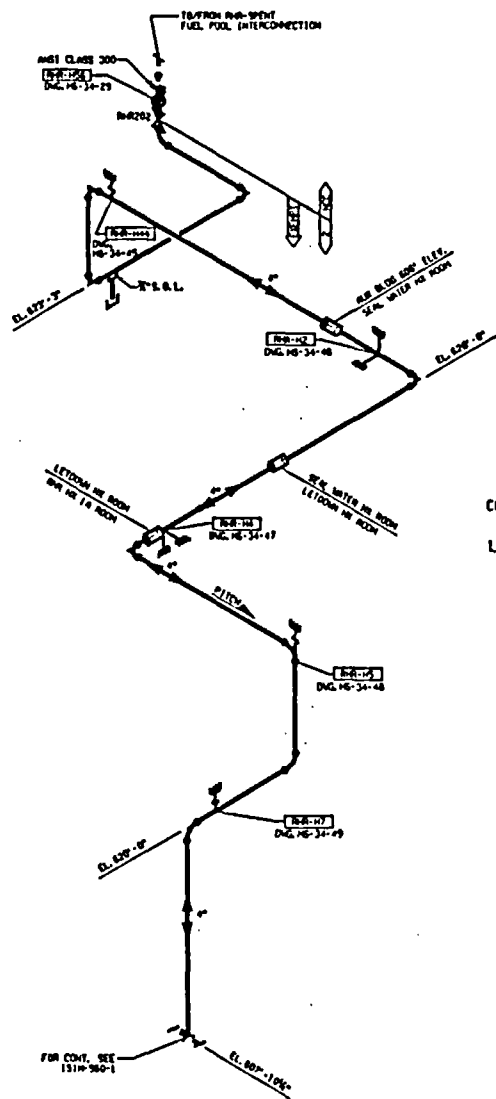
REFERENCE DWGS.
151W-960-1 (RHR-34-000)

ISOMETRIC
RHR-FROM ANCHORS THROUGH ISOL. VALVE
TO PENS. 48 & RHR-LIFT INTERCOMS

WISCONSIN PUBLIC SERVICE COMP.

DATE: 11/11/54
BY: J. J. ...

2-096-1002



CODE CLASS 2

LOCATION: AUX. BLDG.
 SPENT FUEL POOL HEAT EXCHANGER RM,
 SEAL WATER HEAT EXCHANGER RM,
 LETDOWN HEAT EXCHANGER RM,
 RHR HEAT EXCHANGER RM. 1A

PIPING		CALIBRATION BLOCK	
DIA. (IN)	SCHW. THICKNESS (IN)	DIA. (IN)	SCHW. THICKNESS (IN)
8.75	0.375	10.00	0.375
12.00	0.500	12.00	0.500

- NOTES:
- BRACING APPLICABLE FOR 3" & OVER DIA. INTERVAL.
 - CLASS 2 PIPING OF DIAMETER AND LESS IS EXCEPT FROM RCE.
- 0-1
 KAP 01-001639

REFERENCE DWGS.
 151P-90-1, 151P-90-2

DATE: 10/1/80
 DRAWN BY: J. J. [unreadable]
 CHECKED BY: [unreadable]
 APPROVED BY: [unreadable]

ISOMETRIC
 RW-FRM ANCHORS THRU RSOL OR RW-FRM
 TO PENS 42, 49 & RW-FRM INTERCONNS

WISCONSIN PUBLIC SERVICE CORP.
 ST. JOSEPH, WIS.

SCALE: AS SHOWN

DATE: 10/1/80

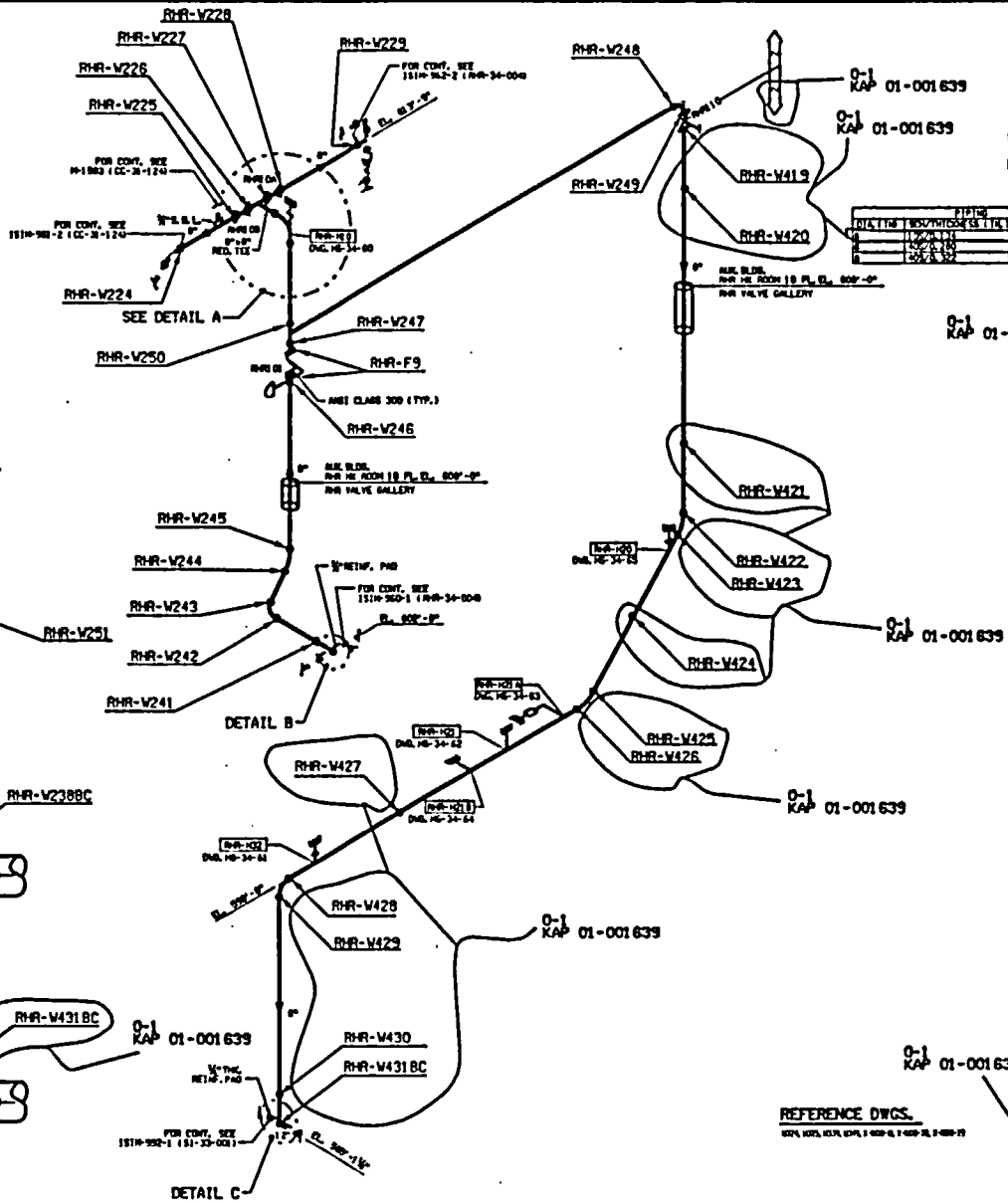
BY: J. J. [unreadable]

CHECKED BY: [unreadable]

APPROVED BY: [unreadable]

151P-90-2

51M-913

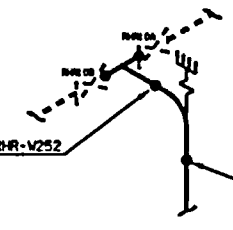


CODE CLASS 2
 LOCATION: AUX. BUILDING ELEV. 606'-0"
 RHR HX ROOM 1B,
 RHR VALVE GALLERY

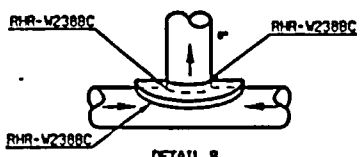
ITEM	QTY	DESCRIPTION
1	1	VALVE GALLERY
2	1	VALVE GALLERY
3	1	VALVE GALLERY
4	1	VALVE GALLERY
5	1	VALVE GALLERY

ITEM	QTY	DESCRIPTION
1	1	VALVE GALLERY
2	1	VALVE GALLERY

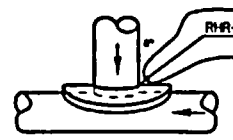
ITEM	QTY	DESCRIPTION
1	1	VALVE GALLERY
2	1	VALVE GALLERY
3	1	VALVE GALLERY
4	1	VALVE GALLERY
5	1	VALVE GALLERY



DETAIL A



DETAIL B

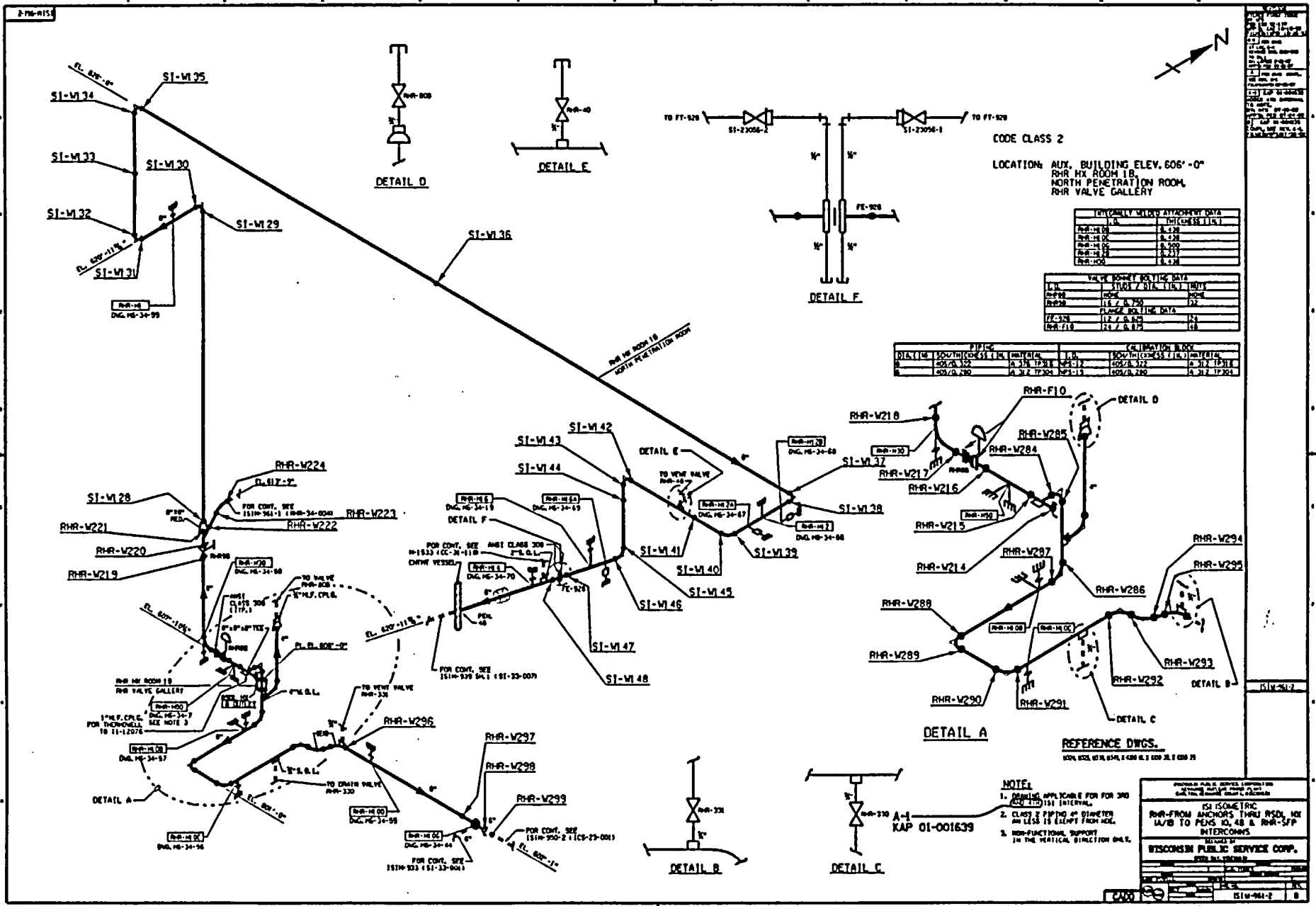


DETAIL C

REFERENCE DWGS.
 151M-902, 151M-903, 151M-904, 151M-905, 151M-906, 151M-907

NOTE:
 1. DRAWING IS SCALE FOR
 1/4" = 1'-0" UNLESS OTHERWISE NOTED.
 2. CLASS 2 FITTING OF DIAMETER
 AND LESS IS EXEMPT FROM NICK.

WISCONSIN PUBLIC SERVICE CORP.
 51M-913
 51M-913-1 A



REVISIONS

NO.	DATE	DESCRIPTION
1	11/17/76	ISSUED FOR CONSTRUCTION
2	11/17/76	REVISIONS TO PIPING
3	11/17/76	REVISIONS TO PIPING
4	11/17/76	REVISIONS TO PIPING
5	11/17/76	REVISIONS TO PIPING
6	11/17/76	REVISIONS TO PIPING
7	11/17/76	REVISIONS TO PIPING
8	11/17/76	REVISIONS TO PIPING
9	11/17/76	REVISIONS TO PIPING
10	11/17/76	REVISIONS TO PIPING

PIPE SCHEDULE DATA

PIPE NO.	SIZE	WALL THICKNESS
RHR-100	8.000	0.375
RHR-101	8.000	0.375
RHR-102	8.000	0.375
RHR-103	8.000	0.375
RHR-104	8.000	0.375

VALVE SCHEDULE DATA

VALVE NO.	SIZE	WALL THICKNESS
RHR-100	8.000	0.375
RHR-101	8.000	0.375
RHR-102	8.000	0.375
RHR-103	8.000	0.375
RHR-104	8.000	0.375

FLANGES SCHEDULE DATA

FLANGE NO.	SIZE	WALL THICKNESS
RHR-100	8.000	0.375
RHR-101	8.000	0.375
RHR-102	8.000	0.375
RHR-103	8.000	0.375
RHR-104	8.000	0.375

SI-M-512

WISCONSIN PUBLIC SERVICE CORP.

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

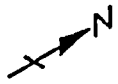
DATE: 11/17/76

PROJECT NO: 151W-001-2

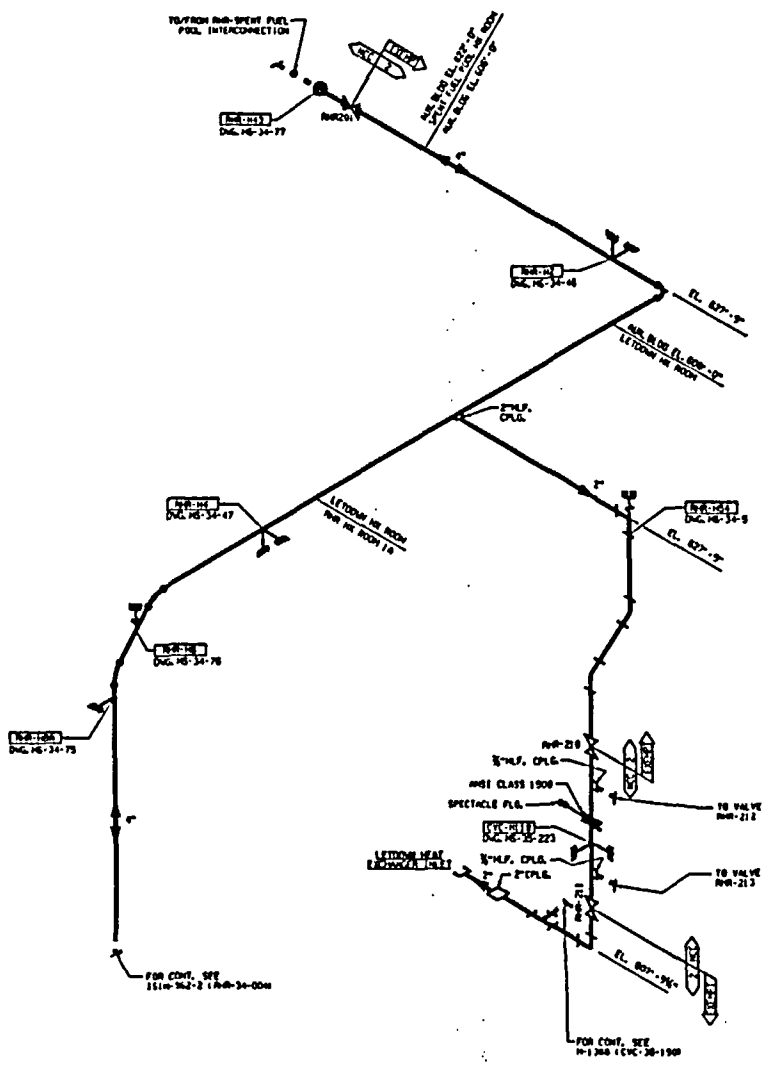
SCALE: AS SHOWN

1-236-RFD

DATE: 12-15-78
 DRAWN BY: [illegible]
 CHECKED BY: [illegible]
 DESIGNED BY: [illegible]
 PROJECT: [illegible]
 SHEET NO: 01-001639
 TOTAL SHEETS: 1

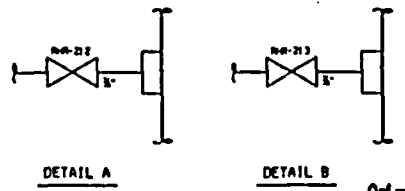


DIA. (IN)	PIPING		CALCULATION BLOCK		
	SAVING THICKNESS (IN)	PROVIDED	S.A.	SAVING THICKNESS (IN)	PROVIDED
0.875	0.312	0.312	N/A	N/A	N/A
1.000	0.312	0.312	N/A	N/A	N/A



CODE CLASS 2

LOCATION: AUX. BLDG.
 SPENT FUEL POOL HX ROOM,
 LETDOWN HX ROOM,
 RFR HX ROOM 1A

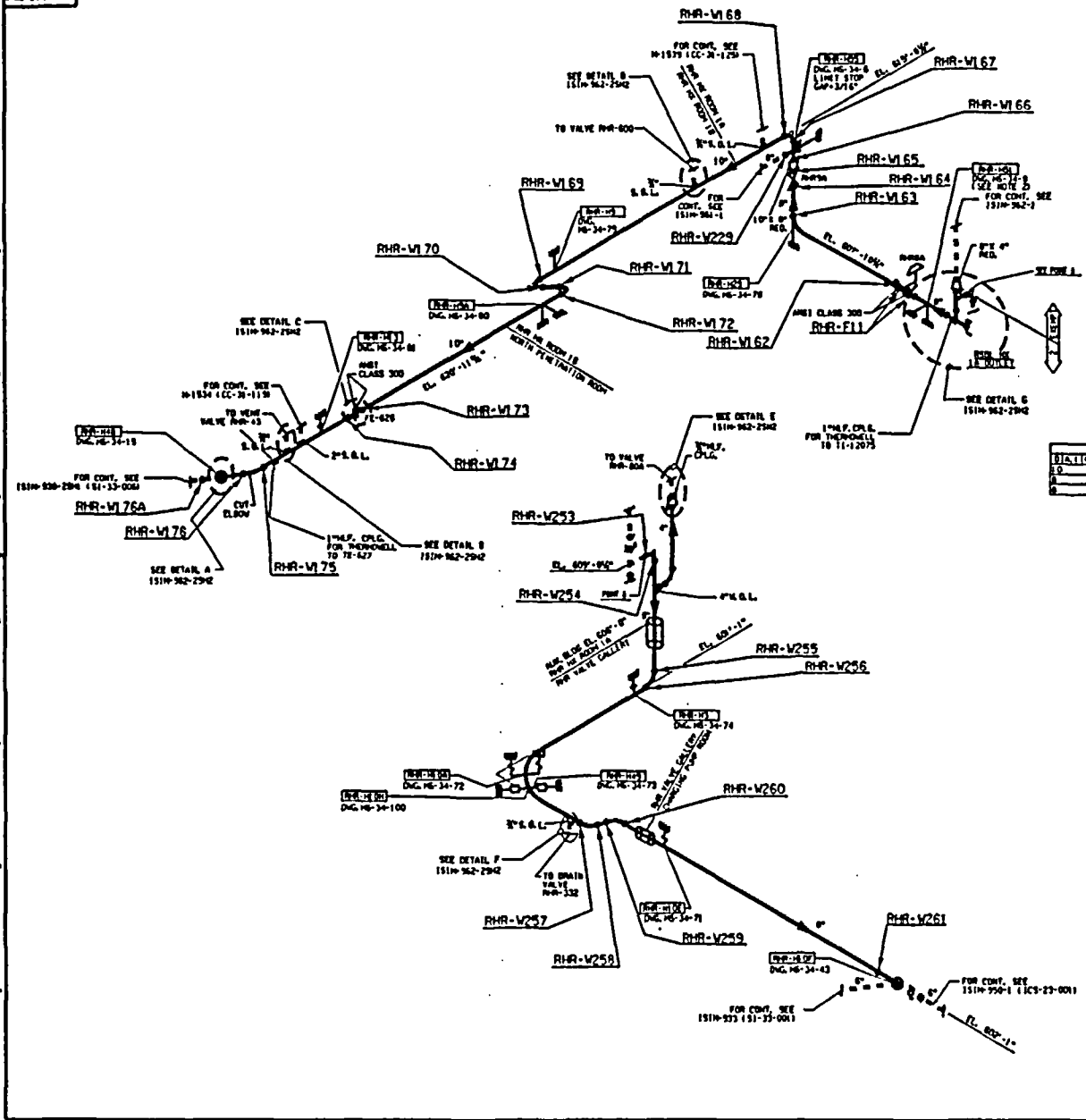


REFERENCE DWGS.
 1510-262-2 1700-30-004, 1400-30, 1400-31,
 10-074, 10-096

NOTE:
 1. DRAWING APPLICABLE FOR 300
 (SEE 10) 151 INTERVAL.
 2. CLASS 2 PIPING OF DIAMETER AND
 LESS IS EXEMPT FROM NDE.

0-1
 KAP 01-001639

ISOMETRIC SPENT FUEL POOL HX ROOM LETDOWN HX ROOM RFR HX ROOM 1A	
DRAWN BY: [illegible] CHECKED BY: [illegible] DESIGNED BY: [illegible]	WISCONSIN PUBLIC SERVICE CORP. 1545 WEST WISCONSIN AVENUE MILWAUKEE, WISCONSIN 53233
SHEET NO: 01-001639 TOTAL SHEETS: 1	SCALE: AS SHOWN DATE: 12-15-78



CODE CLASS 2
 LOCATION: AUX. BLDG. ELEV. 606'-0"
 NORTH PENETRATION ROOM
 RHR HX ROOM 1B,
 RHR HX ROOM 1A,
 RHR VALVE GALLERY,
 CHARGING PUMP ROOM

TYPICAL VALVE APPROXIMATE DATA	
CLASS	TYPE (CLASS 1)
1	1.25"
2	1.50"
3	1.75"
4	2.00"

SIZE (IN)	SCHED. WALL THICKNESS (IN)	CALCULATION BLOCK	
		CLASS 1	CLASS 2
1.50	0.0625	1.50	1.50
2.00	0.0875	2.00	2.00
2.50	0.1125	2.50	2.50
3.00	0.1375	3.00	3.00

VALVE APPROXIMATE DATA	
CLASS	TYPE (CLASS 1)
1	1.25"
2	1.50"
3	1.75"
4	2.00"

VALVE APPROXIMATE DATA	
CLASS	TYPE (CLASS 1)
1	1.25"
2	1.50"
3	1.75"
4	2.00"

REFERENCE DWGS.

1510-962-254
 1510-962-255
 1510-962-256
 1510-962-257
 1510-962-258
 1510-962-259
 1510-962-260
 1510-962-261
 1510-962-262
 1510-962-263
 1510-962-264
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 1510-962-266
 1510-962-267
 1510-962-268
 1510-962-269
 1510-962-270
 1510-962-271
 1510-962-272
 1510-962-273
 1510-962-274
 1510-962-275
 1510-962-276
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 1510-962-279
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 1510-962-293
 1510-962-294
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 1510-962-297
 1510-962-298
 1510-962-299
 1510-962-300

NOTES:

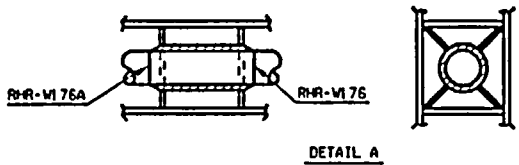
1. DRAWING APPLICABLE FOR 3RD CLASS 2 PIPE.
2. SEE DETAIL F FOR SUPPLEMENTARY NOTES.
3. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM HCC.

A-1
 KAP 01-001639

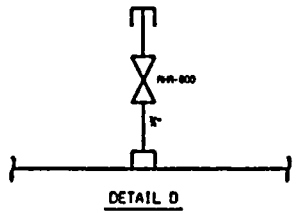
(SH. 1 OF 2)

ISOMETRIC
 FROM ANCHORS THRU ROOF ME. W/S
 TO PDG. EL. 48 & RHR-S/P INTERCOG.
 WISCONSIN PUBLIC SERVICE CORP.
 1510-962-254

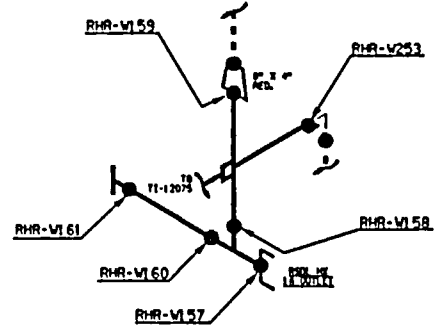
3542-256-000



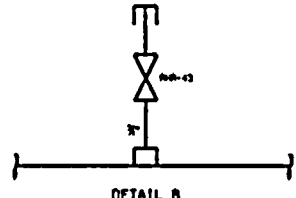
DETAIL A



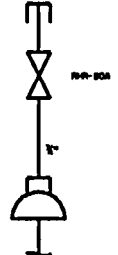
DETAIL D



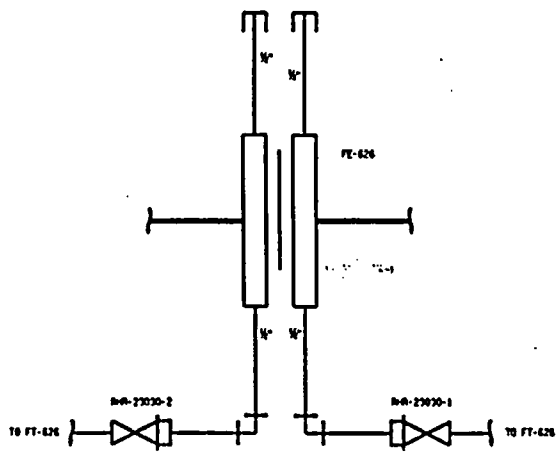
DETAIL G



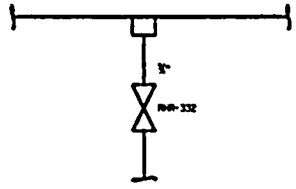
DETAIL B



DETAIL E



DETAIL C



DETAIL F

REVISIONS
 NO. DATE BY
 1 11/14/78 J.P.P.
 2 11/14/78 J.P.P.
 3 11/14/78 J.P.P.
 4 11/14/78 J.P.P.
 5 11/14/78 J.P.P.
 6 11/14/78 J.P.P.
 7 11/14/78 J.P.P.
 8 11/14/78 J.P.P.
 9 11/14/78 J.P.P.
 10 11/14/78 J.P.P.
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 12 11/14/78 J.P.P.
 13 11/14/78 J.P.P.
 14 11/14/78 J.P.P.
 15 11/14/78 J.P.P.
 16 11/14/78 J.P.P.
 17 11/14/78 J.P.P.
 18 11/14/78 J.P.P.
 19 11/14/78 J.P.P.
 20 11/14/78 J.P.P.

NOTES:
 1. DIMENSIONS APPLICABLE FOR 3RD AND 4TH 151 INTERVAL.
 2. CLASS 2 PIPING AS SHOWN AND LEGS TO EXCEPT FROM NIP.

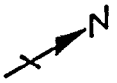
B-1
 KAP 01-001639

(SH. 2 OF 2)

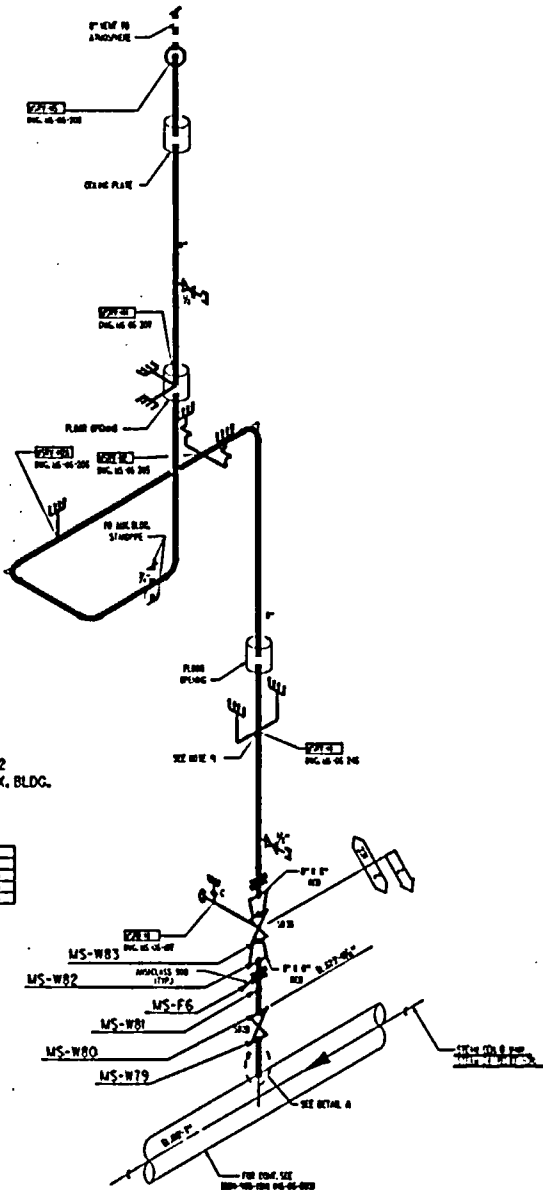
APPROVED FOR CONSTRUCTION WISCONSIN PUBLIC SERVICE CORP.	
ISOLATING PIPE FROM ANCHORS THROUGH RODS AND NIP TO PENES 45, 46 & RHR-SFP INTERCHANGING	
RELEASED BY WISCONSIN PUBLIC SERVICE CORP. PERMITS DIVISION	
PROJECT NO. 01-001639	SHEET NO. 2
DATE 11/14/78	DRAWN BY J.P.P.
CHECKED BY J.P.P.	SCALE AS SHOWN

6400

076-703



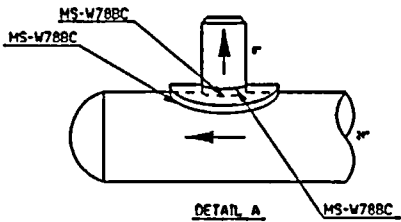
FILED IN THE NAME OF THE PROJECT
 PROJECT NO. 076-703
 SHEET NO. 076-703-01
 DRAWING DATE 07-01-68
 DRAWING BY J. J. [unreadable]
 CHECKED BY [unreadable]
 APPROVED BY [unreadable]
 TITLE: ISOMETRIC MAIN STEAM IS POWER RELIEF VALVE VENT



CODE CLASS 2
LOCATION: AUX. BLDG.

PIPING		CALIBRATION BLOCK	
SIZE	WALL THICKNESS (IN.)	SIZE	WALL THICKNESS (IN.)
1/2"	0.109	1/2"	0.109
1/2"	0.109	1/2"	0.109
1/2"	0.109	1/2"	0.109

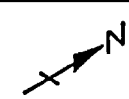
VALVE SYMBOL DATA	
VALVE	1/2" / 0.109
ORIFICE	1/2" / 0.109
ORIFICE	1/2" / 0.109



NOTE:
 FLANGE APPLICABLE PER DWG. KAP 01-001839
 REFERENCE DWGS.
 MS-W78BC, MS-W78BC, MS-W78BC, MS-W78BC, MS-W78BC

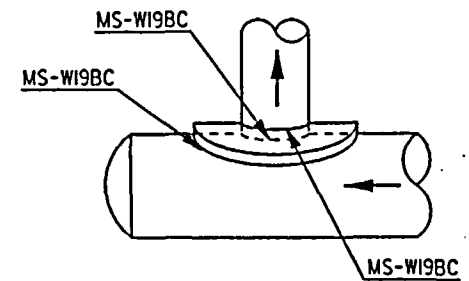
ISOMETRIC MAIN STEAM IS POWER RELIEF VALVE VENT
 INSCONSH PUBLIC SERVICE CORP.
 076-703-01
 076-703-01
 076-703-01

096-470



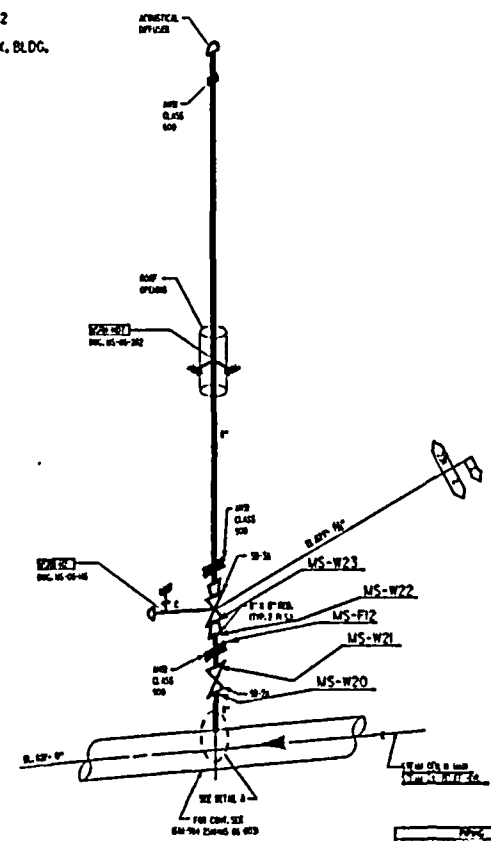
1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 2. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 6. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 7. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 8. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
 9. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
 10. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

CODE CLASS 2
 LOCATION: AUX. BLDG.



DETAIL A

VALVE SCHEDULE FOR THIS DATA			
NO.	SIZE	TYPE	NOTE
MS-21	1/2"	W	1
MS-22	1/2"	W	1
MS-23	1/2"	W	1
MS-24	1/2"	W	1
MS-25	1/2"	W	1



NOTES:
 1. SEE REFERENCE DWG. NO. KAP 01-01639

REFERENCE DWGS.
 KAP 01-01639

VALVE SCHEDULE FOR THIS DATA			
NO.	SIZE	TYPE	NOTE
MS-21	1/2"	W	1
MS-22	1/2"	W	1
MS-23	1/2"	W	1
MS-24	1/2"	W	1
MS-25	1/2"	W	1

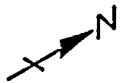
ISOMETRIC
 MAIN STEAM VA
 POWER RELIEF VALVE WENT
 WISCONSIN PUBLIC SERVICE CORP.
 MILWAUKEE, WIS.

INTERMEDIATE VALVE ATTACHMENT DATA		
ITEM	DESCRIPTION	STATUS
RR1 527A	18" NOK 180	1.0
RR1 511A	18" NOK 180	1.0
RR1 511B	18" NOK 180	1.0
RR1 511C	18" NOK 180	1.0
RR1 511D	18" NOK 180	1.0
RR1 511E	18" NOK 180	1.0
RR1 511F	18" NOK 180	1.0
RR1 511G	18" NOK 180	1.0
RR1 511H	18" NOK 180	1.0
RR1 511I	18" NOK 180	1.0
RR1 511J	18" NOK 180	1.0
RR1 511K	18" NOK 180	1.0
RR1 511L	18" NOK 180	1.0
RR1 511M	18" NOK 180	1.0
RR1 511N	18" NOK 180	1.0
RR1 511O	18" NOK 180	1.0
RR1 511P	18" NOK 180	1.0
RR1 511Q	18" NOK 180	1.0
RR1 511R	18" NOK 180	1.0
RR1 511S	18" NOK 180	1.0
RR1 511T	18" NOK 180	1.0
RR1 511U	18" NOK 180	1.0
RR1 511V	18" NOK 180	1.0
RR1 511W	18" NOK 180	1.0
RR1 511X	18" NOK 180	1.0
RR1 511Y	18" NOK 180	1.0
RR1 511Z	18" NOK 180	1.0

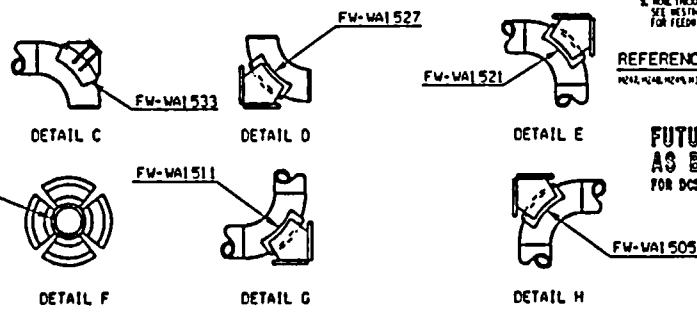
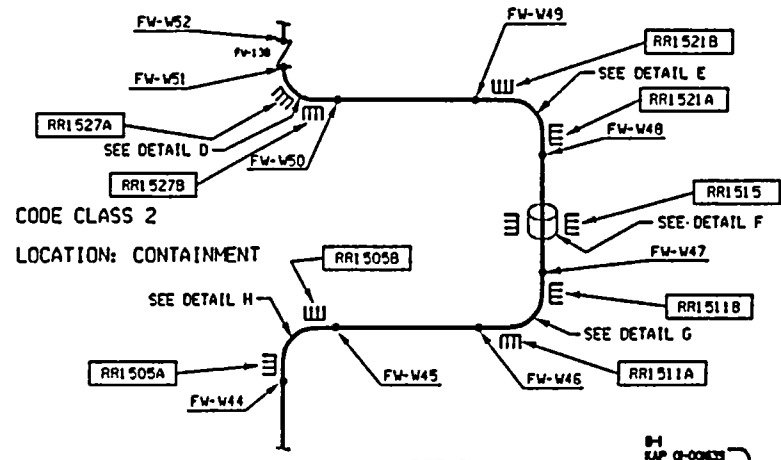
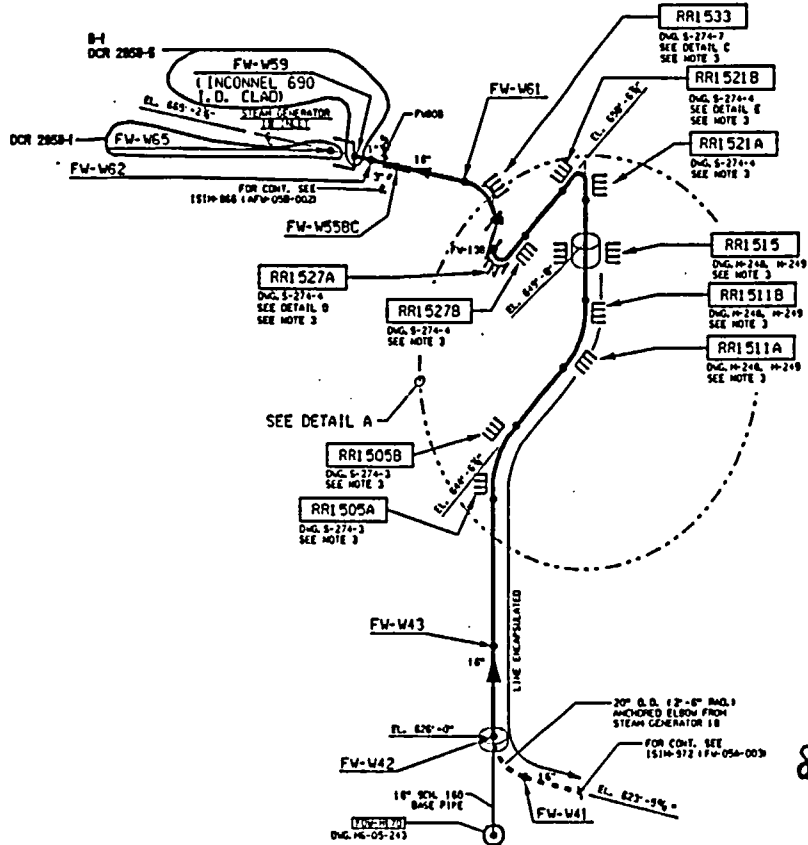
PIPING				CALCULATION BLOCK			
ITEM	DESCRIPTION	STATUS	ITEM	DESCRIPTION	STATUS	ITEM	DESCRIPTION
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS
18"	1800 LBS	A 106 GR. B	18"	1800 LBS	A 106 GR. B	18"	1800 LBS

VALVE BODY BOLTING DATA	
VALVE ID	SIZE
RR1 527A	18"
RR1 511A	18"
RR1 511B	18"
RR1 511C	18"
RR1 511D	18"
RR1 511E	18"
RR1 511F	18"
RR1 511G	18"
RR1 511H	18"
RR1 511I	18"
RR1 511J	18"
RR1 511K	18"
RR1 511L	18"
RR1 511M	18"
RR1 511N	18"
RR1 511O	18"
RR1 511P	18"
RR1 511Q	18"
RR1 511R	18"
RR1 511S	18"
RR1 511T	18"
RR1 511U	18"
RR1 511V	18"
RR1 511W	18"
RR1 511X	18"
RR1 511Y	18"
RR1 511Z	18"

DCR 2858-1



ITEM	DESCRIPTION	STATUS
RR1 527A	18" NOK 180	1.0
RR1 511A	18" NOK 180	1.0
RR1 511B	18" NOK 180	1.0
RR1 511C	18" NOK 180	1.0
RR1 511D	18" NOK 180	1.0
RR1 511E	18" NOK 180	1.0
RR1 511F	18" NOK 180	1.0
RR1 511G	18" NOK 180	1.0
RR1 511H	18" NOK 180	1.0
RR1 511I	18" NOK 180	1.0
RR1 511J	18" NOK 180	1.0
RR1 511K	18" NOK 180	1.0
RR1 511L	18" NOK 180	1.0
RR1 511M	18" NOK 180	1.0
RR1 511N	18" NOK 180	1.0
RR1 511O	18" NOK 180	1.0
RR1 511P	18" NOK 180	1.0
RR1 511Q	18" NOK 180	1.0
RR1 511R	18" NOK 180	1.0
RR1 511S	18" NOK 180	1.0
RR1 511T	18" NOK 180	1.0
RR1 511U	18" NOK 180	1.0
RR1 511V	18" NOK 180	1.0
RR1 511W	18" NOK 180	1.0
RR1 511X	18" NOK 180	1.0
RR1 511Y	18" NOK 180	1.0
RR1 511Z	18" NOK 180	1.0



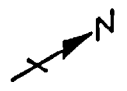
- NOTES:**
1. DRIVING APPLICABLE FOR 3/8" AND SMALLER.
 2. CLASS 2 PIPING OF DIAMETER AND LESS IS EXEMPT FROM ADE.
 3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION III.
 4. FW NOZZLE TRANSITION PIPE SPOOL BUTTERED WITH INCONEL 625.
 5. MIN. THICKNESS OF CARBON STEEL & WELDED BASE MATERIAL. SEE WELDING SYMBOLS SYSTEMS 3 & 4 FOR FEEDWATER NOZZLE TRANSITION PIPE CLAD DETAILS.

REFERENCE DWGS.
151M-971, 151M-972, 151M-973, 151M-974, 151M-975, 151M-976, 151M-977

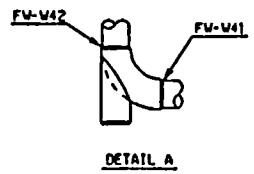
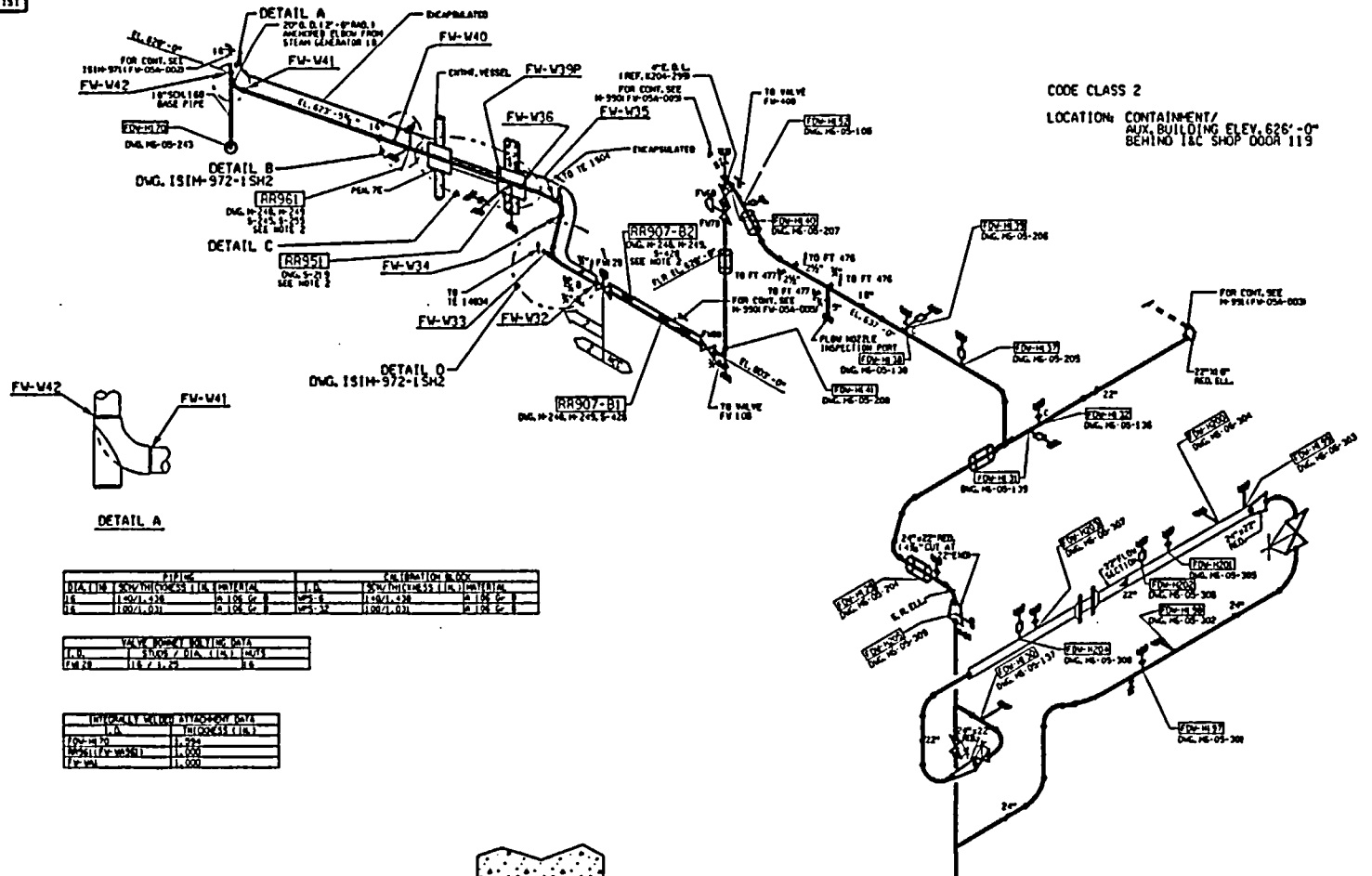
FUTURE AS BUILT FOR DCR 2858

WISCONSIN PUBLIC SERVICE CORPORATION 151 ISOMETRIC FEEDWATER FROM ANCHORED ELL TO STM GEN. 18	
DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: 10/15/71	
CADD	151M-971

1-226-W151



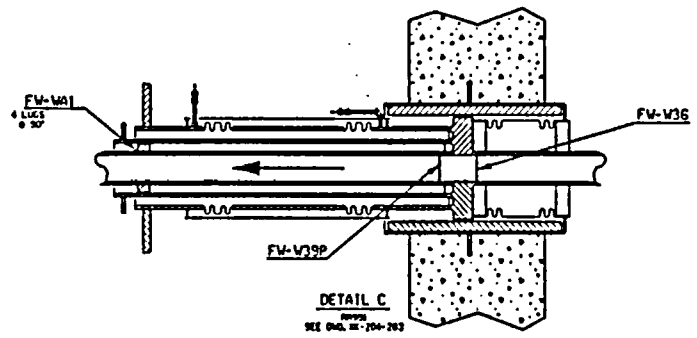
CODE CLASS 2
LOCATION: CONTAINMENT/
AUX. BUILDING ELEV. 626'-0"
BEHIND I&C SHOP DOOR 119



DIAM.	SCH.	MATERIAL	W.T.	W.T.	W.T.
11.50	40	304	0.1875	0.1875	0.1875
11.50	40	304	0.1875	0.1875	0.1875

VALVE	SIZE	W.T.	W.T.
11.50	304	0.1875	0.1875
11.50	304	0.1875	0.1875

THICKNESS	W.T.	W.T.
11.50	0.1875	0.1875
11.50	0.1875	0.1875



REFERENCE DWGS.
KAP 01-001639, KAP 01-001640, KAP 01-001641, KAP 01-001642

- NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISM INTERVAL.
 2. ANCHOR RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION II.
 3. CLASS 2 PIPING 6" DIAMETER AND LESS IS EXEMPT FROM NOE.

B-1
KAP 01-001639

(SH 1 OF 2)

IS1 ISOMETRIC
FEEDWATER- FROM ANCHOR NEAR HTRS
TO ANCHORED ELLS INSIDE CHNT

WISCONSIN PUBLIC SERVICE CORP.
DESIGN DEPARTMENT

DATE	BY	CHKD

151M-972-154E C

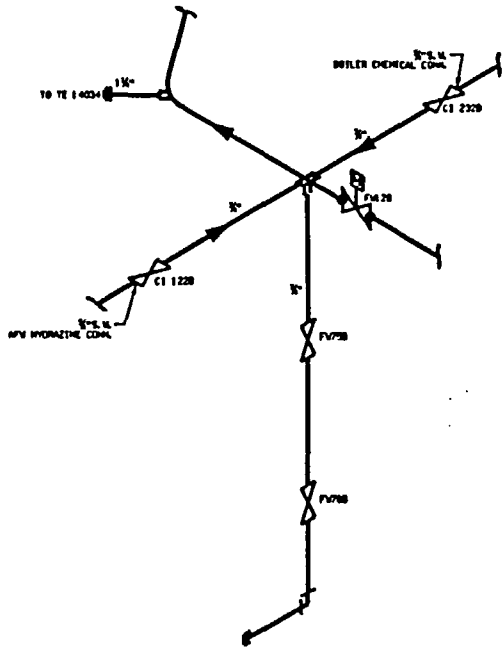
FIELD FIRST DRAW
DATE 10/15/74
DRAWN BY J. J. HART
CHECKED BY J. J. HART
DESIGNED BY J. J. HART

FOR THE USE OF THE
FIELD ENGINEER
FOR THE USE OF THE
FIELD ENGINEER
FOR THE USE OF THE
FIELD ENGINEER

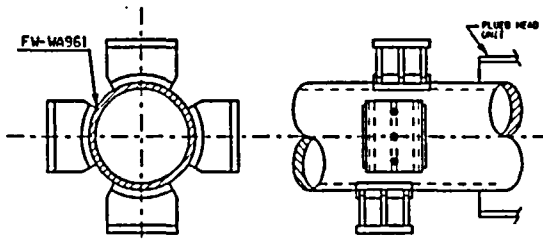
FOR THE USE OF THE
FIELD ENGINEER
FOR THE USE OF THE
FIELD ENGINEER
FOR THE USE OF THE
FIELD ENGINEER

CSI-972-1542

REVISIONS
 0-1 KAP 01-001639
 1511-972-1542



DETAIL D



DETAIL B

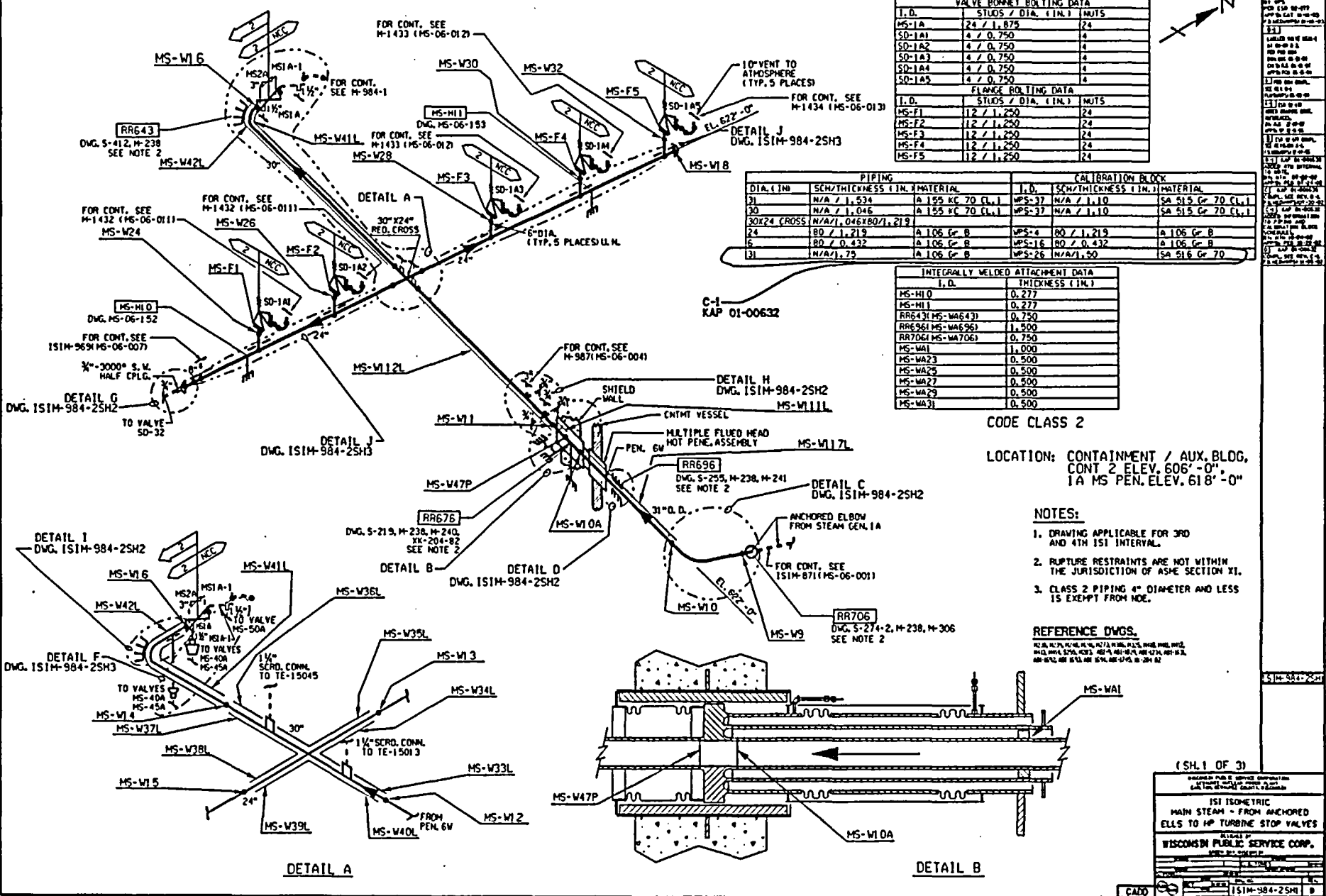
NOTES:

- 1. DRINKING APPLICABLE FOR 3RD AND 4TH 151 INTERVAL.
- 2. CLASS 2 PIPING 1/2" DIAMETER AND LESS IS EXEMPT FROM HDL.

0-1
 KAP 01-001639

(SH 2 OF 2)

PROJECT AND/OR COMPANY NAME WISCONSIN PUBLIC SERVICE CORP.	
IS1 ISOMETRIC FEEDWATER- FROM ANCHOR NEAR MTRS TO ANCHORED ELL'S INSIDE CNTMT	
DRAWN BY CHECKED BY DATE	
1511-972-1542	



VALVE BONNET BOLTING DATA			
I.D.	STUOS / DIA. (IN.)	NUTS	
MS-1A	24 / 1.875	24	
SD-1A1	4 / 0.750	4	
SD-1A2	4 / 0.750	4	
SD-1A3	4 / 0.750	4	
SD-1A4	4 / 0.750	4	
SD-1A5	4 / 0.750	4	

FLANGE BOLTING DATA			
I.D.	STUOS / DIA. (IN.)	NUTS	
MS-F1	12 / 1.250	24	
MS-F2	12 / 1.250	24	
MS-F3	12 / 1.250	24	
MS-F4	12 / 1.250	24	
MS-F5	12 / 1.250	24	

PIPING				CALIBRATION BLOCK			
DIA. (IN.)	SCH./THICKNESS (IN.)	MATERIAL	I.D.	SCH./THICKNESS (IN.)	MATERIAL		
31	N/A / 1.534	A 155 KC 70 CL1	WPS-37	N/A / 1.110	SA 515 Gr 70 CL1		
30	N/A / 1.046	A 155 KC 70 CL1	WPS-37	N/A / 1.110	SA 515 Gr 70 CL1		
30X24 CROSS	N/A/1.046X1.219						
24	80 / 1.219	A 106 Gr B	WPS-4	80 / 1.219	A 106 Gr B		
6	80 / 0.432	A 106 Gr B	WPS-16	80 / 0.432	A 106 Gr B		
31	N/A/1.75	A 106 Gr B	WPS-26	N/A/1.50	SA 516 Gr 70		

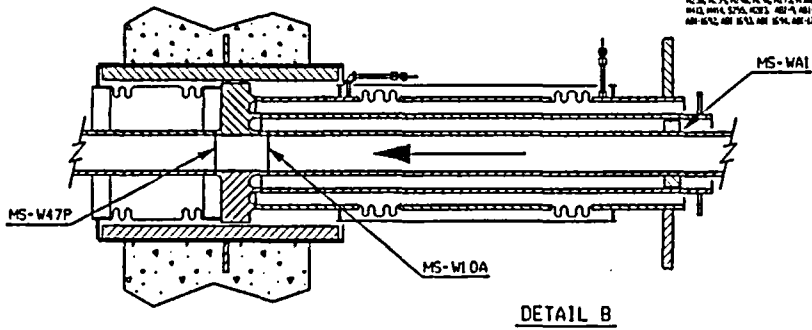
INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
MS-W10	0.277
MS-W11	0.277
RR643 (MS-WA643)	0.750
RR661 (MS-WA696)	1.500
RR706 (MS-WA706)	0.750
MS-WA1	1.000
MS-WA23	0.500
MS-WA25	0.500
MS-WA27	0.500
MS-WA29	0.500
MS-WA31	0.500

CODE CLASS 2

LOCATION: CONTAINMENT / AUX. BLDG,
CONT 2 ELEV. 606'-0"
1A MS PEN. ELEV. 618'-0"

- NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
 2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
 3. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NOE.

REFERENCE DWGS.
S-255, M-238, M-241
S-274-2, M-238, M-306



N

(SH. 1 OF 3)

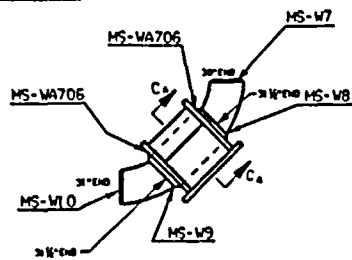
DRAUGHTING PUBLIC SERVICE CORPORATION
CANTON, MASSACHUSETTS

ISI ISOMETRIC
MAIN STEAM - FROM ANCHORED
ELLS TO HP TURBINE STOP VALVES

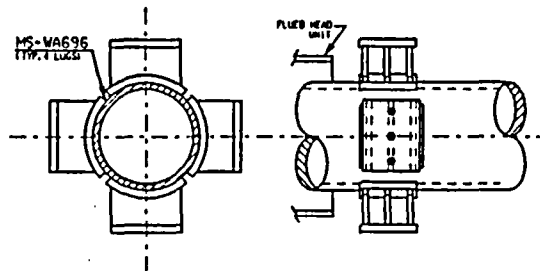
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
SCALE: AS SHOWN

DWG. S-412, M-238
151M-984-25H1 B

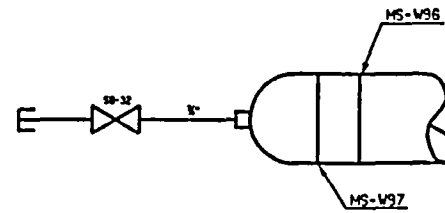
CHS2-96-1151



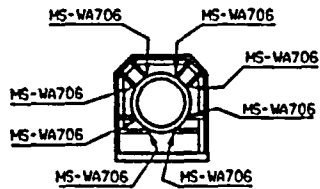
DETAIL C



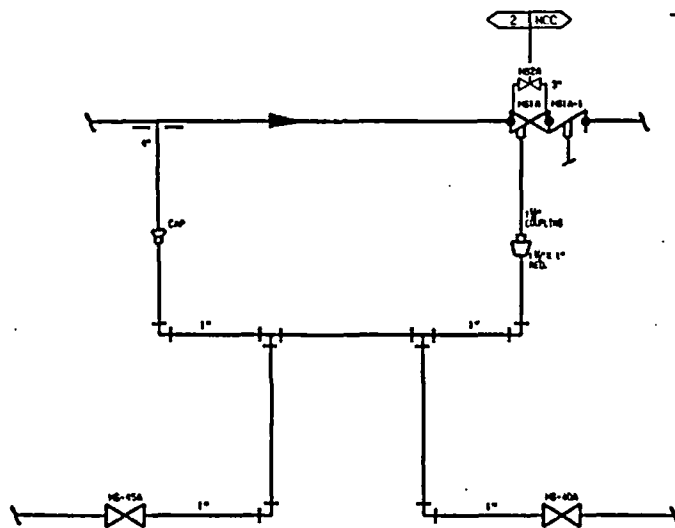
DETAIL D



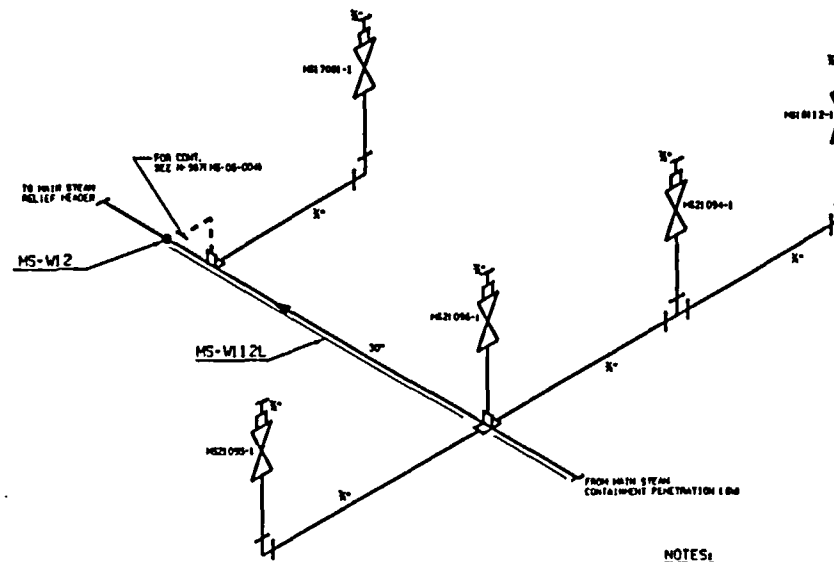
DETAIL G



SECTION C-C



DETAIL E



DETAIL H

- NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH 151 INTERVAL.
 2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM MCL.

A-1
KAP 01-001639

1. 151-984-2542
2. 151-984-2542
3. 151-984-2542
4. 151-984-2542
5. 151-984-2542
6. 151-984-2542
7. 151-984-2542
8. 151-984-2542
9. 151-984-2542
10. 151-984-2542

151-984-2542

(SHEET 2 OF 3)

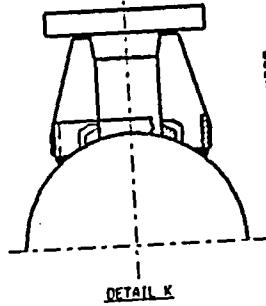
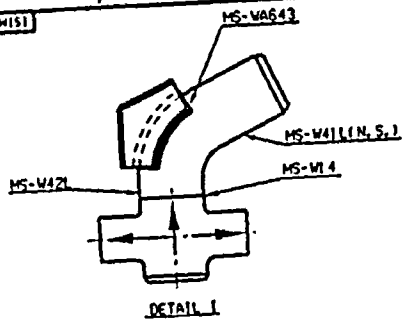
151 DETAILS SHEET 2
MAIN STEAM - FROM ANCHORED
ELLS TO HP TURBINE STOP VALVES

WISCONSIN PUBLIC SERVICE CORP.
151M-984-2542

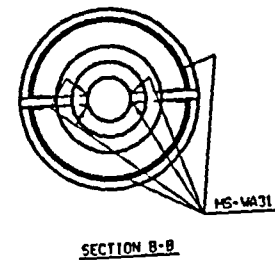
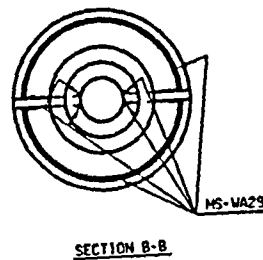
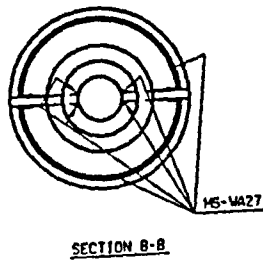
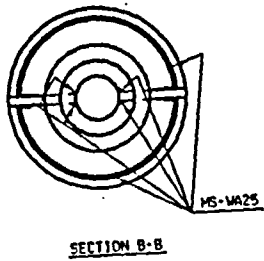
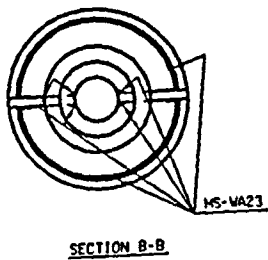
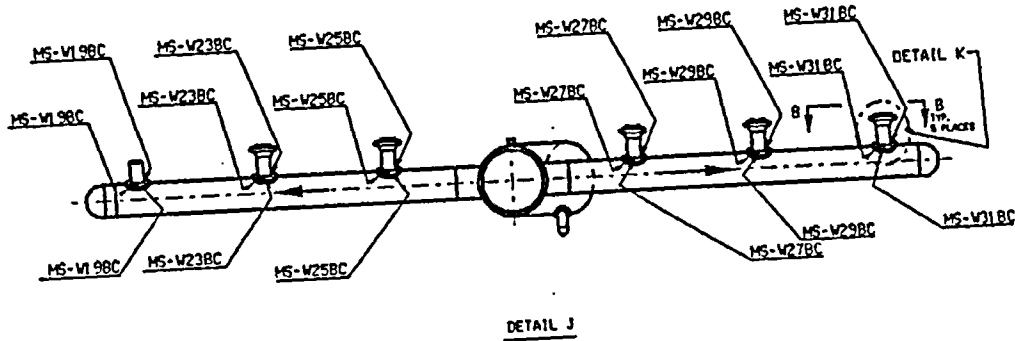
151M-984-2542

ENSZ-P06-M151

REVISIONS
NO. DATE BY
1 11-15-54 J.S.
2 11-15-54 J.S.
3 11-15-54 J.S.
4 11-15-54 J.S.
5 11-15-54 J.S.



END VIEW OF TYPICAL REINFORCEMENT FOR MAIN STEAM RELIEF VALVES FOR INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBERS SEE SECTION B-B.



NOTES:

1. DRAWING APPLICABLE FOR 3RD AND 4TH 151 INTERVAL.

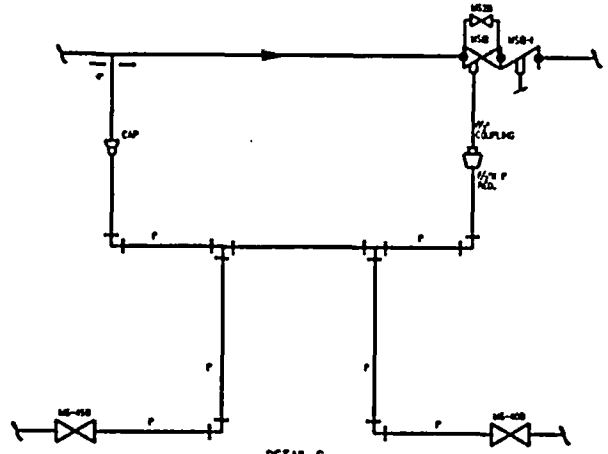
0-1
KAP 01-001639

(SH. 3 OF 3)

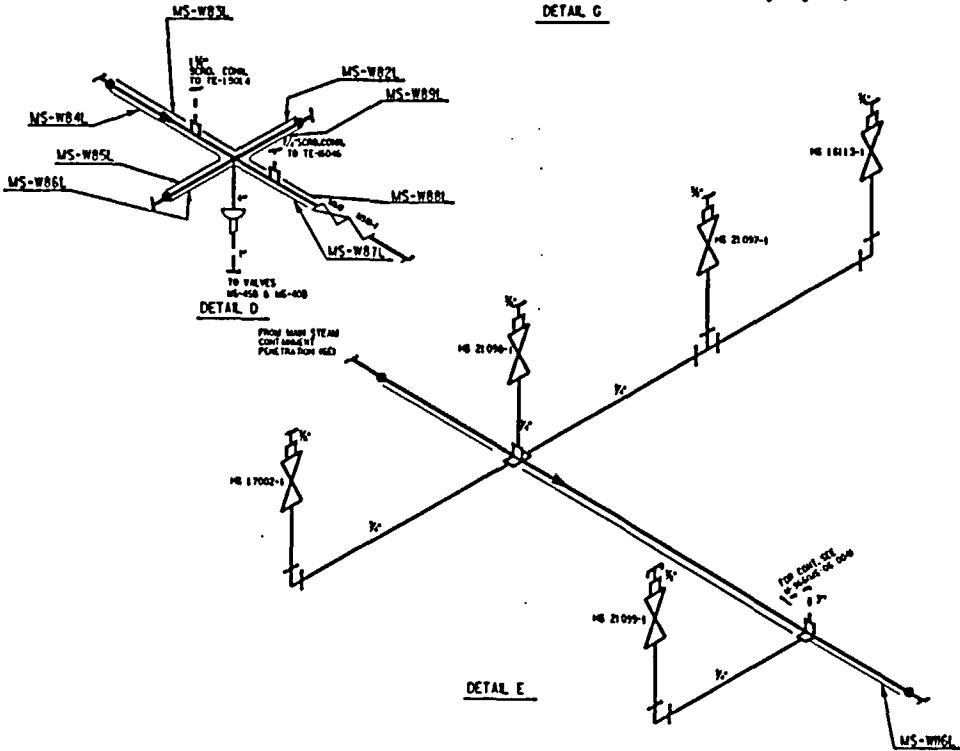
WISCONSIN PUBLIC SERVICE COMPANY
 MAIN STEAM - FROM ANCHORED
 ELLS TO HP TURBINE STOP VALVES
 WISCONSIN PUBLIC SERVICE COMPANY
 151W-984-25H3 A

210-000-000

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 2. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 3. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 4. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 5. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 6. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 7. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 8. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 9. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.
 10. ALL DIMENSIONS ARE TO FACE UNLESS INDICATED OTHERWISE.



DETAIL G



DETAIL D

DETAIL E

A-1
 KAP 01-001639

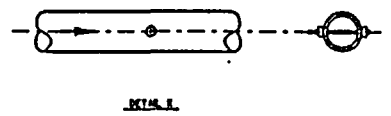
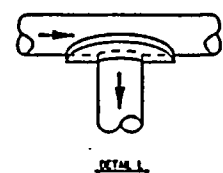
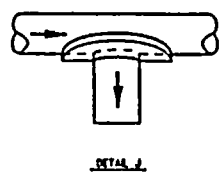
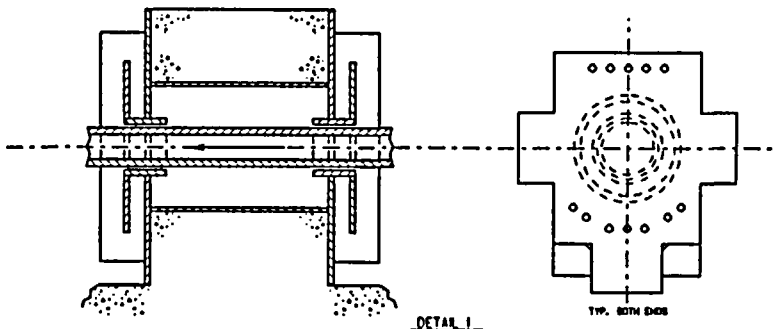
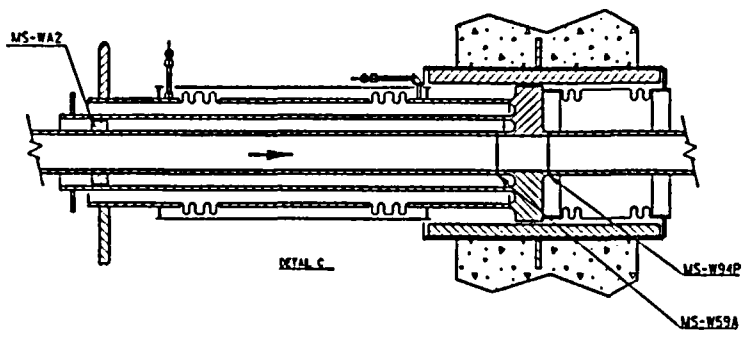
NOTE:
 1. DRAWING APPLICABLE FOR 300 AND 675 ISE INTERVAL.
 2. CLASS 2 PIPING 4\"/>

(SHEET 2 OF 3)

ISOMETRIC
 MAIN STEAM FROM ANCHORED
 ELLS TO HP TURBINE STOP VALVES
 DRAWN BY
 WISCONSIN PUBLIC SERVICE CORP.
 MILWAUKEE, WISCONSIN

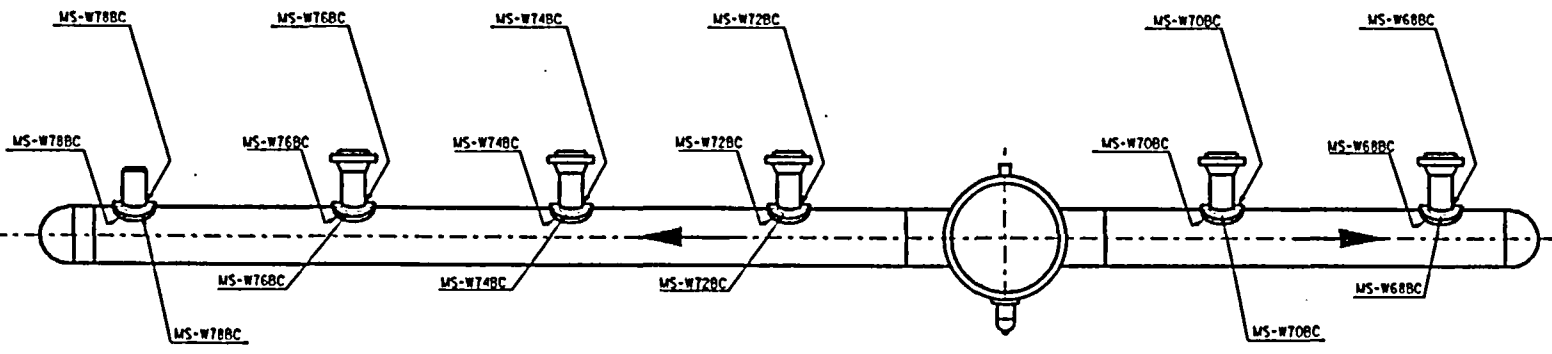
DWG 204-495

FOR THE USE OF THE
 ENGINEER OR ARCHITECT
 IN CONNECTION WITH THE
 PROJECT OF THE
 WISCONSIN PUBLIC SERVICE COMPANY
 PROJECT NO. 204-495
 DRAWING NO. 204-495-1



0-1
 KAP 01-001639

NOTE:
 1. DRAWING APPLICABLE FOR 200 AND 470 PSI INTERVAL.



(SHEET 3 OF 3)

ISOMETRIC MAIN STEAM FROM ANCHORED ELLS TO HP TURBINE STOP VALVE			
DESIGNED BY WISCONSIN PUBLIC SERVICE COMP.			
CHECKED BY			
DATE			
PROJECT NO.			
DRAWING NO.			
SHEET NO.			
TOTAL SHEETS			
SCALE			
APPR. BY			
TITLE			

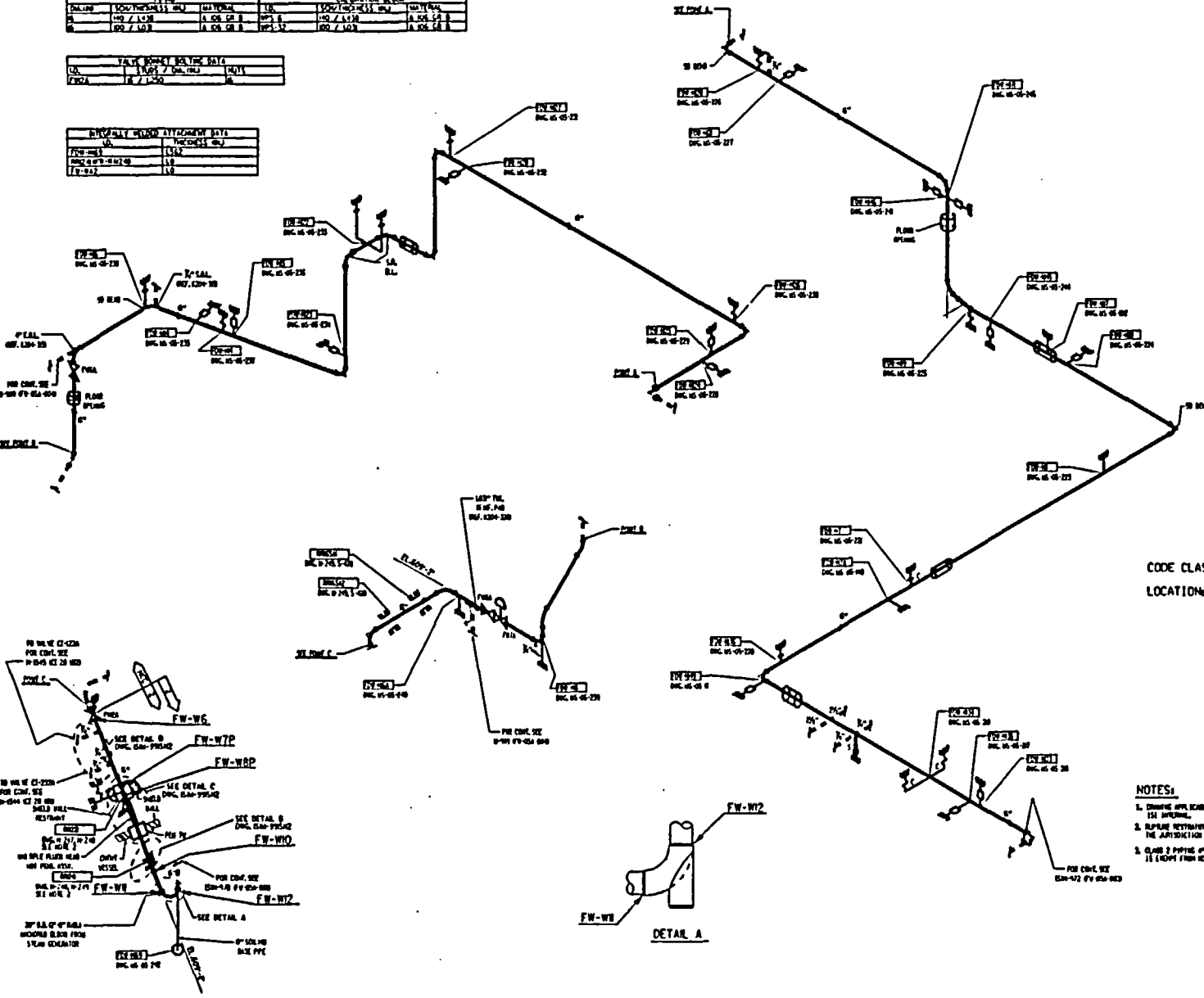
204-495-1

8A-02

FROM		TO		CH. BRIDGE BLOCK	
NO.	DESCRIPTION	NO.	DESCRIPTION	NO.	DESCRIPTION
100	100	100	100	100	100
101	101	101	101	101	101
102	102	102	102	102	102

VALVE ROOM DATA	
NO.	101
DESCRIPTION	VALVE ROOM
DATE	12/1/50

DIMENSIONAL ALIGNMENT DATA	
NO.	101
DESCRIPTION	ALIGNMENT
DATE	12/1/50



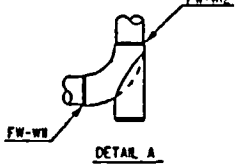
CODE CLASS 2
 LOCATION: CONTAINMENT
 AUX. BUILDING ELEV. 606'-0"

REFERENCE DWGS.
 SEE DWGS. 8A-01, 8A-02, 8A-03, 8A-04, 8A-05, 8A-06, 8A-07, 8A-08, 8A-09, 8A-10, 8A-11, 8A-12, 8A-13, 8A-14, 8A-15, 8A-16, 8A-17, 8A-18, 8A-19, 8A-20, 8A-21, 8A-22, 8A-23, 8A-24, 8A-25, 8A-26, 8A-27, 8A-28, 8A-29, 8A-30, 8A-31, 8A-32, 8A-33, 8A-34, 8A-35, 8A-36, 8A-37, 8A-38, 8A-39, 8A-40, 8A-41, 8A-42, 8A-43, 8A-44, 8A-45, 8A-46, 8A-47, 8A-48, 8A-49, 8A-50, 8A-51, 8A-52, 8A-53, 8A-54, 8A-55, 8A-56, 8A-57, 8A-58, 8A-59, 8A-60, 8A-61, 8A-62, 8A-63, 8A-64, 8A-65, 8A-66, 8A-67, 8A-68, 8A-69, 8A-70, 8A-71, 8A-72, 8A-73, 8A-74, 8A-75, 8A-76, 8A-77, 8A-78, 8A-79, 8A-80, 8A-81, 8A-82, 8A-83, 8A-84, 8A-85, 8A-86, 8A-87, 8A-88, 8A-89, 8A-90, 8A-91, 8A-92, 8A-93, 8A-94, 8A-95, 8A-96, 8A-97, 8A-98, 8A-99, 8A-100.

- NOTES:
1. DRAWING APPLICABLE FOR THE 100% DESIGN.
 2. SUPPLIER REQUIREMENTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION IS.
 3. CLASS 2 PIPING IS SHOWN AND LISTED IN EXCEPT FROM IS.

0-1
 KAP 01-001839

(SH 1 OF 2)



ISOMETRIC
 FEEDWATER FROM ANCHOR NEAR HTS
 TO ANCHORED ELLS INSIDE CHWT

DESIGNED BY
 BESSONEN PUBLIC SERVICE CORP.

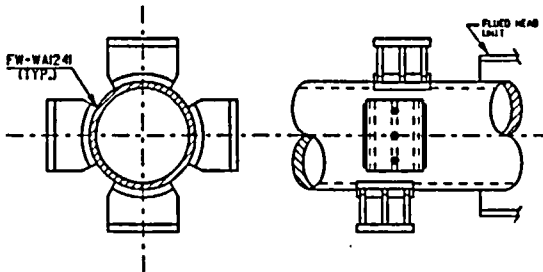
DATE: 12/1/50

SCALE: AS SHOWN

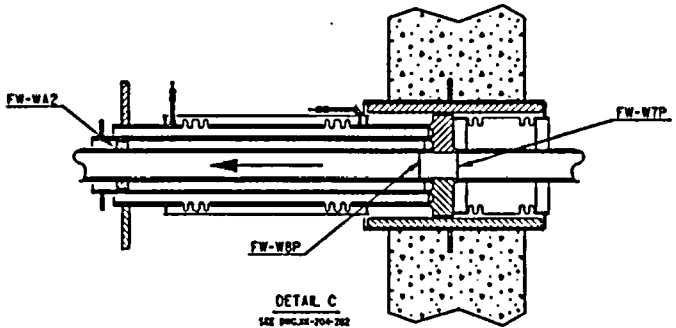
PROJECT: 01-001839

REV: A

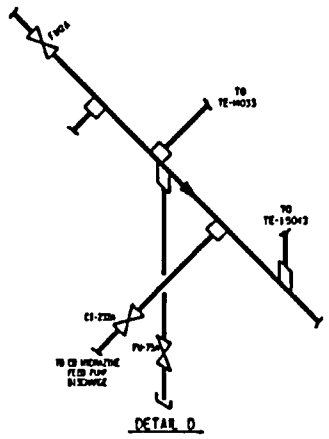
20566-103



DETAIL B
 RETURN BRACKET (AN 240)
 ACCESSIBLE



DETAIL C
 SEE DWG. 20-204-202
 AN 123



DETAIL D

REVISIONS
 1. REV. 11-20-50
 2. REV. 12-10-50
 3. REV. 12-10-50
 4. REV. 12-10-50
 5. REV. 12-10-50
 6. REV. 12-10-50
 7. REV. 12-10-50
 8. REV. 12-10-50
 9. REV. 12-10-50
 10. REV. 12-10-50
 11. REV. 12-10-50
 12. REV. 12-10-50
 13. REV. 12-10-50
 14. REV. 12-10-50
 15. REV. 12-10-50
 16. REV. 12-10-50
 17. REV. 12-10-50
 18. REV. 12-10-50
 19. REV. 12-10-50
 20. REV. 12-10-50

NOTES:
 1. DRAWING APPLICABLE FOR THE 100 AND 150 INCH DIAMETER.
 2. CLASS 2 PIPING OF 8 INCHES AND LESS IS EXCEPT FROM HERE.

A-1
 KAP 01-001639

(SH 2 OF 2)

WISCONSIN PUBLIC SERVICE CORP.
 ENGINEERING DEPARTMENT
 1000 WISCONSIN STREET, MADISON, WISCONSIN

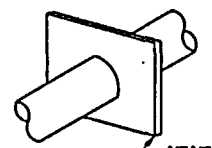
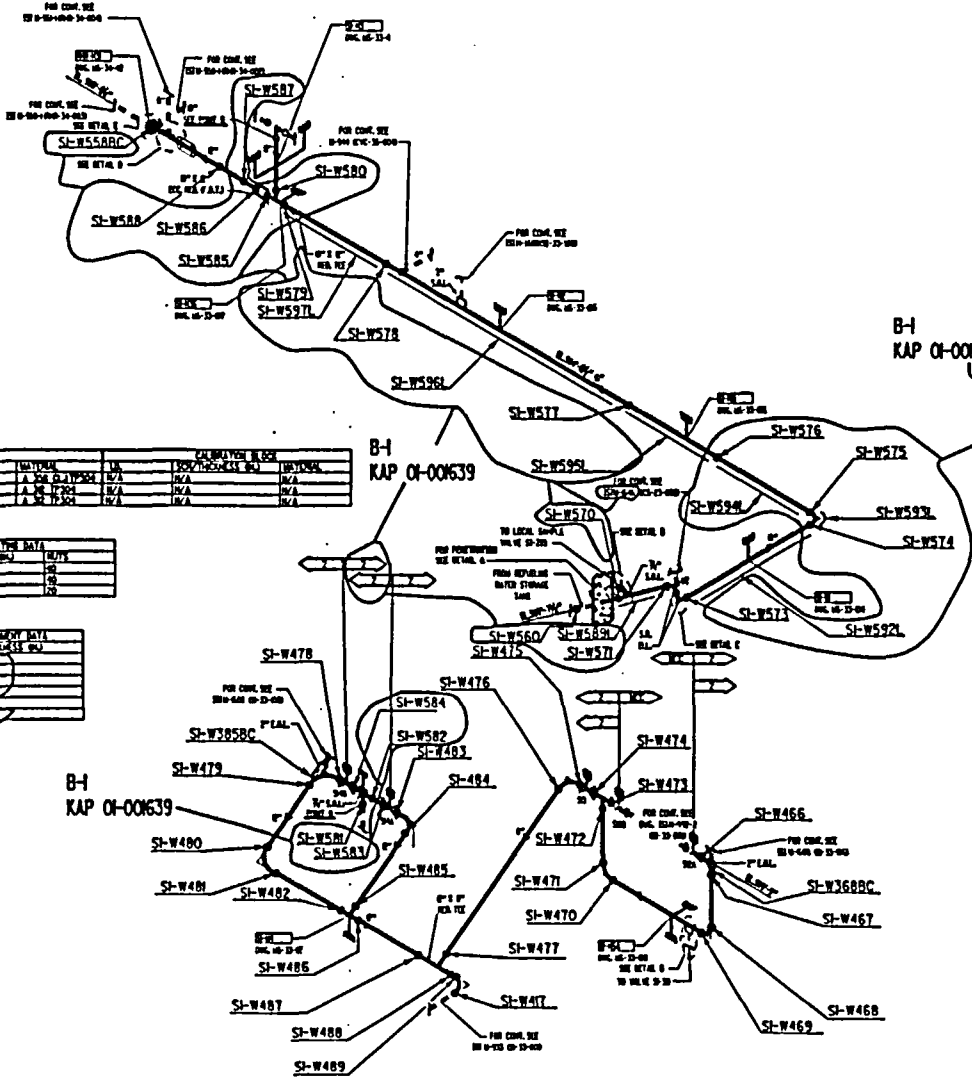
**ISOMETRIC
 FEEDWATER FROM ANCHOR NEAR MTR
 TO ANCHORED ELLS BEHIND CNTMT**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 1950-1951

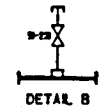
DATE: 11-20-50
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 INCHES: 1/8" = 1'-0"



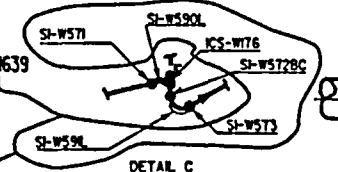
PLANS FOR THE
B-1
FOR THE
APPLICANT
DATE
PROJECT NO.
SHEET NO.
TOTAL SHEETS
DATE
PROJECT NO.
SHEET NO.
TOTAL SHEETS
DATE
PROJECT NO.
SHEET NO.
TOTAL SHEETS
DATE



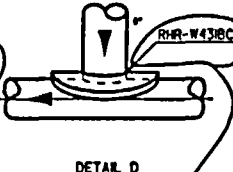
DETAIL A



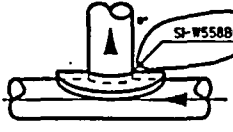
DETAIL B



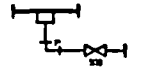
DETAIL C



DETAIL D



DETAIL E



DETAIL G

NO.	REVISION	DATE	BY	CHKD.
1	REV. 1	10/15/88	J. M. W. / J. M. W.	J. M. W.
2	REV. 2	11/15/88	J. M. W. / J. M. W.	J. M. W.
3	REV. 3	12/15/88	J. M. W. / J. M. W.	J. M. W.
4	REV. 4	01/15/89	J. M. W. / J. M. W.	J. M. W.

NO.	REVISION	DATE	BY	CHKD.
1	REV. 1	10/15/88	J. M. W. / J. M. W.	J. M. W.
2	REV. 2	11/15/88	J. M. W. / J. M. W.	J. M. W.
3	REV. 3	12/15/88	J. M. W. / J. M. W.	J. M. W.
4	REV. 4	01/15/89	J. M. W. / J. M. W.	J. M. W.

NO.	REVISION	DATE	BY	CHKD.
1	REV. 1	10/15/88	J. M. W. / J. M. W.	J. M. W.
2	REV. 2	11/15/88	J. M. W. / J. M. W.	J. M. W.
3	REV. 3	12/15/88	J. M. W. / J. M. W.	J. M. W.
4	REV. 4	01/15/89	J. M. W. / J. M. W.	J. M. W.

REFERENCE DWGS.
SEE DRAWING NO. 100-100-01

B-1
KAP 01-00639

ISOMETRIC
SAFETY INJECTION PUMPS
SUCTION PIPING

DESIGNED BY
WISCONSIN PUBLIC SERVICE COMP.

DATE: 10/15/88
DRAWN BY: J. M. W.
CHECKED BY: J. M. W.
SCALE: AS SHOWN

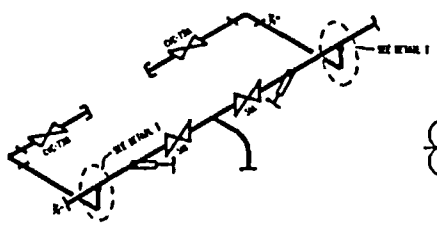
PROJECT NO.: P-206-100
SHEET NO.: 1
TOTAL SHEETS: 1

DATE: 10/15/88

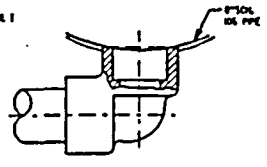
CADD

10/15/88

2-756-992



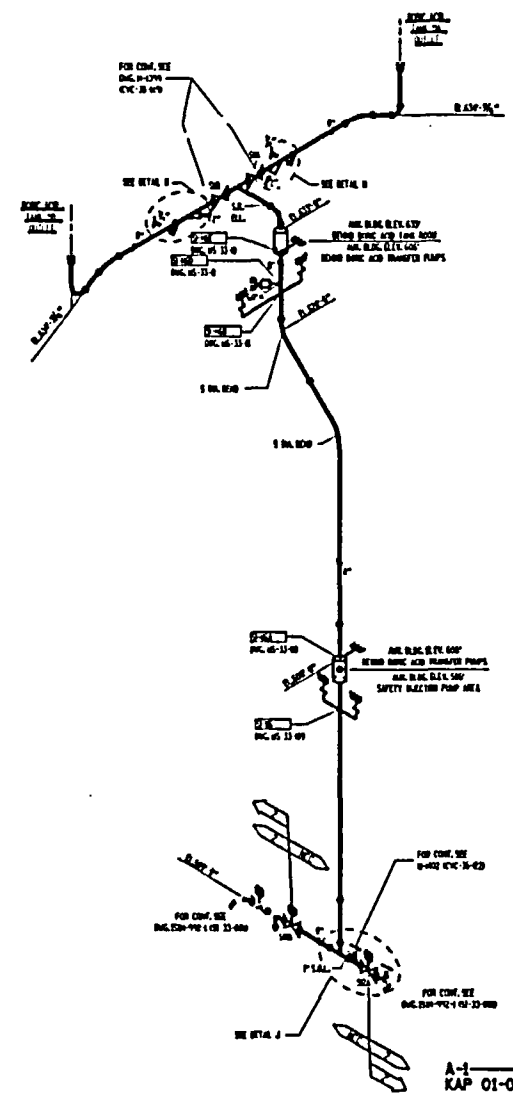
DETAIL H



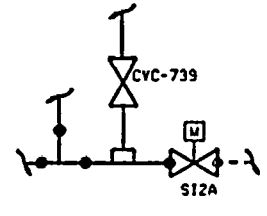
DETAIL I

VALVE SYMBOL DATA		
SYMBOL	TYPE / SIZE	NOTES
(Symbol)	1/2" / 1/2"	101
(Symbol)	1/2" / 1/2"	10
(Symbol)	1/2" / 1/2"	10
(Symbol)	1/2" / 1/2"	10
(Symbol)	1/2" / 1/2"	10

MATERIALS AND THICKNESS DATA	
ITEM	THICKNESS (IN)
S1-1	1/2"
S1-2	1/2"
S1-3	1/2"
S1-4	1/2"



LOCATION: AUXILIARY BLDG. SAFETY INJECTION PUMP AREA, BEHIND BORIC ACID TRANSFER PUMPS, BORIC ACID TANK ROOM



DETAIL J

REFERENCE DWGS.
KAP 01-001639, 01-001640

A-1
KAP 01-001639

DESIGNED BY: [Name]
CHECKED BY: [Name]
DATE: [Date]

ISI ISOMETRIC SAFETY INJECTION PUMPS SUCTION PIPING

ISSUED BY: **WISCONSIN PUBLIC SERVICE CORP.**
DESIGN NO. [Number]

SCALE: [Scale]

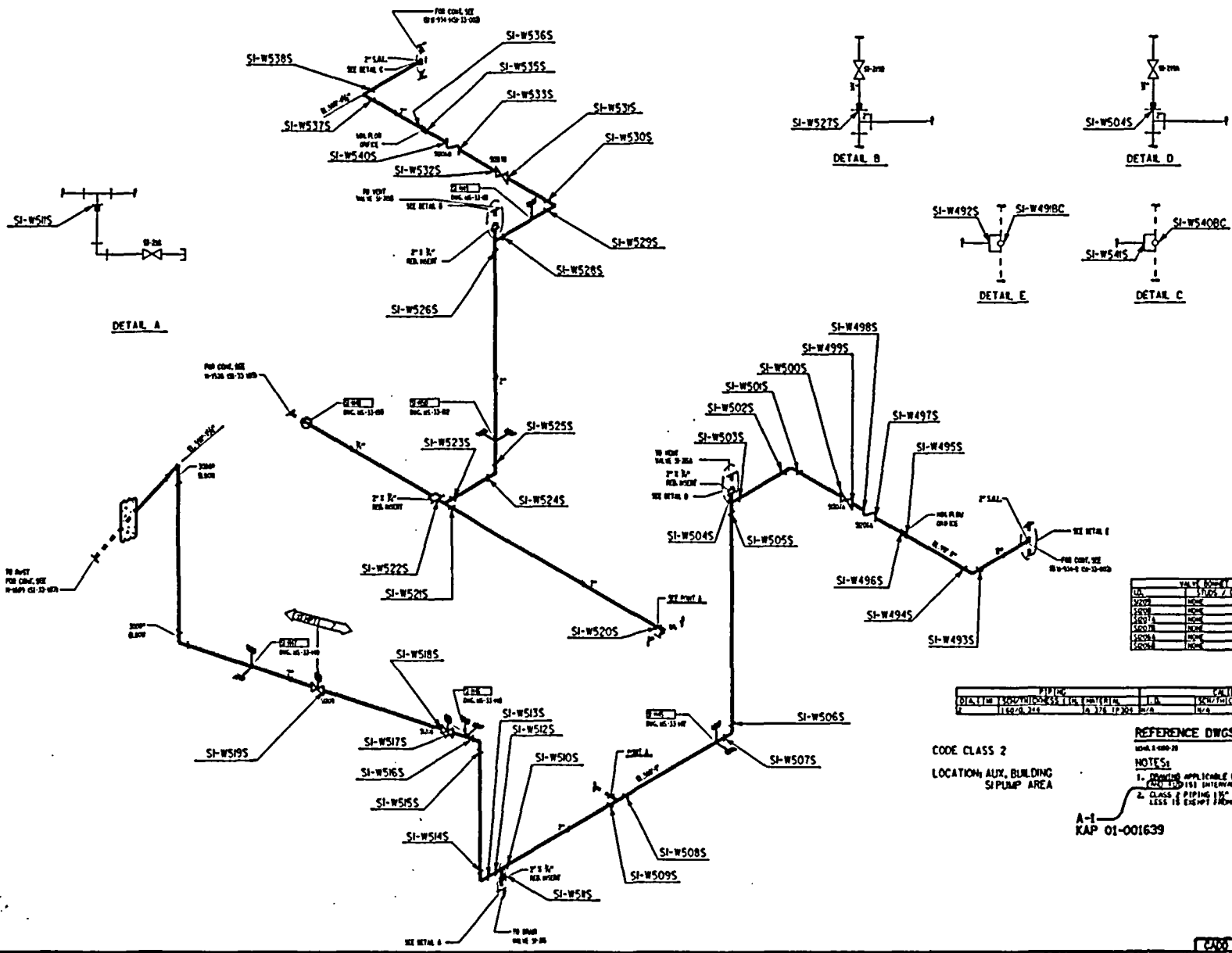
DATE: [Date]

BY: [Name]

APP. [Signature]

2-756-992

DATE: 11/15/00
 DRAWN BY: J. J. KAP
 CHECKED BY: J. J. KAP
 PROJECT: ISM SAFETY INJECTION PUMP PIPING TO PEN. ENR. ZONE & RWST
 SHEET NO. 004-993
 OF 004-993



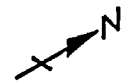
DETAIL A

DETAIL B

DETAIL D

DETAIL E

DETAIL C



VALVE	SIZE	DATE	STATUS
SI-W5005	1.5\"/>		

PIPE	SIZE	DATE	STATUS
SI-W5005	1.5\"/>		

CODE CLASS 2
 LOCATION: AUX. BUILDING
 SI PUMP AREA

REFERENCE DWGS.
 1. ISM SAFETY INJECTION PUMP PIPING TO PEN. ENR. ZONE & RWST
 2. CLASS 2 PIPING 1.5\"/>

A-1
 KAP 01-001639

ISM SAFETY INJECTION PUMP PIPING TO PEN. ENR. ZONE & RWST

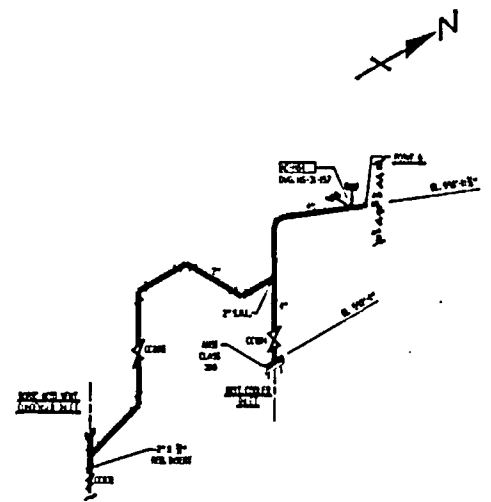
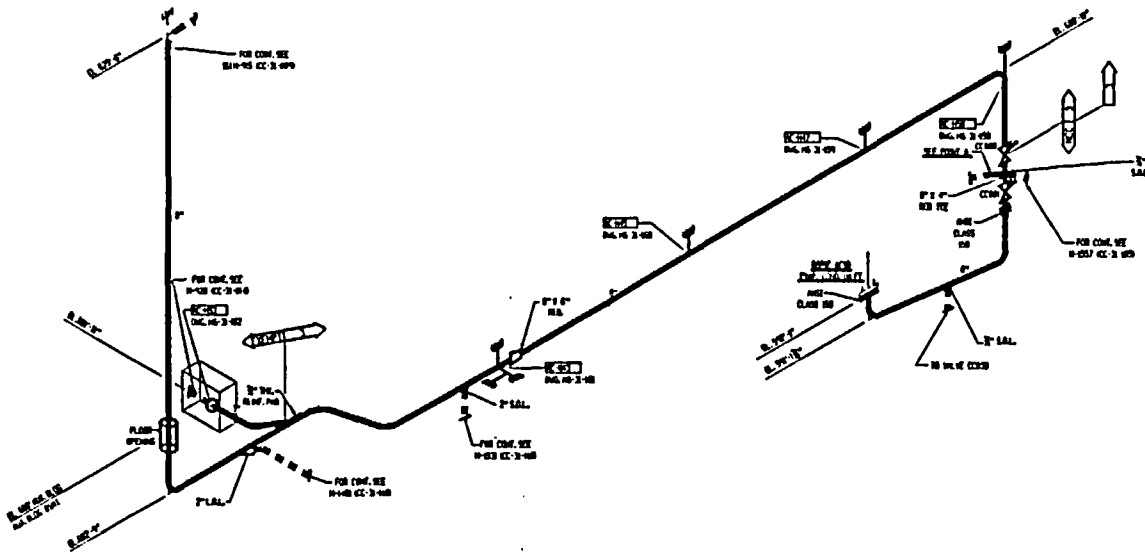
DESIGNED BY: J. J. KAP
 CHECKED BY: J. J. KAP

DATE: 11/15/00

PROJECT: ISM SAFETY INJECTION PUMP PIPING TO PEN. ENR. ZONE & RWST

SHEET NO. 004-993 OF 004-993

606-1151



CODE CLASS 3
 LOCATION: AUX. BLDG ELEV. 606, AUX. BLDG
 BSMT, BORIC ACID EVAP. ROOM

INTEGRALLY WELDED ATTACHMENT
 LIST OF ATTACHMENT NUMBER
 CC-150

REFERENCE DWGS.
 101, 102, 1100-3

A-1
 KAP 01-001633

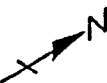
1. DRAWING IS APPLICABLE FOR 30" AND 48" DIAMETER
2. CLASS 3 PIPING OF 48" SIZE IS COVERED BY CLASS 2 PIPING REQUIREMENTS OF PART 11-105 CC-3-106

DESIGNED BY: []		CHECKED BY: []	
COPIES ON HAND TO: []			
WISCONSIN PUBLIC SERVICE CORP.			
DATE: []	BY: []	SCALE: []	NO. []
REV. []	BY: []	SCALE: []	NO. []
REV. []	BY: []	SCALE: []	NO. []
REV. []	BY: []	SCALE: []	NO. []
REV. []	BY: []	SCALE: []	NO. []

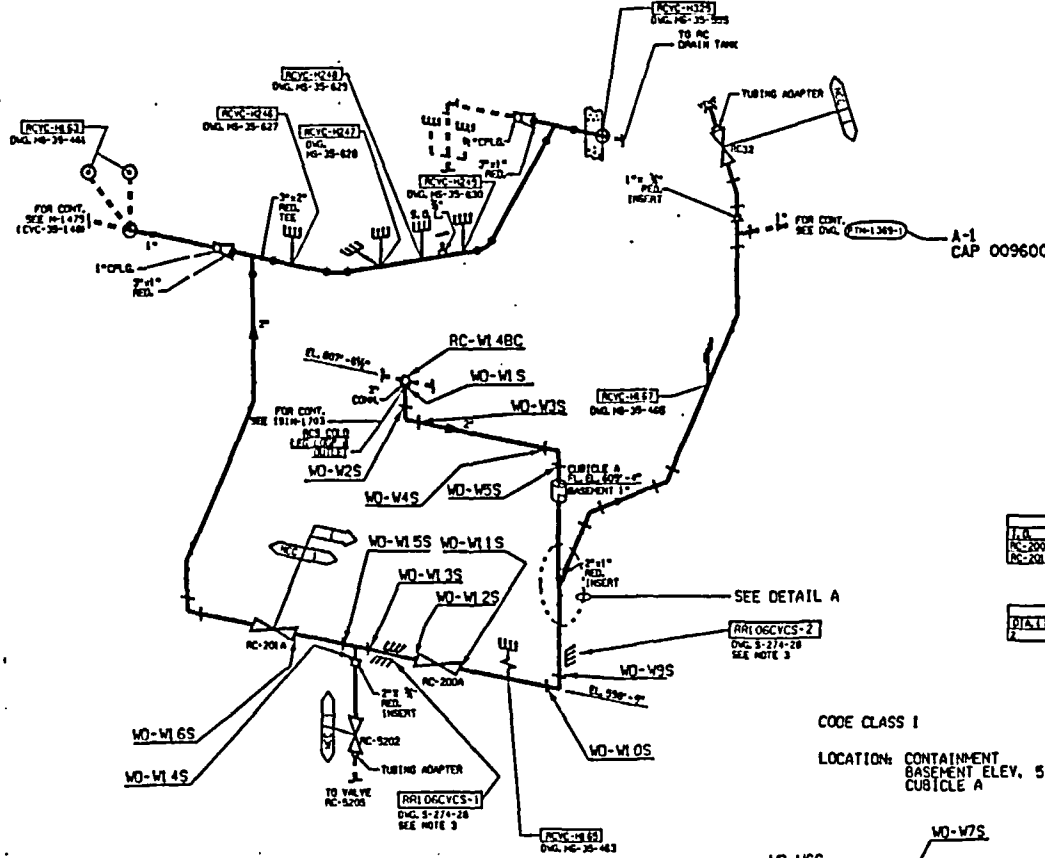
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611-100

181H-000 0



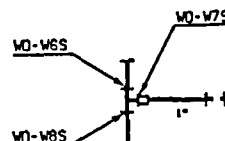
REVISIONS
 1. CAP 009600
 2. CAP 009600
 3. CAP 009600
 4. CAP 009600
 5. CAP 009600
 6. CAP 009600
 7. CAP 009600
 8. CAP 009600
 9. CAP 009600
 10. CAP 009600



VALVE SYMBOL MATING DATA		
RC-V14	1" / 1.315 / DIA. 11/16"	NONE
RC-V15	1" / 1.315 / DIA. 11/16"	NONE
RC-V16	1" / 1.315 / DIA. 11/16"	NONE

DIAMETER	PIPE		CALCULATION NO.	
	1.50 / 3.74	1.50 / 3.74	1.50 / 3.74	1.50 / 3.74

CODE CLASS I
LOCATION: CONTAINMENT
BASEMENT ELEV. 593'
CUBICLE A



DETAIL A

- NOTES:**
- DRAWING APPLICABLE FOR 3" AND 4" ISI INTERVAL.
 - CLASS I PIPING 1" DIAMETER AND LESS IS EXEMPT FROM HDG.
 - RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION III.

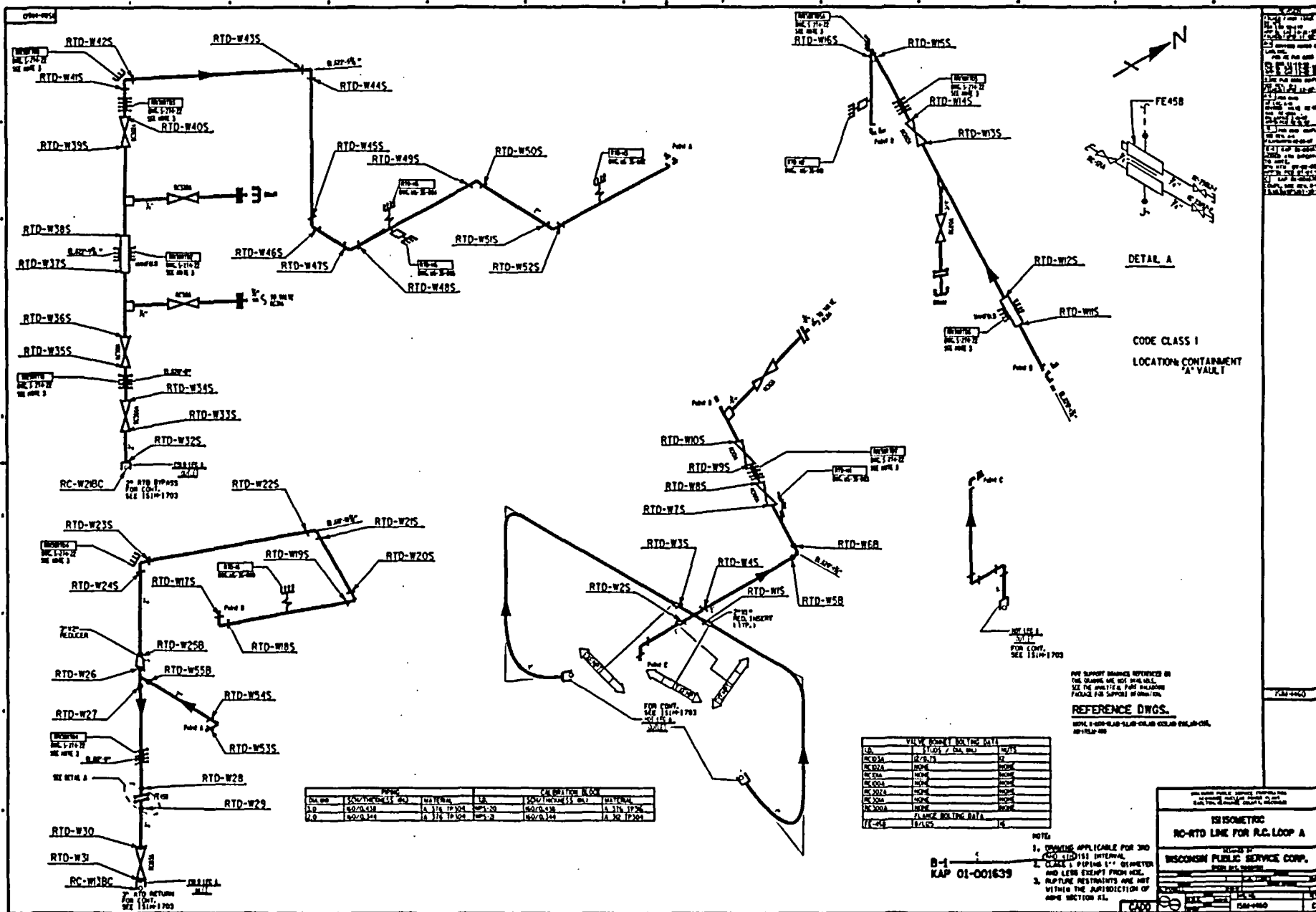
REFERENCE DWGS.
 P. 009600-01 THROUGH P. 009600-08
 AND 009600-09 THROUGH 009600-10

PROGRAM FILE # 009600-01
 2. DATE 01/16/82
 3. DRAWN BY: J. J. J.

ISI ISOMETRIC
RCS, COLD LEAD LOOP A
AND EXCESS LEAD/DOWN LINE

WISCONSIN PUBLIC SERVICE COMP.
 5000 EAST WISCONSIN
 MADISON, WISCONSIN 53706

PROJECT NO. 009600
 SHEET NO. 009600-01



SIZE	WALL THICKNESS	WGT PER FT	WGT PER YD	WGT PER 100 FT
1/2"	0.048	1.318	17.202	172.02
3/4"	0.064	1.318	17.202	172.02

ITEM	QUANTITY	UNIT	DESCRIPTION
10000	1000	FT	1/2" SCH 40S BLACK PIPE
10001	1000	FT	3/4" SCH 40S BLACK PIPE
10002	1000	FT	1" SCH 40S BLACK PIPE
10003	1000	FT	1 1/2" SCH 40S BLACK PIPE
10004	1000	FT	2" SCH 40S BLACK PIPE
10005	1000	FT	2 1/2" SCH 40S BLACK PIPE
10006	1000	FT	3" SCH 40S BLACK PIPE
10007	1000	FT	3 1/2" SCH 40S BLACK PIPE
10008	1000	FT	4" SCH 40S BLACK PIPE
10009	1000	FT	4 1/2" SCH 40S BLACK PIPE
10010	1000	FT	5" SCH 40S BLACK PIPE
10011	1000	FT	5 1/2" SCH 40S BLACK PIPE
10012	1000	FT	6" SCH 40S BLACK PIPE
10013	1000	FT	6 1/2" SCH 40S BLACK PIPE
10014	1000	FT	7" SCH 40S BLACK PIPE
10015	1000	FT	7 1/2" SCH 40S BLACK PIPE
10016	1000	FT	8" SCH 40S BLACK PIPE
10017	1000	FT	8 1/2" SCH 40S BLACK PIPE
10018	1000	FT	9" SCH 40S BLACK PIPE
10019	1000	FT	9 1/2" SCH 40S BLACK PIPE
10020	1000	FT	10" SCH 40S BLACK PIPE
10021	1000	FT	10 1/2" SCH 40S BLACK PIPE
10022	1000	FT	11" SCH 40S BLACK PIPE
10023	1000	FT	11 1/2" SCH 40S BLACK PIPE
10024	1000	FT	12" SCH 40S BLACK PIPE
10025	1000	FT	12 1/2" SCH 40S BLACK PIPE
10026	1000	FT	13" SCH 40S BLACK PIPE
10027	1000	FT	13 1/2" SCH 40S BLACK PIPE
10028	1000	FT	14" SCH 40S BLACK PIPE
10029	1000	FT	14 1/2" SCH 40S BLACK PIPE
10030	1000	FT	15" SCH 40S BLACK PIPE
10031	1000	FT	15 1/2" SCH 40S BLACK PIPE
10032	1000	FT	16" SCH 40S BLACK PIPE
10033	1000	FT	16 1/2" SCH 40S BLACK PIPE
10034	1000	FT	17" SCH 40S BLACK PIPE
10035	1000	FT	17 1/2" SCH 40S BLACK PIPE
10036	1000	FT	18" SCH 40S BLACK PIPE
10037	1000	FT	18 1/2" SCH 40S BLACK PIPE
10038	1000	FT	19" SCH 40S BLACK PIPE
10039	1000	FT	19 1/2" SCH 40S BLACK PIPE
10040	1000	FT	20" SCH 40S BLACK PIPE
10041	1000	FT	20 1/2" SCH 40S BLACK PIPE
10042	1000	FT	21" SCH 40S BLACK PIPE
10043	1000	FT	21 1/2" SCH 40S BLACK PIPE
10044	1000	FT	22" SCH 40S BLACK PIPE
10045	1000	FT	22 1/2" SCH 40S BLACK PIPE
10046	1000	FT	23" SCH 40S BLACK PIPE
10047	1000	FT	23 1/2" SCH 40S BLACK PIPE
10048	1000	FT	24" SCH 40S BLACK PIPE
10049	1000	FT	24 1/2" SCH 40S BLACK PIPE
10050	1000	FT	25" SCH 40S BLACK PIPE
10051	1000	FT	25 1/2" SCH 40S BLACK PIPE
10052	1000	FT	26" SCH 40S BLACK PIPE
10053	1000	FT	26 1/2" SCH 40S BLACK PIPE
10054	1000	FT	27" SCH 40S BLACK PIPE
10055	1000	FT	27 1/2" SCH 40S BLACK PIPE
10056	1000	FT	28" SCH 40S BLACK PIPE
10057	1000	FT	28 1/2" SCH 40S BLACK PIPE
10058	1000	FT	29" SCH 40S BLACK PIPE
10059	1000	FT	29 1/2" SCH 40S BLACK PIPE
10060	1000	FT	30" SCH 40S BLACK PIPE
10061	1000	FT	30 1/2" SCH 40S BLACK PIPE
10062	1000	FT	31" SCH 40S BLACK PIPE
10063	1000	FT	31 1/2" SCH 40S BLACK PIPE
10064	1000	FT	32" SCH 40S BLACK PIPE
10065	1000	FT	32 1/2" SCH 40S BLACK PIPE
10066	1000	FT	33" SCH 40S BLACK PIPE
10067	1000	FT	33 1/2" SCH 40S BLACK PIPE
10068	1000	FT	34" SCH 40S BLACK PIPE
10069	1000	FT	34 1/2" SCH 40S BLACK PIPE
10070	1000	FT	35" SCH 40S BLACK PIPE
10071	1000	FT	35 1/2" SCH 40S BLACK PIPE
10072	1000	FT	36" SCH 40S BLACK PIPE
10073	1000	FT	36 1/2" SCH 40S BLACK PIPE
10074	1000	FT	37" SCH 40S BLACK PIPE
10075	1000	FT	37 1/2" SCH 40S BLACK PIPE
10076	1000	FT	38" SCH 40S BLACK PIPE
10077	1000	FT	38 1/2" SCH 40S BLACK PIPE
10078	1000	FT	39" SCH 40S BLACK PIPE
10079	1000	FT	39 1/2" SCH 40S BLACK PIPE
10080	1000	FT	40" SCH 40S BLACK PIPE
10081	1000	FT	40 1/2" SCH 40S BLACK PIPE
10082	1000	FT	41" SCH 40S BLACK PIPE
10083	1000	FT	41 1/2" SCH 40S BLACK PIPE
10084	1000	FT	42" SCH 40S BLACK PIPE
10085	1000	FT	42 1/2" SCH 40S BLACK PIPE
10086	1000	FT	43" SCH 40S BLACK PIPE
10087	1000	FT	43 1/2" SCH 40S BLACK PIPE
10088	1000	FT	44" SCH 40S BLACK PIPE
10089	1000	FT	44 1/2" SCH 40S BLACK PIPE
10090	1000	FT	45" SCH 40S BLACK PIPE
10091	1000	FT	45 1/2" SCH 40S BLACK PIPE
10092	1000	FT	46" SCH 40S BLACK PIPE
10093	1000	FT	46 1/2" SCH 40S BLACK PIPE
10094	1000	FT	47" SCH 40S BLACK PIPE
10095	1000	FT	47 1/2" SCH 40S BLACK PIPE
10096	1000	FT	48" SCH 40S BLACK PIPE
10097	1000	FT	48 1/2" SCH 40S BLACK PIPE
10098	1000	FT	49" SCH 40S BLACK PIPE
10099	1000	FT	49 1/2" SCH 40S BLACK PIPE
10100	1000	FT	50" SCH 40S BLACK PIPE

- NOTE:
1. DRAWING APPLICABLE FOR 300 AND 400 (100) INTERNAL AND LESS EXCEPT FROM HOLE.
 2. CLASS 1 PIPING 1/2" DIAMETER AND LESS EXCEPT FROM HOLE.
 3. ALL PIPE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION XL.

ISOMETRIC
NO-RTD LINE FOR R.C. LOOP A

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
FIELD ENGINEER

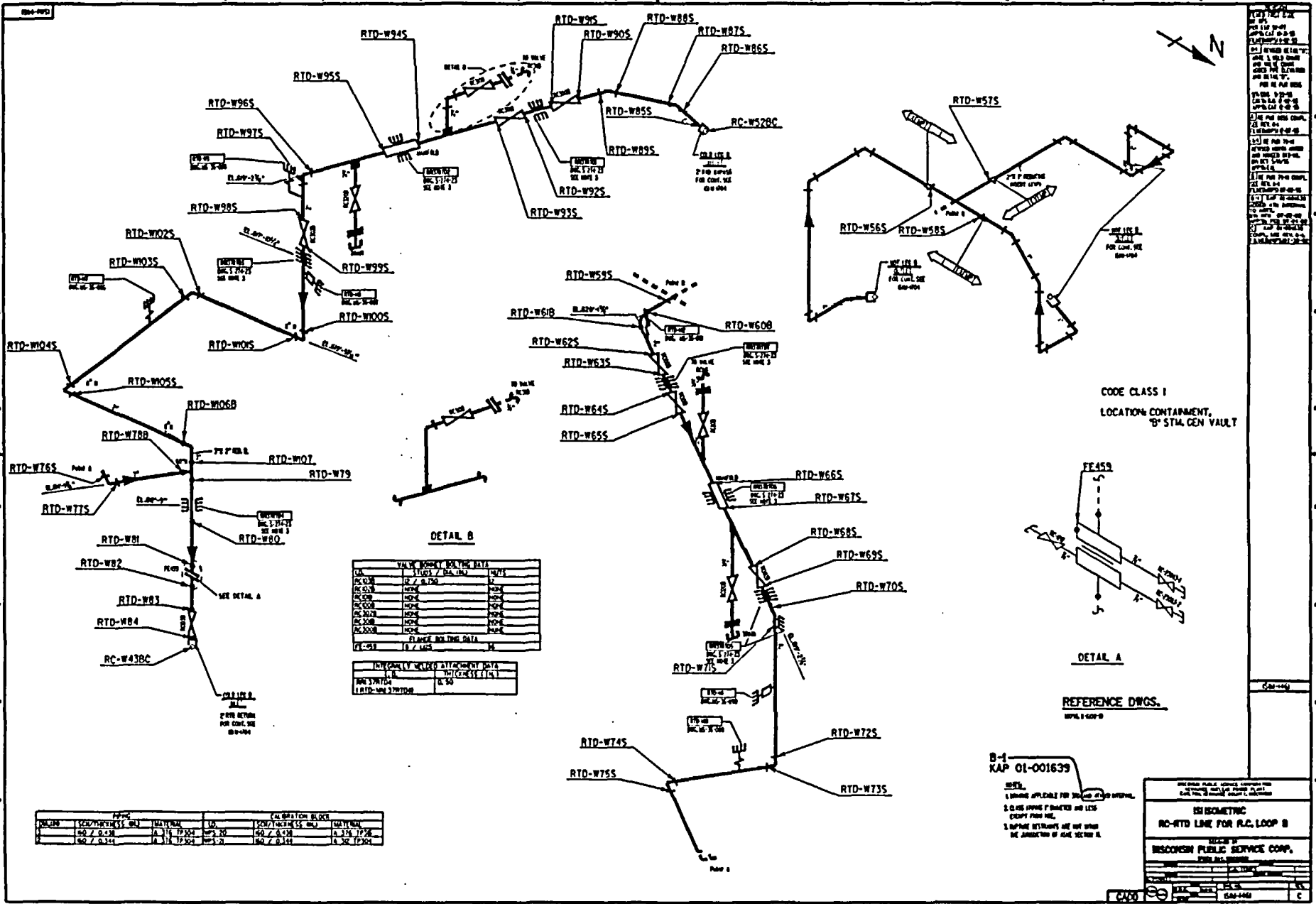
DATE: 10/1/59

PROJECT: 01-001639

SCALE: AS SHOWN

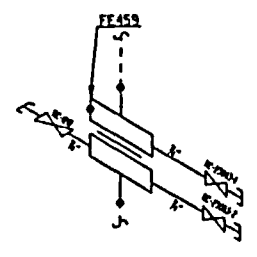
APPROVED: [Signature]

DATE: 10/1/59



(1) THE LINE IS TO BE INSTALLED IN THE EXISTING CONDUIT AND SHALL BE SUPPORTED BY THE EXISTING SUPPORTS. (2) THE LINE SHALL BE INSTALLED IN THE EXISTING CONDUIT AND SHALL BE SUPPORTED BY THE EXISTING SUPPORTS. (3) THE LINE SHALL BE INSTALLED IN THE EXISTING CONDUIT AND SHALL BE SUPPORTED BY THE EXISTING SUPPORTS. (4) THE LINE SHALL BE INSTALLED IN THE EXISTING CONDUIT AND SHALL BE SUPPORTED BY THE EXISTING SUPPORTS. (5) THE LINE SHALL BE INSTALLED IN THE EXISTING CONDUIT AND SHALL BE SUPPORTED BY THE EXISTING SUPPORTS.

CODE CLASS 1
 LOCATION: CONTAINMENT, 3RD STA. GEN. VAULT



DETAIL A

REFERENCE DWGS.
 WPA 1-6009

B-1
 KAP 01-001639

- 1. WORKING APPLICABLE FOR THE USE OF THIS DRAWING.
- 2. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION AND SHALL BE KEPT IN THE OFFICE OF THE ENGINEER.
- 3. ANY CHANGES TO THIS DRAWING SHALL BE MADE BY THE ENGINEER.

ISOMETRIC RTD-LINE FOR R.C. LOOP B	
PREPARED BY WISCONSIN PUBLIC SERVICE CORP.	
DATE 10/1/58	DRAWN BY G.M.
CHECKED BY J.C.	APPROVED BY J.C.

VALVE WORKING DATA

VALVE	SIZE / DIA. (IN)	TYPE
RC-300	12 / 8.750	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12
RC-300	12/24	12

PLEASE NOTE: DATA IS FOR 12" / 8.750

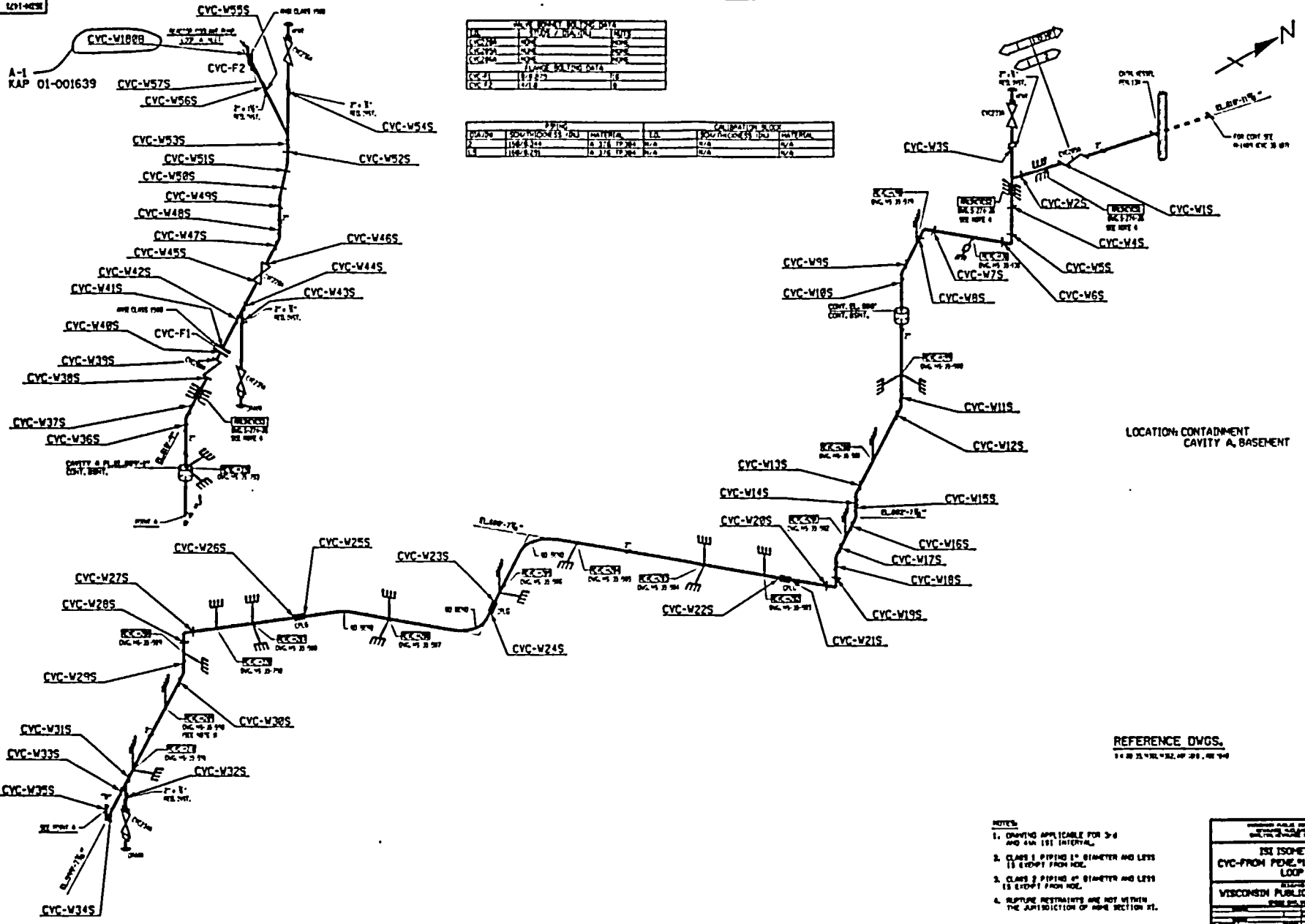
ISOMETRIC WORKING ATTACHMENT DATA

ITEM	DESCRIPTION	QTY
RC-300	12" / 8.750	1
RC-300	12" / 8.750	1

EXPLANATION BLOCK

NO.	DESCRIPTION	DATE	BY	REVISION
1	AS SHOWN	10/1/58	J.C.	1
2	AS SHOWN	10/1/58	J.C.	2

EDT-M20



NO.	DESCRIPTION	QTY	UNIT
1
2
3
4
5
6
7
8
9
10

NO.	DESCRIPTION	QTY	UNIT	NO.	DESCRIPTION	QTY	UNIT
1	11	...	...	...
2	12	...	...	...
3	13	...	...	...
4	14	...	...	...
5	15	...	...	...
6	16	...	...	...
7	17	...	...	...
8	18	...	...	...
9	19	...	...	...
10	20	...	...	...

LOCATION: CONTAINMENT CAVITY A, BASEMENT

REFERENCE DWGS.
11-20-82, 11-22-82, 11-23-82, 11-24-82, 11-25-82

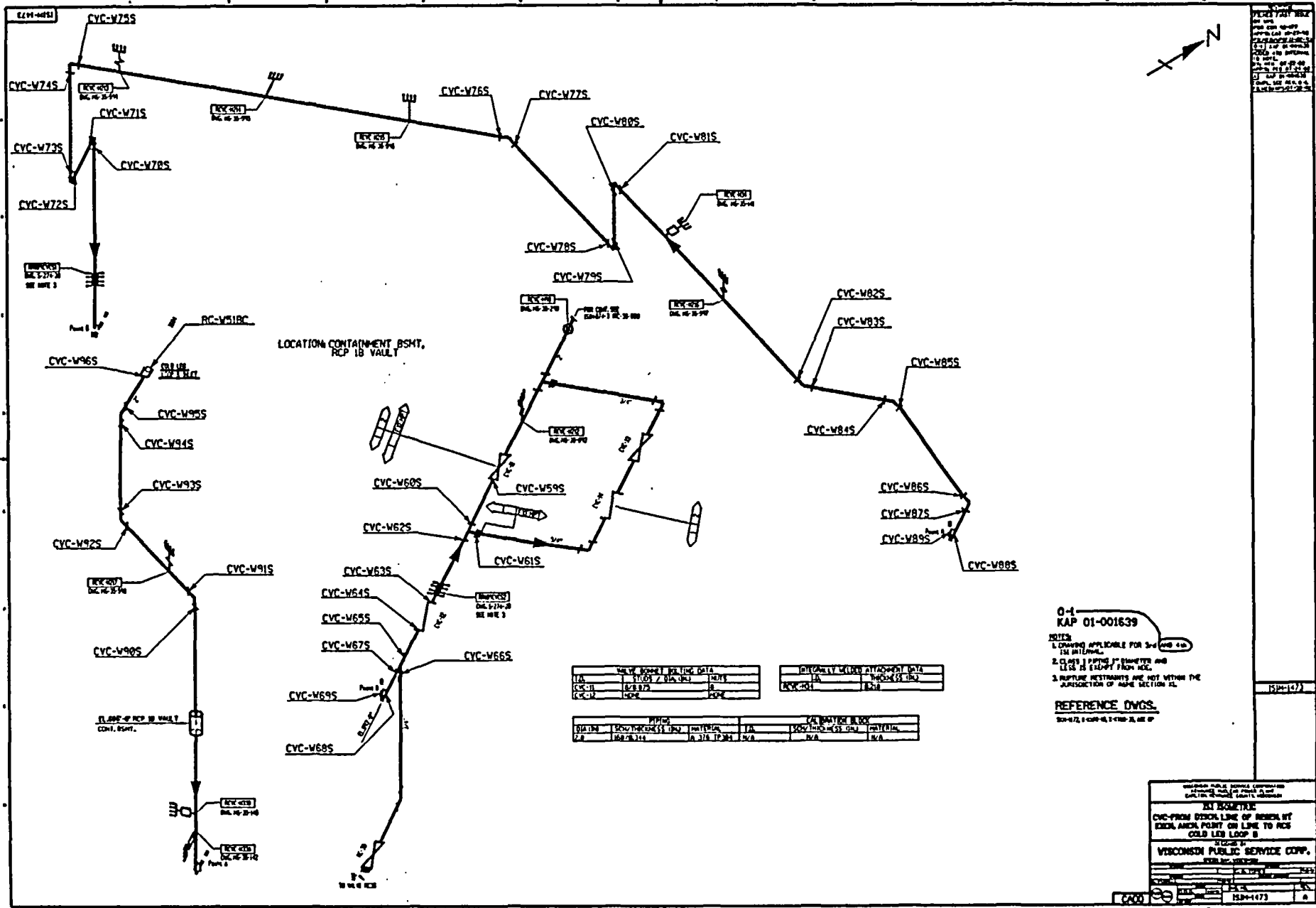
- NOTES:
1. DRAWING APPLICABLE FOR 3" AND 4" DIA. INTERNAL.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXCEPT FROM HOE.
 3. CLASS 2 PIPING 1/2" DIAMETER AND LESS IS EXCEPT FROM HOE.
 4. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF THIS SECTION.

ISSUED BY
WISCONSIN PUBLIC SERVICE CORP.
 PUBLIC SERVICE
 1100 W. MICHIGAN ST.
 MILWAUKEE, WIS. 53233
 DATE: 11-25-82
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 PROJECT NO: 8889-1471
 SHEET NO: 8

REVISIONS:

NO.	DATE	DESCRIPTION
1	11-25-82	ISSUED FOR CONSTRUCTION
2	11-25-82	ISSUED FOR CONSTRUCTION
3	11-25-82	ISSUED FOR CONSTRUCTION
4	11-25-82	ISSUED FOR CONSTRUCTION
5	11-25-82	ISSUED FOR CONSTRUCTION
6	11-25-82	ISSUED FOR CONSTRUCTION
7	11-25-82	ISSUED FOR CONSTRUCTION
8	11-25-82	ISSUED FOR CONSTRUCTION
9	11-25-82	ISSUED FOR CONSTRUCTION
10	11-25-82	ISSUED FOR CONSTRUCTION

150-147



LOCATION CONTAINMENT BSMT.
RCP 18 VAULT

REVISION		REVISION	
NO.	DATE	NO.	DATE
1A	11/01/74	1A	11/01/74
1B	11/01/74	1B	11/01/74
1C	11/01/74	1C	11/01/74

REVISION		REVISION	
NO.	DATE	NO.	DATE
1A	11/01/74	1A	11/01/74
1B	11/01/74	1B	11/01/74
1C	11/01/74	1C	11/01/74

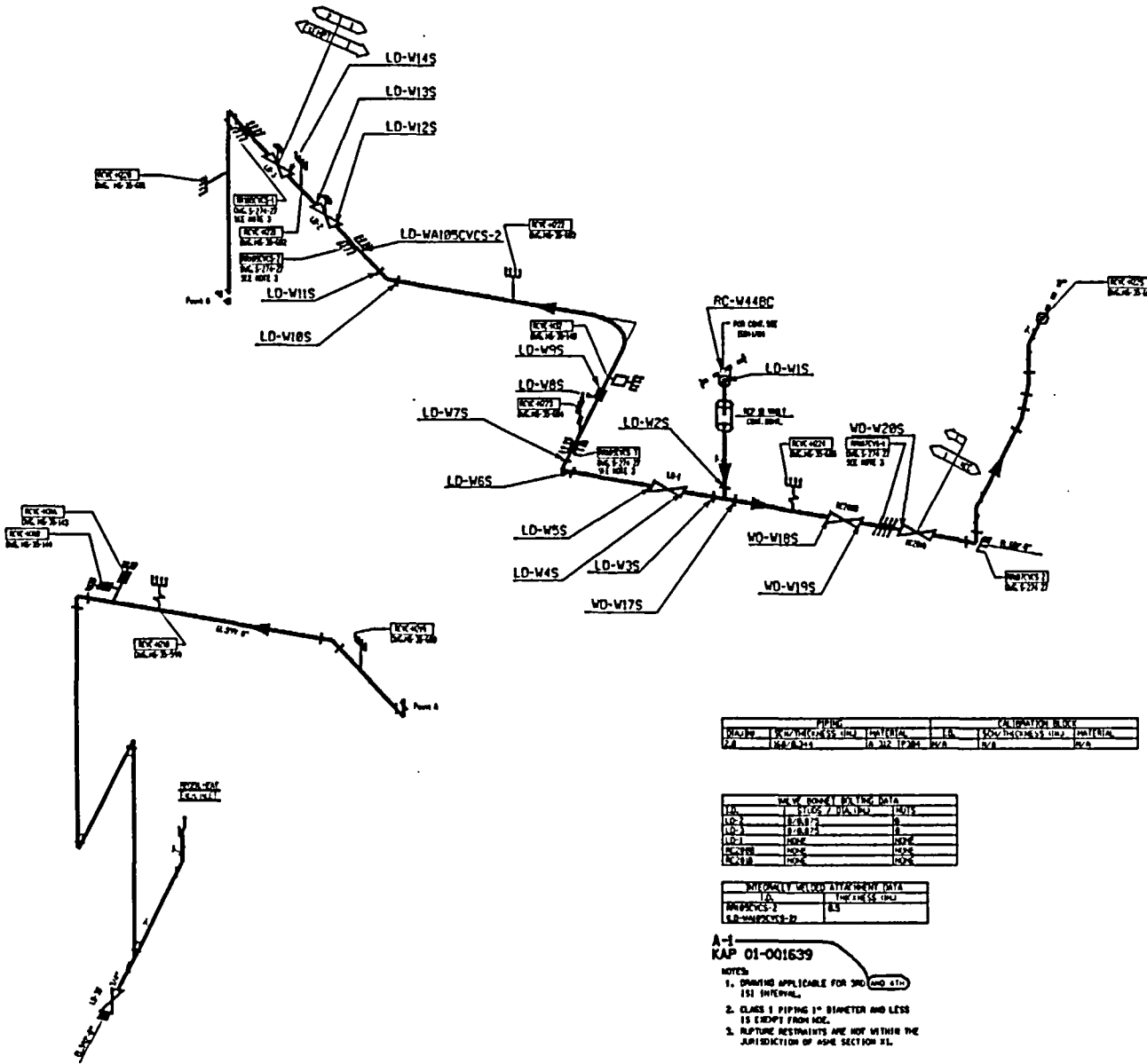
PIPE		PIPE	
DIA.	MAT.	DIA.	MAT.
2.0	304	2.0	304
2.0	304	2.0	304

0-1
KAP 01-001639

NOTES:
 1. DRAWING APPLICABLE FOR 3-4" DIA. PIPE
 2. CLASS 1 PIPING IS SHOWN AND
 LEAD IS SHOWN FROM HOLE.
 3. RUPTURE RESTRAINTS ARE NOT WITHIN THE
 JURISDICTION OF THIS SECTION IS.

REFERENCE DWGS:
 SW-472, SW-473, SW-474, SW-475

<p>IN ISOMETRIC CVC FROM EXHAUST LINE OF REHEATER BY EXHAUST POINT ON LINE TO RCS COLD LEG LOOP B</p>			
<p>VISCONSIN PUBLIC SERVICE CORP. ENGINEERING DEPARTMENT</p>			
DATE:	BY:	CHK'D:	APP'D:
11/01/74	J.C.B.	J.C.B.	J.C.B.
<p>152-1173</p>			<p>152-1173</p>



LOCATION CONTAINMENT BSMT. RCP 1B VAULT

PIPE ID	SIZE	MATERIAL	COUPLER BLOCK
W448C	12" SCH 40S	304	12" SCH 40S 304
W448C-1	12" SCH 40S	304	12" SCH 40S 304

VALVE ID	SIZE	MATERIAL
V1	12"	304
V2	12"	304
V3	12"	304
V4	12"	304
V5	12"	304
V6	12"	304

RESTRAINT ID	SIZE	MATERIAL
R1	12"	304
R2	12"	304

A-1
KAP 01-001639

- NOTES
1. DIMENSIONS APPLICABLE FOR 3RD (AND 4TH) EDITION.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXCEPT FROM CODE.
 3. RAFTER RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.

PIPE SUPPORT BRACKETS REFERENCED ON THIS DRAWING MAY NOT BE SHOWN AS THEY ARE ANALYTICAL PART PIPE SUPPORT BRACKETS PROVIDED BY THE SUPPORT DRAWING AND NOT SHOWN HERE WITH A CONTROLLER DRAWING REFERENCE.

REFERENCE DWGS.

See DWG. 01-000163, 01-000164, 01-000165, 01-000166, 01-000167, 01-000168, 01-000169, 01-000170, 01-000171, 01-000172

REVISIONS

NO.	DATE	DESCRIPTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

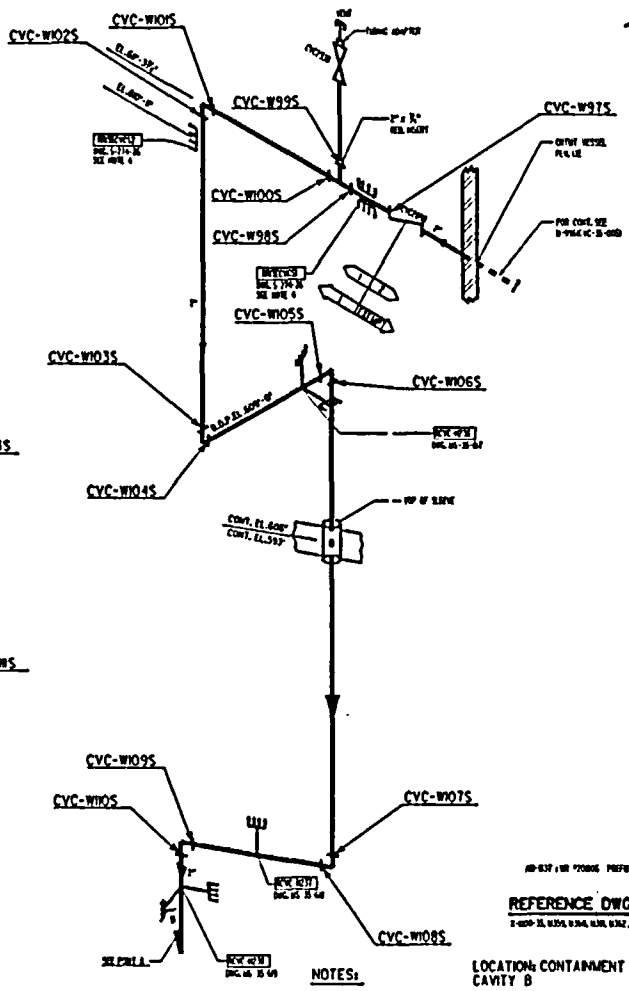
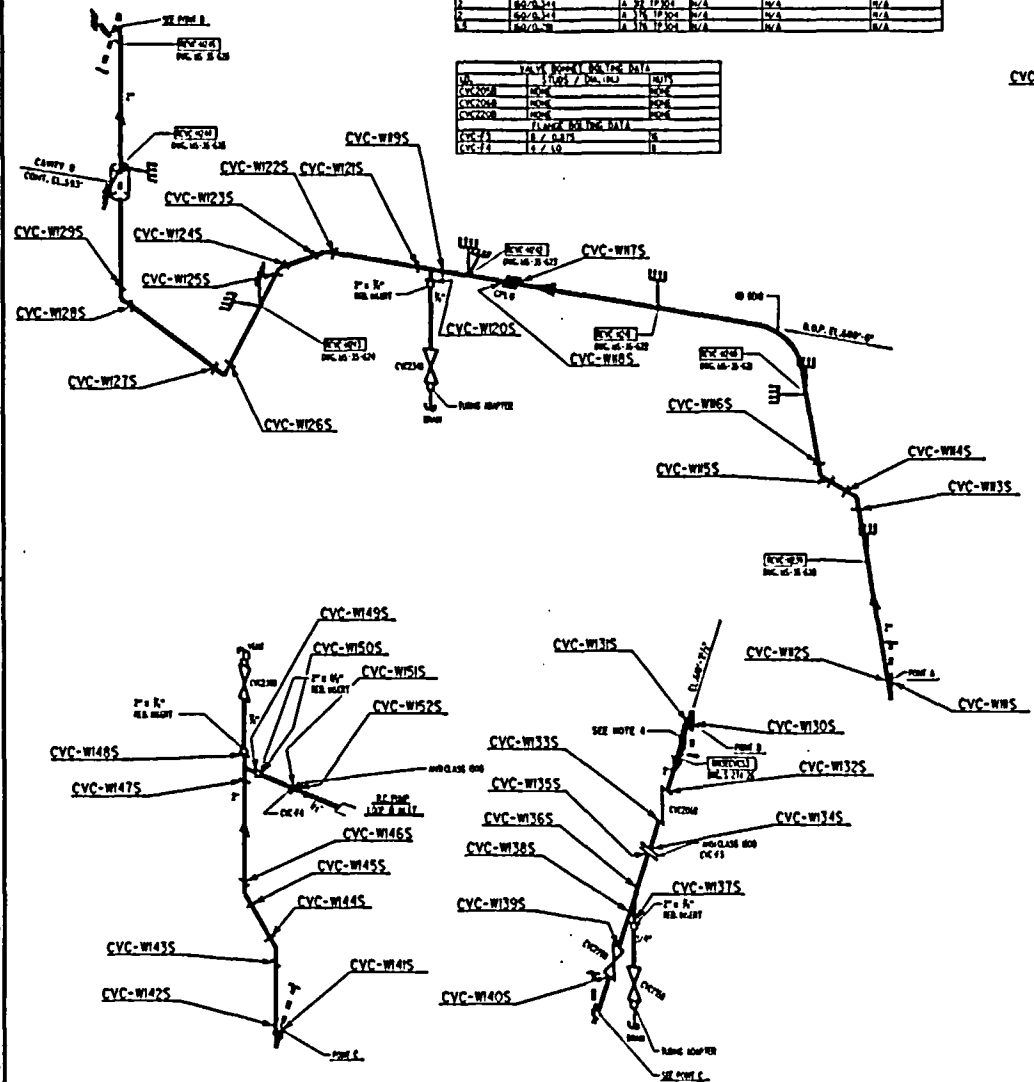
1510-1076

WISCONSIN PUBLIC SERVICE COMPANY
 1510-1076
 DATE: 12/1/74
 SCALE: AS SHOWN
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]
 PROJECT: [Project Name]

0100-W15

Pipes		VALVE BOXES	
1	100/100	1A	100/100
2	100/100	2A	100/100
3	100/100	3A	100/100
4	100/100	4A	100/100

VALVE BOXES (MULTI-PORT)	
1	100/100
2	100/100
3	100/100
4	100/100
5	100/100
6	100/100
7	100/100
8	100/100

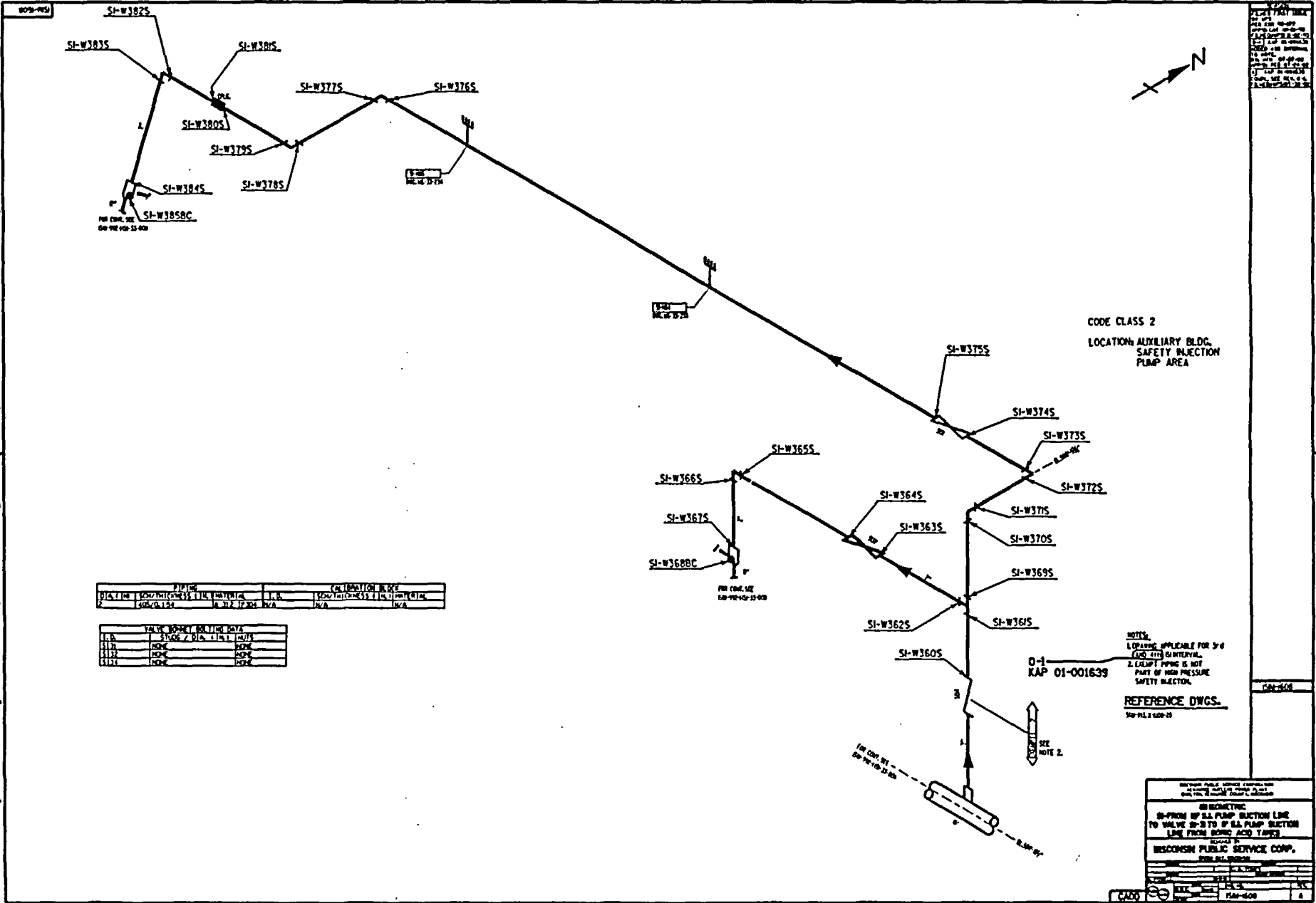


- NOTES:
1. DRAWING APPLICABLE FOR 3rd (AND 4TH) ISI INTERVAL.
 2. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM NDE.
 3. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
 4. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI

LOCATION CONTAINMENT ELEV. 593' CAVITY B

REFERENCE DWGS.
 1-000-11, 1-000-12, 1-000-13, 1-000-14, 1-000-15, 1-000-16, 1-000-17, 1-000-18, 1-000-19, 1-000-20, 1-000-21, 1-000-22, 1-000-23, 1-000-24, 1-000-25, 1-000-26, 1-000-27, 1-000-28, 1-000-29, 1-000-30, 1-000-31, 1-000-32, 1-000-33, 1-000-34, 1-000-35, 1-000-36, 1-000-37, 1-000-38, 1-000-39, 1-000-40, 1-000-41, 1-000-42, 1-000-43, 1-000-44, 1-000-45, 1-000-46, 1-000-47, 1-000-48, 1-000-49, 1-000-50, 1-000-51, 1-000-52, 1-000-53, 1-000-54, 1-000-55, 1-000-56, 1-000-57, 1-000-58, 1-000-59, 1-000-60, 1-000-61, 1-000-62, 1-000-63, 1-000-64, 1-000-65, 1-000-66, 1-000-67, 1-000-68, 1-000-69, 1-000-70, 1-000-71, 1-000-72, 1-000-73, 1-000-74, 1-000-75, 1-000-76, 1-000-77, 1-000-78, 1-000-79, 1-000-80, 1-000-81, 1-000-82, 1-000-83, 1-000-84, 1-000-85, 1-000-86, 1-000-87, 1-000-88, 1-000-89, 1-000-90, 1-000-91, 1-000-92, 1-000-93, 1-000-94, 1-000-95, 1-000-96, 1-000-97, 1-000-98, 1-000-99, 1-000-100

ISOMETRIC CVO-FROM PEN. TO R.C. PUMP LOOP B	
WISCONSIN PUBLIC SERVICE COMP.	
PROJECT NO. 01-001639	SHEET NO. 15
DATE: 11/15/01	SCALE: AS SHOWN
DRAWN BY: J. J. ...	CHECKED BY: ...
DESIGNED BY: ...	APPROVED BY: ...



PIPE		CALCULATION INFO	
DISTANCE	CONCENTRATION	L.R.	CONCENTRATION
1000/150	1.0	1.0	1.0

VALVE	TYPE	DATE
SI-W3825	SI	11/11/11
SI-W3835	SI	11/11/11
SI-W3805	SI	11/11/11
SI-W3775	SI	11/11/11
SI-W3765	SI	11/11/11
SI-W3785	SI	11/11/11
SI-W3845	SI	11/11/11
SI-W3858C	SI	11/11/11
SI-W3755	SI	11/11/11
SI-W3745	SI	11/11/11
SI-W3735	SI	11/11/11
SI-W3725	SI	11/11/11
SI-W3655	SI	11/11/11
SI-W3665	SI	11/11/11
SI-W3675	SI	11/11/11
SI-W3688C	SI	11/11/11
SI-W3645	SI	11/11/11
SI-W3635	SI	11/11/11
SI-W3715	SI	11/11/11
SI-W3705	SI	11/11/11
SI-W3695	SI	11/11/11
SI-W3625	SI	11/11/11
SI-W3615	SI	11/11/11
SI-W3605	SI	11/11/11

CODE CLASS 2
 LOCATION AUXILIARY BLDG.
 SAFETY INJECTION
 PUMP AREA

NOTES:
 1. ORANGE APPLICABLE FOR 3rd
 (AND 2TH) QUARTERLY.
 2. EXCEPT FURNISH IS NOT
 PART OF HIGH PRESSURE
 SAFETY INJECTOR.

REFERENCE DWGS.
 SW-PL-1-100-23

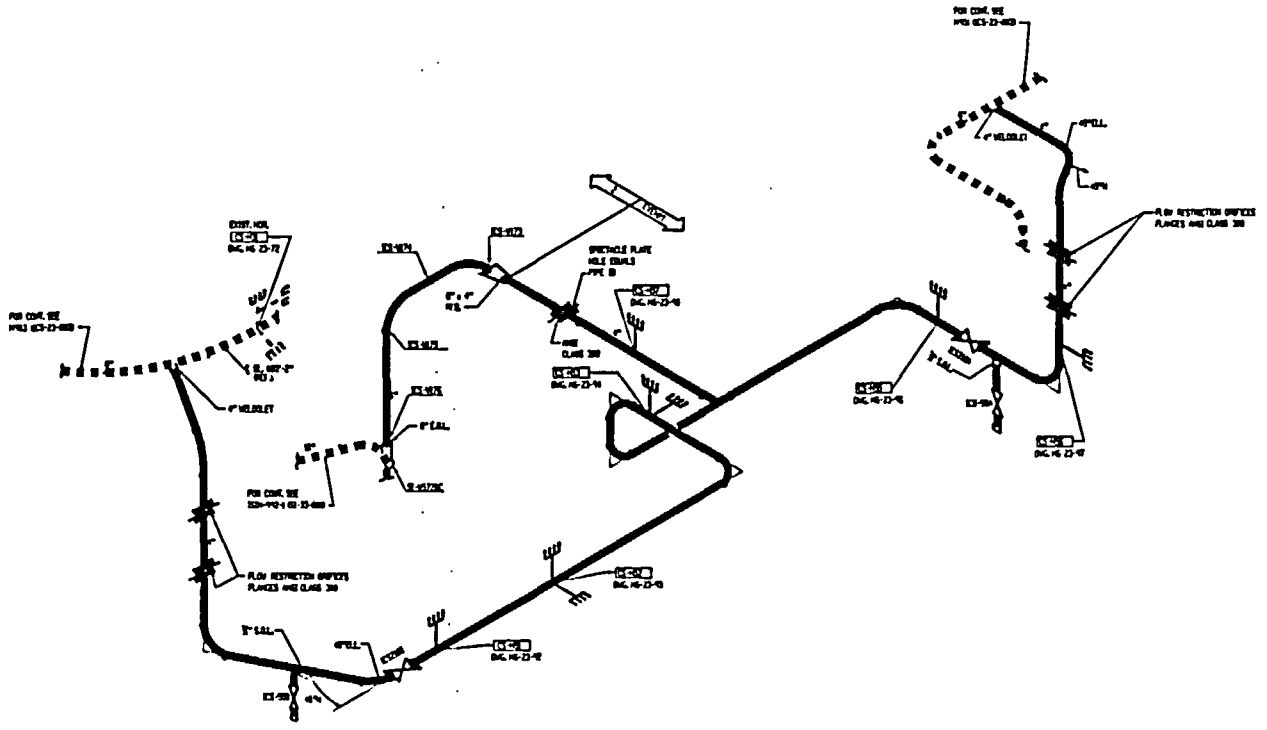
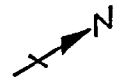
WISCONSIN PUBLIC SERVICE COMPANY
 DIVISION OF WATER SUPPLY
 1000 WATER STREET, MILWAUKEE, WIS. 53202

PROJECT: SAFETY INJECTION PUMP AREA
 SHEET: 1 OF 1
 DATE: 11/11/11
 DRAWN BY: [Name]
 CHECKED BY: [Name]

SCALE: AS SHOWN
 PLAN NO: 100-23

545F-RES1

REVISION
 1. 11/20/78
 FOR LIFT TO 200
 FROM 100-10
 2. 11/20/78
 FOR 100-10
 TO 200



NOTES:
 1. DRIVING APPLICABLE FOR 200 AND 400 TO BE SPECIAL.
 2. CLASS 2 PIPING FABRICATED AND USED IN CONFORM WITH AISC.
REFERENCE DWGS.
 102, 103, 104, 105

PP77C		CALIBRATION R. DEC.	
ISA 88	COL/INCHES/IN	INTERNAL	LA
6	45.5.30	A32773A	45.5.30

WISCONSIN PUBLIC SERVICE CORPORATION
 WATKINSVILLE NUCLEAR POWER PLANT
 CALTON, WATKINS COUNTY, WISCONSIN

**CONTAINMENT SPRAY PUMPS 1A & 1B
 DISCH PIPING TO PENS. 29E & 29N**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 BOSTON, MASS., WISCONSIN

DATE	BY	CHK. NO.	REV.
11/20/78	(-)

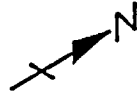
CADD

ISDM-1646

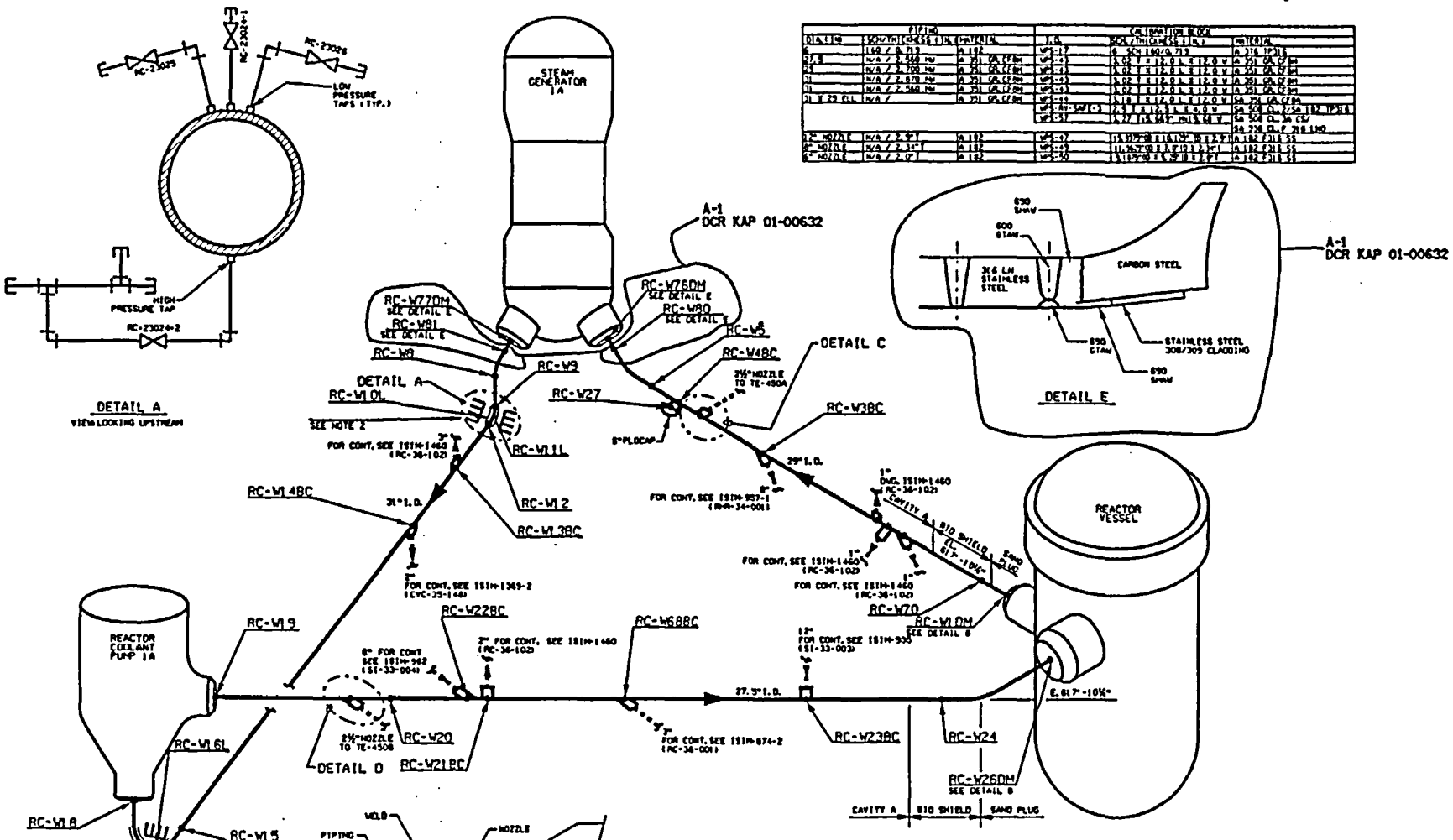
CD-1-0481

CODE CLASS 1

LOCATION: CONTAINMENT ELEV. 606'-0"
SAND PLUG, BIO SHIELD, CAVITY A



NO.	SIZE	TYPE	CLASS	LOCATION	DESCRIPTION	MATERIAL
1	1/2"	FL	A	182	182	SA 304
2	1/2"	FL	A	182	182	SA 304
3	1/2"	FL	A	182	182	SA 304
4	1/2"	FL	A	182	182	SA 304
5	1/2"	FL	A	182	182	SA 304
6	1/2"	FL	A	182	182	SA 304
7	1/2"	FL	A	182	182	SA 304
8	1/2"	FL	A	182	182	SA 304
9	1/2"	FL	A	182	182	SA 304
10	1/2"	FL	A	182	182	SA 304
11	1/2"	FL	A	182	182	SA 304
12	1/2"	FL	A	182	182	SA 304
13	1/2"	FL	A	182	182	SA 304
14	1/2"	FL	A	182	182	SA 304
15	1/2"	FL	A	182	182	SA 304
16	1/2"	FL	A	182	182	SA 304
17	1/2"	FL	A	182	182	SA 304
18	1/2"	FL	A	182	182	SA 304
19	1/2"	FL	A	182	182	SA 304
20	1/2"	FL	A	182	182	SA 304
21	1/2"	FL	A	182	182	SA 304
22	1/2"	FL	A	182	182	SA 304
23	1/2"	FL	A	182	182	SA 304
24	1/2"	FL	A	182	182	SA 304
25	1/2"	FL	A	182	182	SA 304
26	1/2"	FL	A	182	182	SA 304
27	1/2"	FL	A	182	182	SA 304
28	1/2"	FL	A	182	182	SA 304
29	1/2"	FL	A	182	182	SA 304
30	1/2"	FL	A	182	182	SA 304
31	1/2"	FL	A	182	182	SA 304
32	1/2"	FL	A	182	182	SA 304
33	1/2"	FL	A	182	182	SA 304
34	1/2"	FL	A	182	182	SA 304
35	1/2"	FL	A	182	182	SA 304
36	1/2"	FL	A	182	182	SA 304
37	1/2"	FL	A	182	182	SA 304
38	1/2"	FL	A	182	182	SA 304
39	1/2"	FL	A	182	182	SA 304
40	1/2"	FL	A	182	182	SA 304
41	1/2"	FL	A	182	182	SA 304
42	1/2"	FL	A	182	182	SA 304
43	1/2"	FL	A	182	182	SA 304
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49	1/2"	FL	A	182	182	SA 304
50	1/2"	FL	A	182	182	SA 304
51	1/2"	FL	A	182	182	SA 304
52	1/2"	FL	A	182	182	SA 304
53	1/2"	FL	A	182	182	SA 304
54	1/2"	FL	A	182	182	SA 304
55	1/2"	FL	A	182	182	SA 304
56	1/2"	FL	A	182	182	SA 304
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69	1/2"	FL	A	182	182	SA 304
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73	1/2"	FL	A	182	182	SA 304
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75	1/2"	FL	A	182	182	SA 304
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82	1/2"	FL	A	182	182	SA 304
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87	1/2"	FL	A	182	182	SA 304
88	1/2"	FL	A	182	182	SA 304
89	1/2"	FL	A	182	182	SA 304
90	1/2"	FL	A	182	182	SA 304
91	1/2"	FL	A	182	182	SA 304
92	1/2"	FL	A	182	182	SA 304
93	1/2"	FL	A	182	182	SA 304
94	1/2"	FL	A	182	182	SA 304
95	1/2"	FL	A	182	182	SA 304
96	1/2"	FL	A	182	182	SA 304
97	1/2"	FL	A	182	182	SA 304
98	1/2"	FL	A	182	182	SA 304
99	1/2"	FL	A	182	182	SA 304
100	1/2"	FL	A	182	182	SA 304



DETAIL A
VIEW LOOKING UPSTREAM

DETAIL A
FOR CONT. SEE 181M-1460
(RC-36-102)

FOR CONT. SEE 181M-957-1
(RC-34-001)

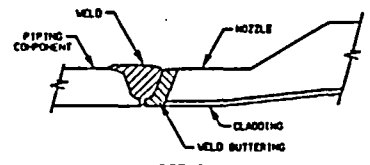
FOR CONT. SEE 181M-1363-2
(CVC-25-148)

FOR CONT. SEE 181M-1460
(RC-36-102)

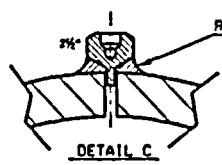
FOR CONT. SEE 181M-1460
(RC-36-102)

FOR CONT. SEE 181M-974-2
(RC-34-001)

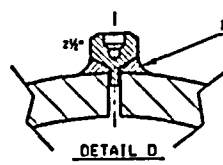
FOR CONT. SEE 181M-962
(S1-33-004)



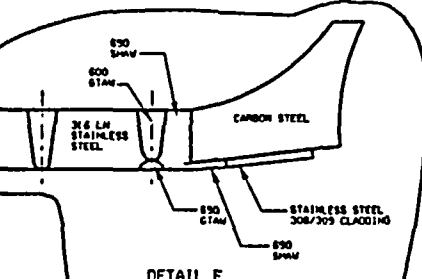
DETAIL B
TYPICAL DISSIMILAR METAL
WELD CONFIGURATION



DETAIL C



DETAIL D



DETAIL E

REFERENCE DRAWINGS

- 181-100-10, 181-100-106, 181-355, 181-36, 181-1305

NOTES:

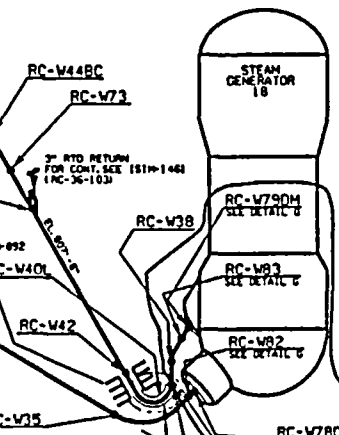
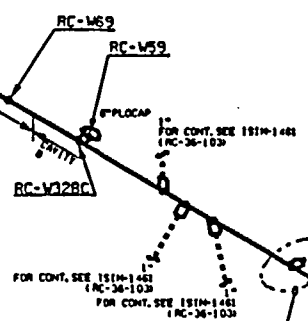
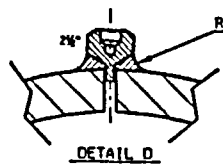
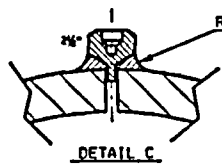
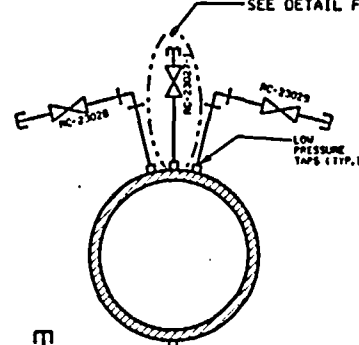
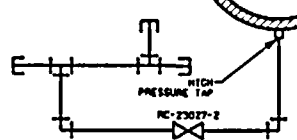
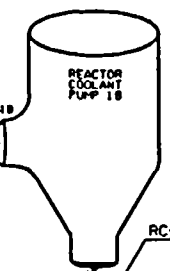
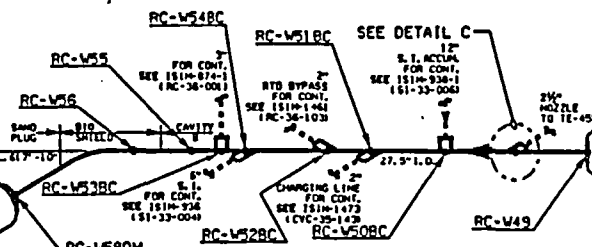
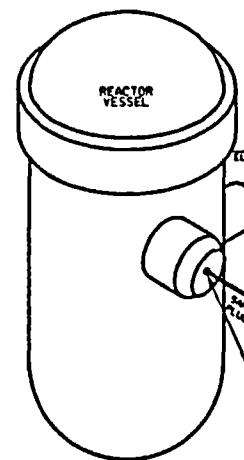
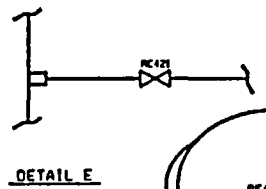
1. DRAWING APPLICABLE FOR 3-6 & 4IN 151 INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION III.
3. CLASS 1 PIPING 3" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISSUED BY PUBLIC SERVICE CORPORATION
 ENGINEERED BY PUBLIC SERVICE CORPORATION
 CHECKED BY PUBLIC SERVICE CORPORATION
 DESIGNED BY PUBLIC SERVICE CORPORATION
 DRAWING NO. 181-1703
 WISCONSIN PUBLIC SERVICE CORP.
 181-1703

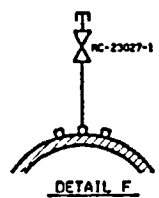
SCALE 1:1

CODE CLASS 1
 LOCATION: CONTAINMENT ELEV. 606'-0"
 SAND PLUG, BIO SHIELD, CAVITY B

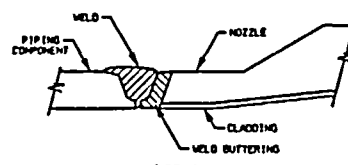
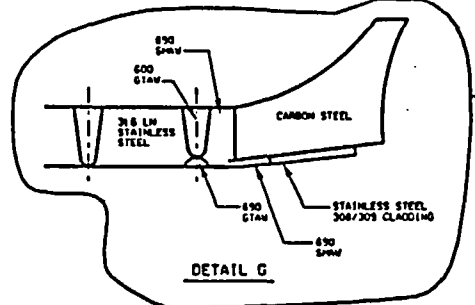
SEE DETAIL F



DETAIL A
VIEW LOOKING UPSTREAM



WELDS		CALCULATION BODY	
DIA. (IN)	NO. WELDS (ES. LIN. INVTAL)	WELDS	NO. WELDS (ES. LIN. INVTAL)
1/2"	1/2" / 0.713"	W5-17	1/2" / 0.713"
3/4"	3/4" / 1.062"	W5-18	3/4" / 1.062"
1"	1" / 1.413"	W5-19	1" / 1.413"
1 1/4"	1 1/4" / 1.763"	W5-20	1 1/4" / 1.763"
2"	2" / 2.825"	W5-21	2" / 2.825"
3"	3" / 4.238"	W5-22	3" / 4.238"
4"	4" / 5.651"	W5-23	4" / 5.651"
6"	6" / 8.477"	W5-24	6" / 8.477"
8"	8" / 11.303"	W5-25	8" / 11.303"
10"	10" / 14.129"	W5-26	10" / 14.129"
12"	12" / 16.955"	W5-27	12" / 16.955"
14"	14" / 19.781"	W5-28	14" / 19.781"
16"	16" / 22.607"	W5-29	16" / 22.607"
18"	18" / 25.433"	W5-30	18" / 25.433"



REFERENCE DRAWINGS
 SK-100-10, SK-100-106, M-358, M-363,
 AB-1-3E, AB-1-505

- NOTES:
- DRAWING APPLICABLE FOR 3" & 4" 151 INTERVAL.
 - RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
 - CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM IFC.

DESIGNED BY PUBLIC SERVICE CORPORATION
 ENGINEERING DEPARTMENT
 CAPITAL PROJECTS GROUP, MILWAUKEE

151 ISOMETRIC
 REACTOR COOLANT PIPING
 LOOP B

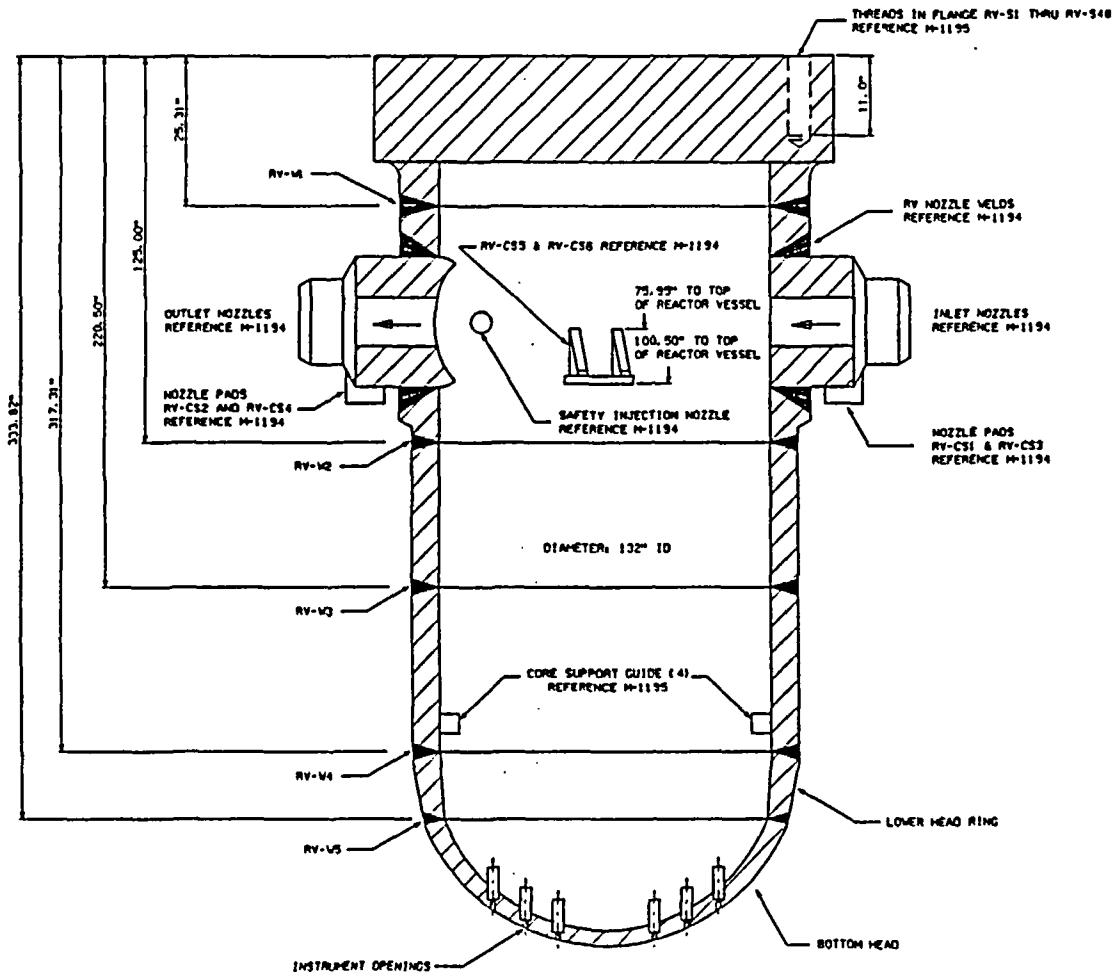
ISSUED BY
 WISCONSIN PUBLIC SERVICE CORP.
 151-1704

DATE: 11/15/74

SCALE: 1:1

151-1704

6611-W



COMPONENT WELD DATA		
I.D.	THICKNESS	MATERIAL
RV-S1	3.44"	A508-64 CL. 2 CS
RV-S2	7.0"	A508-64 CL. 2 CS
RV-S3	7.0"	A508-64 CL. 2 CS
RV-S4	7.0"	A508-64 CL. 2 CS
RV-S5	4.12" MIN.	A533 GR. B CL. 1 CS

CALIBRATION BLOCK		
I.D.	DIAMETER/SCHEDULE	MATERIAL
MPS-RV-1	16" x 3.125" x 8.625"	SASOB CL. 2 CS
MPS-RV-2	8.0" x 32" x 6.0"	SASOB CL. 2 CS
MPS-RV-3	7.0" x 28" x 6.0"	SASOB CL. 2 CS
MPS-RV-4	6.0" x 18" x 6.0"	SASOB CL. 2 CS

REVISION

A

PDO 0011 COMPL
SEE REV 0-1
APP'D: CAT 10/23/89
FILM'D: (MPS) 11/7/89

A-1

REDRAFTED TO CAD
PER ESR 92-177
DWN: E. SAXTON 4/1/93
CHK'D: B. TROTTER 5/12/93
APP'D: CAT 7-23-93

B ESR 92-177 COMPL.
SEE REV. A-1
FILM'D: (MPS) 06-03-93

B-1

REV. NOTES
PER ESR 92-177
BY: LM 10-1-93
CHK'D: RJS 10-4-93
APP'D: CAT 10-07-93

C ESR 92-177 COMPL.
SEE REV. B-1
FILM'D: (MPS) 10-19-93

C-1 RE PUR 0295
ADDED ITEM NO.
BY: BJD 7-19-93
APP'D: DAK 7-26-93

D RE PUR 0295 COMPL.
SEE REV. C-1
FILM'D: (MPS) 8-3-93

D-1 KAP 01-001639
REVISED NOTE 1.
BY: ABF 06-03-02
APP'D:

E KAP 01-001639
COMPLETE
SEE REV. D-1.
FILM'D: (MPS)

D-1
KAP 01-001639

NOTES:

- DRAWING APPLICABLE FOR 3rd (AND 4th) ISI INTERVAL
- ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I
- RV INSTRUMENT PENETRATION ID #S: RV-P1 THRU RV-P36

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**REACTOR VESSEL
RV**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

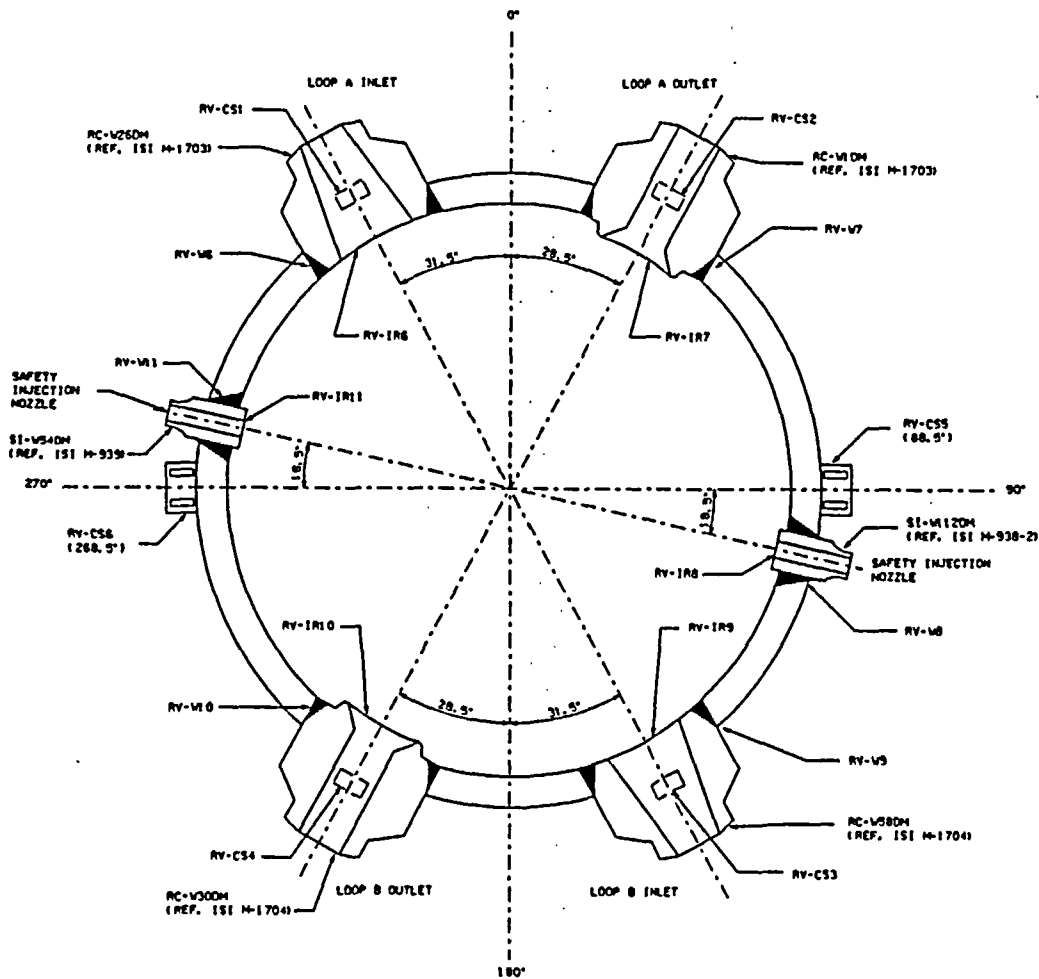
DESIGNED	APPROVED
CHECKED	PHILLIP E. BLUKS
D.M.	PROJECT APPROVED
DATE	11/17/83
ESS	DWG. NO.
NONE	M-1193
	REV.
	E

LOCATION: CONTAINMENT

157-011

CADD

1611-W



157-011

LOCATION: CONTAINMENT

COMPONENT DATA		
I.D.	THICKNESS	MATERIAL
RV-V6	3.44"	A508-64 CL. 2 CS
RV-IR6	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-V7	3.44"	A508-64 CL. 2 CS
RV-IR7	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-V8	3.37"	A508-64 CL. 2 CS
RV-IR8	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-V9	3.44"	A508-64 CL. 2 CS
RV-IR9	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-M0	3.44"	A508-64 CL. 2 CS
RV-IR10	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-M1	3.37"	A508-64 CL. 2 CS
RV-IR11	INNER RADIUS SECTION	A508-64 CL. 2 CS

INTEGRALLY WELDED ATTACHMENT DATA		
I.D.	THICKNESS	MATERIAL
RV-C55	4.25"	SA 516 GR. 70 CS
RV-C56	4.25"	SA 516 GR. 70 CS

INLET AND OUTLET NOZZLE SUPPORT PADS (WELD BUILDUP)		
I.D.	THICKNESS	MATERIAL
RV-CS1	3.0"	SA 516 GR. 70 CS
RV-CS2	3.0"	SA 516 GR. 70 CS
RV-CS3	3.0"	SA 516 GR. 70 CS
RV-CS4	3.0"	SA 516 GR. 70 CS

CALIBRATION BLOCK		
I.D.	DIMENSIONS/SCHEDULE	MATERIAL
WPS-RV-1	16" IN. x 3" x 1.875" x 0.25" W	SA-508-64 CL. 1 CS
WPS-RV-2	5.0" x 3.5" x 1.6" O W	SA-508-64 CL. 1 CS
WPS-RV-3	7.0" x 2.25" x 1.6" O W	SA-508-64 CL. 1 CS
WPS-SIS-01	6.0" x 1.125" x 1.4" O W	SA-508-64 CL. 2 CS

- NOTES:
- DRAWING APPLICABLE FOR 3rd (AND 1ST) ISI INTERVAL
 - ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

REVISION

E-1	KAP 01-001639 COMPLETE SEE REV. E-1. FILMED (WPS)
A-1	REDRAFTED TO CAD PER ESR 92-177 DWN E. SEXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B-1	ESR 92-177 COMPL. SEE REV. A-1 FILMED (WPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LM 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C-1	ESR 92-177 COMPL. SEE REV. B-1 FILMED (WPS) 10-19-93
C-1	PDR 0149 REVISED WELD ATTCH. DATA, ADDED INLET AND OUTLET NOZZLE WELD DATA. BY: JSPICE 2-21-97 APP'D: PCM 02-21-97
D	PDR 0149 COMPL. SEE REV. C-1 FILMED (WPS) 02-25-97
D-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: OAK 7-26-99
E	RE PUR 0295 COMPL. SEE REV. D-1 FILMED (WPS) 8-3-99
E-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:

E-1
KAP 01-001639

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

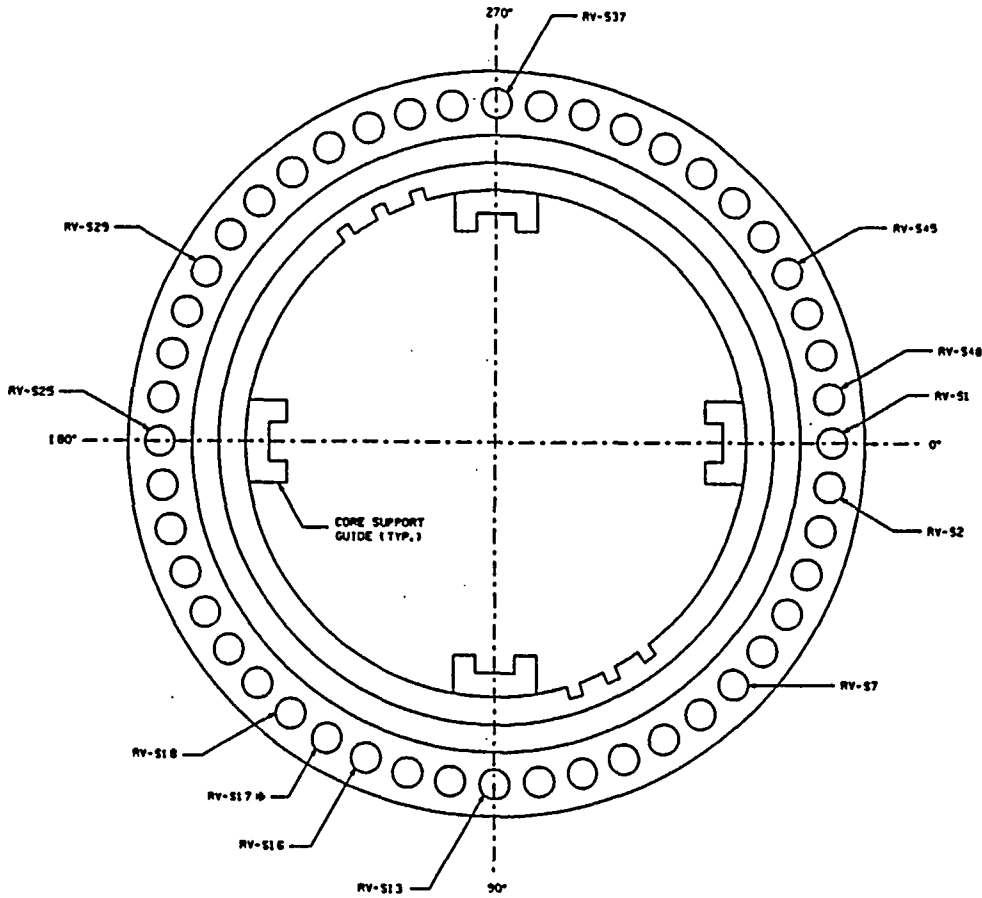
**REACTOR VESSEL
NOZZLES AND
INTEGRALLY WELDED ATTACHMENTS**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
	PHILLIP E. BUKES (6/16/93)
CHECKED	PROJECT APPROVED
D. M.	1/17/83
DATE	DWG. NO.
ESS SCALE 1/1/93	M-1194
NONE	REV.
	F

CADD

S611-W



* NOTE: LOCATION FOR REACTOR VESSEL STUD, NUT AND WASHERS 455.

157-011 D-1 KAP 01-001639

LOCATION: CONTAINMENT

COMPONENT DATA		
I.D.	THICKNESS	MATERIAL
RV-S1 thru RV-S48	111.0"	A508-CL.2 CS

CALIBRATION BLOCK		
I.D.	DIAMETER/SCHEDULE	MATERIAL
MPS-75	6.0" x 20" x 6.0" W	S4508 CL.2 CS
MPS-RV-4	5.0" x 18" x 6.0" W	S4508 CL.2 CS

D-1 KAP 01-001639

- NOTES:
- DRAWING APPLICABLE FOR 3-d (AND 4th) ISI INTERVAL
 - ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

REVISION

A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL SEE REV. A-1 FILM'D: (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL SEE REV. B-1 FILM'D: (MPS) 10-19-93
C-1	RE PUR 0295
	ADDED ITEM NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILM'D: (MPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

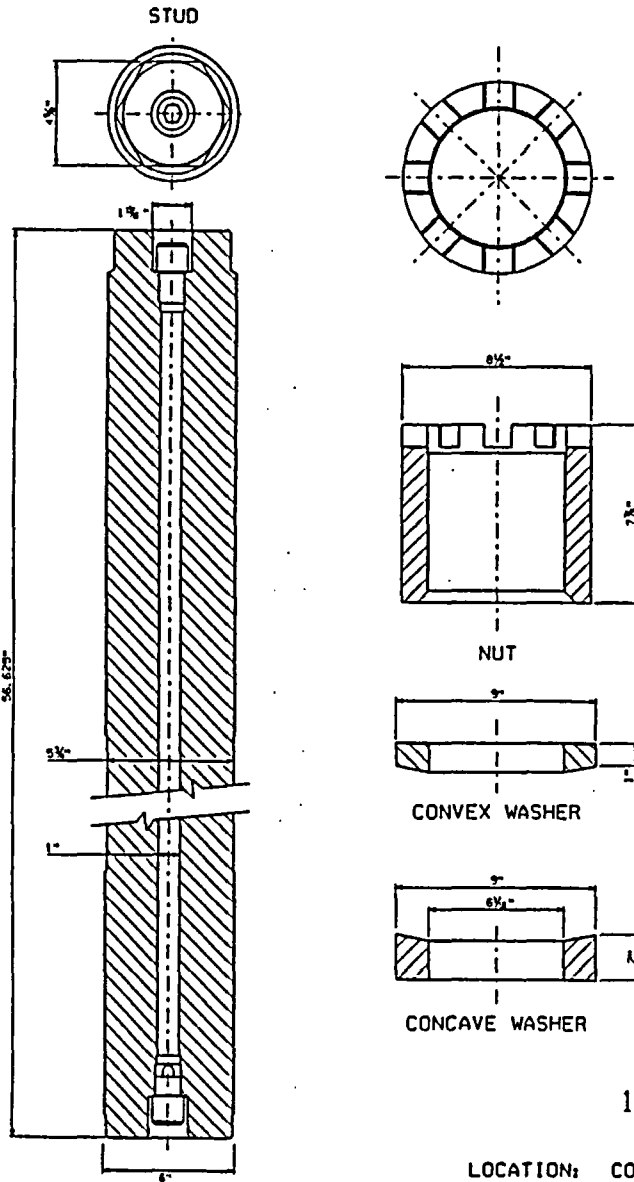
REACTOR VESSEL
THREADS IN FLANGE

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
	PHILLIP E. BUKES	6/16/93
CHECKED	PROJECT APPROVED	
D. H.	1/17/83	
DRW	ESS	4/1/93
SCALE	OWG. NO.	REV.
NONE	M-1195	E

CADD

9611-W



COMPONENT DATA			
PART	I.D.	O.D.	MATERIAL
STUD	RY-S1	1 THRU 1 1/2 18 THRU 4 1/2 35	SA-540 GRADE B2
NUT	RY-N	1 THRU 1 1/2 18 THRU 4 1/2 35	SA-540 GRADE B2
WASHERS (CONCAVE/CONVEX)	RY-W	1 THRU 1 1/2 18 THRU 4 1/2 35	SA-540 GRADE B2

CALIBRATION BLOCK		
I.D.	DIAMETER/LENGTH	MATERIAL
MPS-20	3.75" / 56.625"	SA-540 GRADE B2

D-1
KAP 01-001639

NOTES:
 1. DRAWING APPLICABLE FOR 3-0 (AND 4-1) ISI INTERVAL
 2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

REVISION	
A	POD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL. SEE REV. A-1 FILM'D: (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93. CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILM'D: (MPS) 10-19-93
C-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILM'D: (MPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ASB 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**REACTOR VESSEL
STUD, NUT AND WASHERS**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

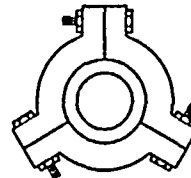
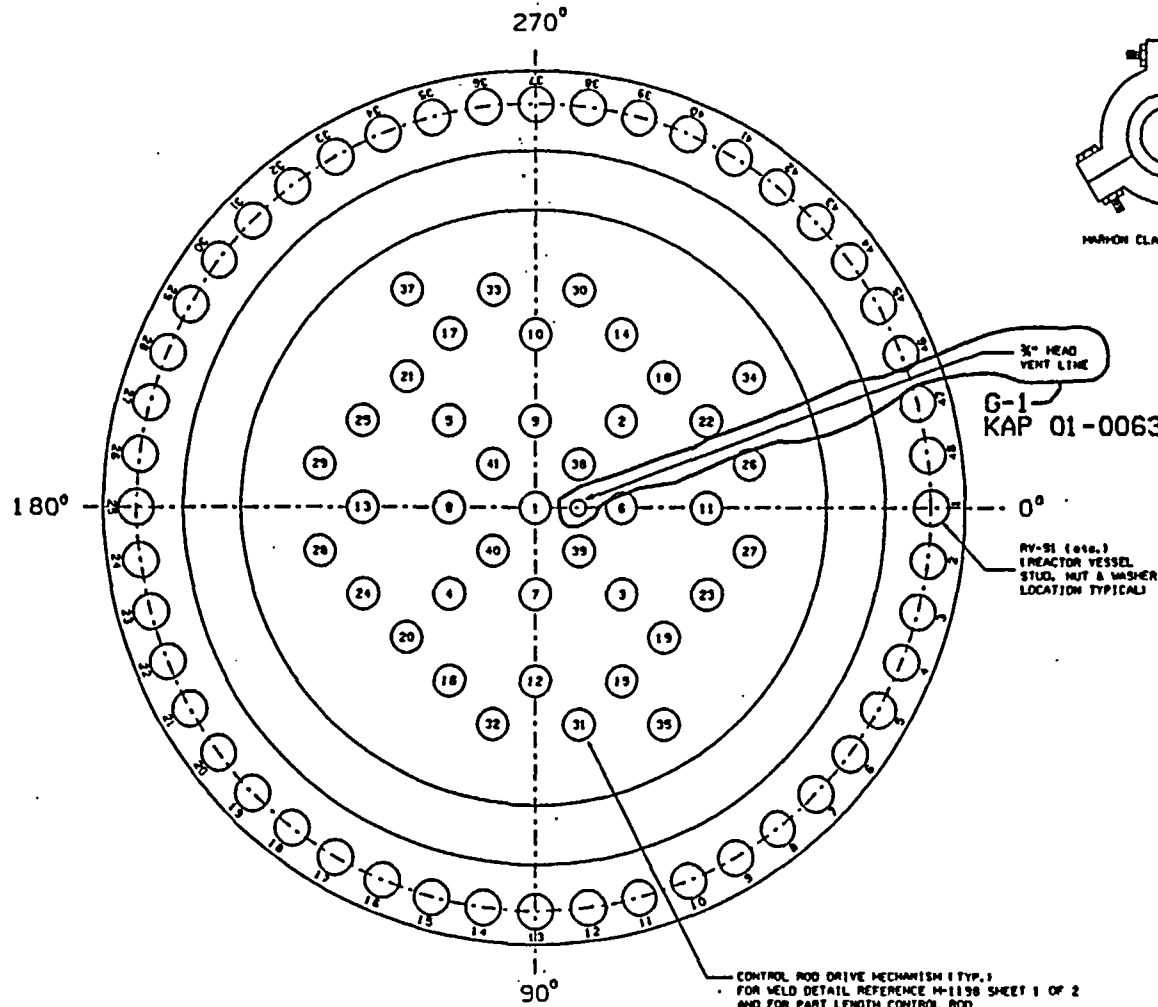
DESIGNED	APPROVED
PHILLIP E. BUKES	8/13/93
CHECKED	PROJECT APPROVED
D.M.	1/17/93
DRAWN	DWG. NO.
D.R./D.S. 1/13/93	M-1196
SCALE	REV.
NONE	E

157-011

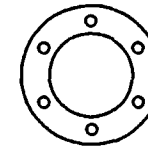
LOCATION: CONTAINMENT

CADD

1611-W



HARMON CLAMP



JACKING SCREW ASSEMBLY
(16 SCREWS)

CONOSEAL BOLTING

PORT DESCRIPTION	PORT NUMBERS	IDENT.
CONOSEAL BOLTING (THERMOCOUPLE INSPECTION)	34, 35, 37	RY-CD34 RY-CD35 RY-CD37
PLUTONIUM RECYCLE WITH CONTROL ROD DRIVE MECHANISM HOUSING	2, 3, 4, 5	CONTROL ROD DRIVE
PART LENGTH CONTROL ROD DRIVE MECHANISM HOUSING	6, 7, 8, 9	MECHANISM RY-CD35 & RY-CD37 THRU RY-CD41
FULL LENGTH CONTROL ROD DRIVE MECHANISM HOUSING	BALANCE	
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	8	RY-CD42 RY-CD43
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	7	RY-CD44 RY-CD45
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	6	RY-CD46 RY-CD47
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	5	RY-CD48 RY-CD49

NOTES:

- 11. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
- 21. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

CONTROL ROD DRIVE MECHANISM (TYP.)
FOR WELD DETAIL REFERENCE M-1198 SHEET 1 OF 2
AND FOR PART LENGTH CONTROL ROD
DRIVE MECHANISM MOTOR TUBE UPPER
AND LOWER WELD DETAIL REFERENCE
M-1198 SHEET 2 OF 2.

157-011

LOCATION: CONTAINMENT

REVISION	
G-1	KAP 01-00632 ADDED 3" VENT LINE. BY: SHJ 10-07-02 APP'D:
H	KAP 01-00632 COMPL SEE REV G-1 FILMED (WPS)
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED (WPS) 08-03-93
C-1	REV. NOTES AND ADD IDENT. COL. TO CHART PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
D	ESR 92-177 COMPL. SEE REV. C-1 FILMED (WPS) 10-19-93
D-1	KAP 1560 ADDED TO PORT DESCR., NUMBERS, & IDENT. BY: SJD 4-1-98 APP'D: PEB 04-07-98
E	KAP 1560 COMPL. SEE REV. D-1. FILMED (WPS) 04-14-98
E-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: GAK 7-26-99
F	RE PUR 0295 COMPL. SEE REV. E-1. FILMED (WPS) 8-3-99
F-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D: PEB 06-04-02
G	KAP 01-001639 COMPLETE SEE REV. F-1. FILMED (WPS) 06-11-02

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

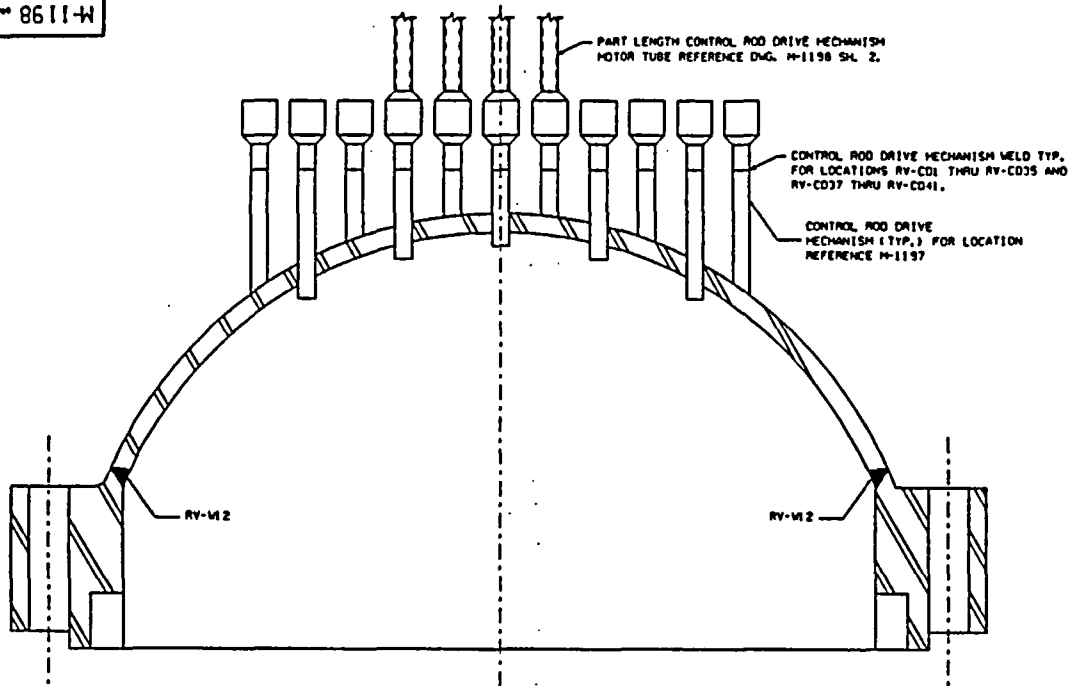
**REACTOR VESSEL CLOSURE
HEAD CONOSEAL BOLTING AND
CONTROL ROD DRIVE MECHANISMS**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

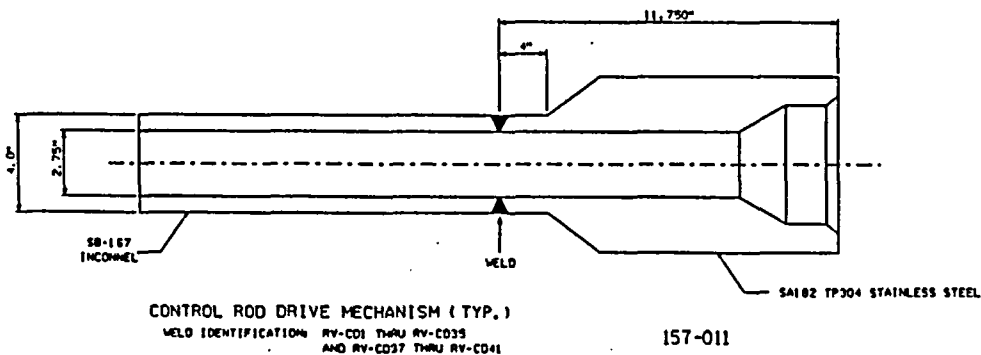
DESIGNED	APPROVED
DATE	PHILLIP E. BUKES 3/13/93
DR. PL.	PROJECT APPROVED
DATE	1/17/93
SCALE	DWG. NO.
NONE	M-1197
REV.	H

CADD

8611-H



REACTOR VESSEL CLOSURE HEAD FLANGE



CONTROL ROD DRIVE MECHANISM (TYP.)
WELD IDENTIFICATION: RV-C01 THRU RV-C035
AND RV-C037 THRU RV-C041

157-011

LOCATION: CONTAINMENT

COMPONENT WELD DATA	
I.D.	THICKNESS
RV-M2	6.0"
CROW WELD RV-C01 THRU RV-C035 AND RV-C037 THRU RV-C041	1.625"

REACTOR VESSEL CLOSURE HEAD
FLANGE.....6.0" A508-64 CLASS 2 CARBON STEEL
DOME.....SA533 CL. B CLASS 1 CARBON STEEL
DIAMETER.....137.9"
CIRCUM.....432.0"

CALIBRATION BLOCK		
I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-75	6.0" x 20" x 6" M	SA-508 CL. 2 CS
WPS-18	4" SCH160 0.351" T	A378 TP 316 SS

NOTES:

- DRAWING APPLICABLE FOR 3-0 (AND 4-0) ISI INTERVAL
- ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

E-1
KAP 01-001639

REVISION	
F	KAP 01-001639 COMPLETE SEE REV. E-1. FILMED (MPS)
A-1	REDRAFTED TO CAD PER ESR 92-177 DWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL. SEE REV. A-1 FILMED (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED (MPS) 10-19-93
C-1	KAP 1560 ADDED PART LENGTH CONTROL ROD DRIVE MECH. & INFO. TO COMP. WELD DATA & CALIBRATION BLOCK LISTS & MADE DNG. SH. 1 OF 2. BY: SJD 4-1-98 APP'D: PEB 04-07-98
D	KAP 1560 COMPL. SEE REV. C-1 FILMED (MPS) 04-14-98
D-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
E	RE PUR 0295 COMPL. SEE REV. D-1 FILMED (MPS) 8-3-99
E-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

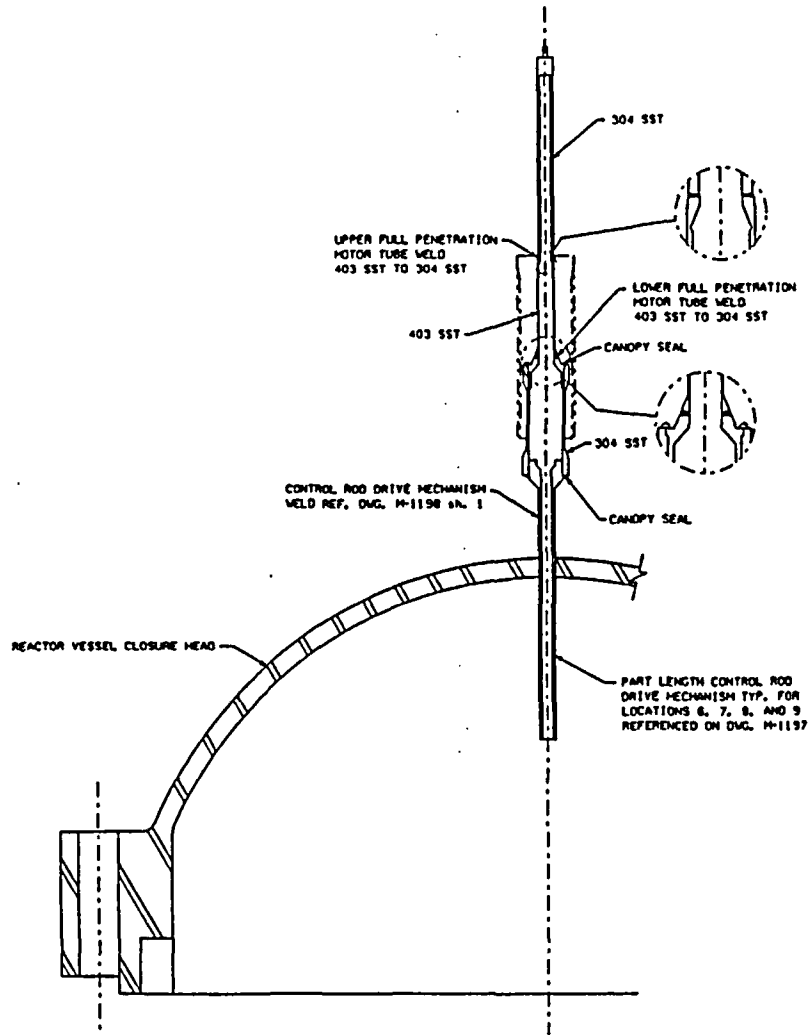
REACTOR VESSEL CLOSURE HEAD FLANGE
AND CONTROL ROD DRIVE MECHANISM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
PHILLIP E. BUKES	8/12/93	
CHECKED	PROJECT APPROVED	
D. H.	11/17/83	
DATE	DWG. NO.	REV.
Q. R. / D. S. 11/12/83	M-1198	sh. 1 of 2
NONE		F.

CADD

2102 8611-W



LOCATION: CONTAINMENT

PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE WELD DATA

PART LENGTH LOCATION	I. D.	DIAMETER / THICKNESS
NL. 6 LOWER WELD	RV-CDM42	4.89" O. 460"
NL. 6 UPPER WELD	RV-CDM43	3.75" O. 490"
NL. 7 LOWER WELD	RV-CDM44	4.89" O. 460"
NL. 7 UPPER WELD	RV-CDM45	3.75" O. 490"
NL. 8 LOWER WELD	RV-CDM46	4.89" O. 460"
NL. 8 UPPER WELD	RV-CDM47	3.75" O. 490"
NL. 9 LOWER WELD	RV-CDM48	4.89" O. 460"
NL. 9 UPPER WELD	RV-CDM49	3.75" O. 490"

NOTE: DISTANCE BETWEEN LOWER WELD AND UPPER WELD: 15.375"

LOWER WELD 0.94" ABOVE CANOPY SEAL.

O-1
KAP 01-001639

NOTES:

- 1). DRAWING APPLICABLE FOR 3rd (AND 4th) ISI INTERVAL
- 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I
- 3). REFERENCE DRAWINGS: XX100-411-1 THRU XX100-411-5.

REVISION

FILMED FIRST ISSUE
PER KAP 1560.
APP'D: FEB 04-07-9
FILMED: (WPS) 04-14-98
O-1 KAP 01-001639
REVISED NOTE 1.
BY: ABF 06-03-02
APP'D:
A1 KAP 01-001639
COMPLETE
SEE REV. 0-1.
FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

REACTOR VESSEL CLOSURE HEAD FLANGE
PART LENGTH CONTROL ROD DRIVE
MECHANISM MOTOR TUBE

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED: PHILLIP E. BUKES 12/13/93
APPROVED: PROJECT APPROVED

CHECKED: 1/17/93

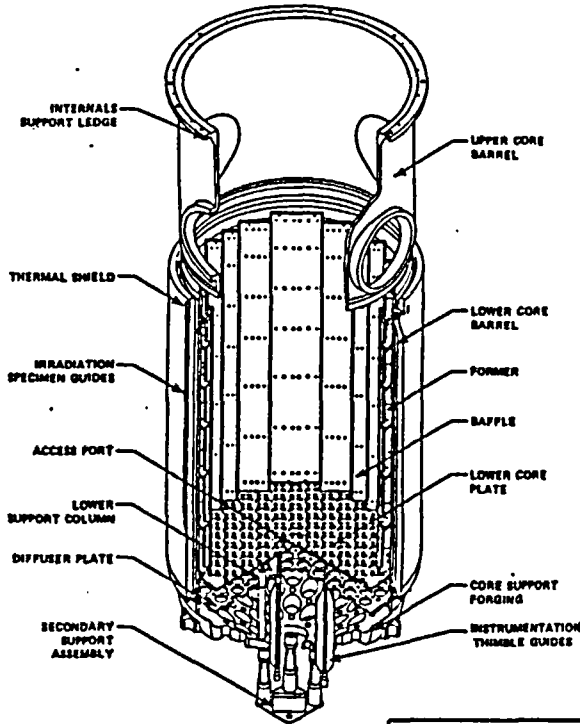
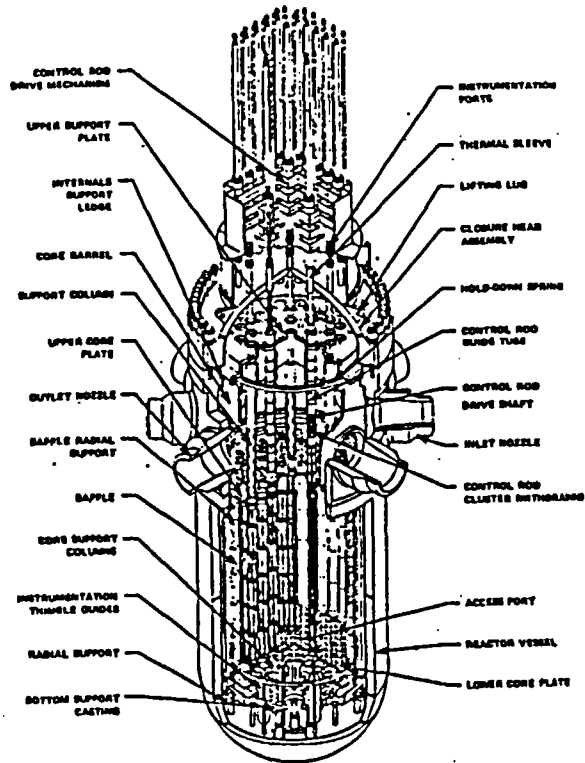
D. M.

DRAWN: O.R./D.S. 11/13/93 DWG. NO. M-1198 REV. 2 of 2 A

SCALE: NONE

CADD

6611-W



157-011

D-1
KAP 01-001639

- NOTES:
- DRAWING APPLICABLE FOR 30" (AND 45") ISI INTERVAL
 - ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

REVISION

A	POD 0011 COMP. SEE REV. 0-1 APP'D: C. A. T. 10-23-89 FLM'D: WPS 11-07-89
A-1	REDRAFTED TO CAD PER ESR 92-177 OWN: DOG 8-9-93 CHK'D: B. TROTTER 8-10-93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL. SEE REV. A-1 FILMED: (WPS) 08-03-93
B-1	ADD NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED: (WPS) 10-19-93
C-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILMED: (WPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

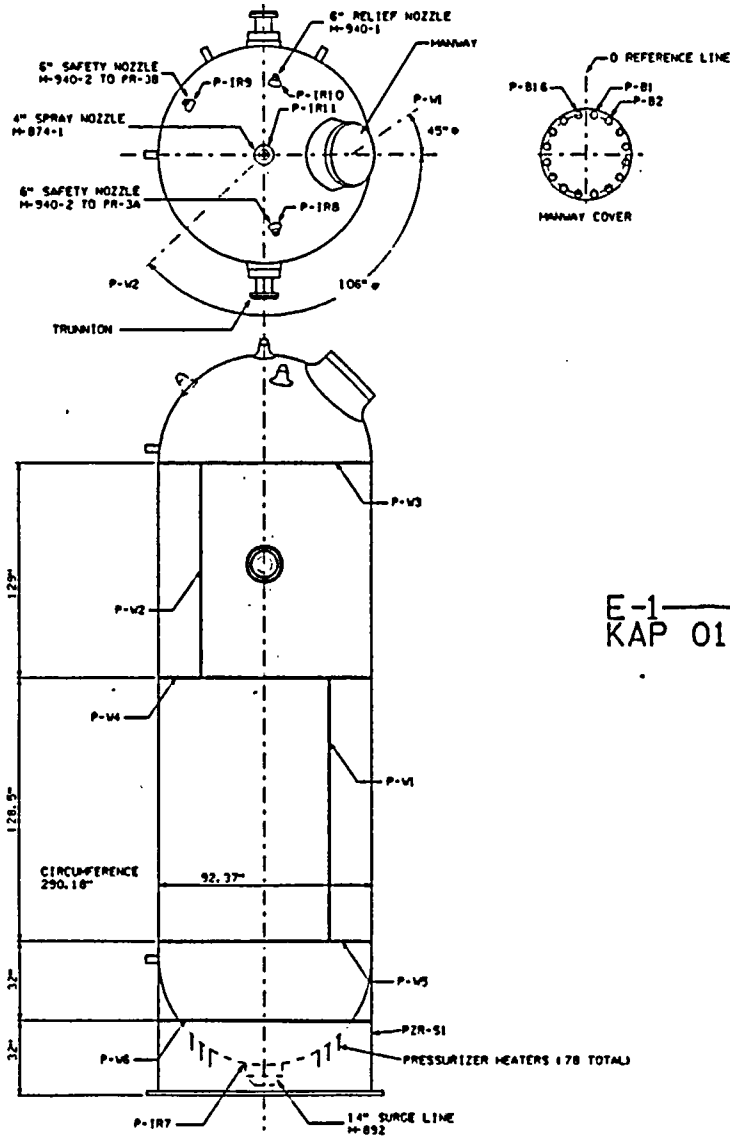
REACTOR VESSEL INTERNALS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	PHILLIP E. SUKES	APPROVED	8-10-93
CHECKED		PROJECT APPROVED	
U. M.	1/17/83		
DATE	12-3-93	DMG. NO.	M-1199
BY	D. D. C. WALK	REV.	E
OTHER	NONE		

HYBRID
CADD

0021-W



BOLTING DATA

BOLTS / DIA. / LGTH	INITS
16 / 1.88\"/>	N/A

E-1
KAP 01-001639

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
P-W	4.5"	SA 533 GR. A CL. 1 CS
P-V2	4.5"	SA 533 GR. A CL. 1 CS
P-V3	4.5"	QWTF 4
P-W4	4.5"	SA 533 GR. A CL. 1 CS
P-V5	4.5"	QWTF 4
P-W6	1.5"	SA 516 GR. 70 CS
P-1R7	INNER RADIUS SECTION	SA 216 GR. WCC CS
P-1R8	INNER RADIUS SECTION	SA 216 GR. WCC CS
P-1R9	INNER RADIUS SECTION	SA 216 GR. WCC CS
P-1R10	INNER RADIUS SECTION	SA 216 GR. WCC CS
P-1R11	INNER RADIUS SECTION	SA 216 GR. WCC CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-23	5.0\"/>	SA 533 GR. A CL. 1 CS
WPS-26	1.5\"/>	SA 516 GR. 70 CS
WPS-45	1.5\"/>	SA 216 GR. WCC CS
WPS-46	1.5\"/>	SA 216 GR. WCC CS

E-1
KAP 01-001639

- NOTES:**
- DRAWING APPLICABLE FOR 3rd (AND 4th) ISI INTERVAL
 - ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I
 - PZR HEATER PENETRATION ID #s: PZR-P1 THRU PZR-P78
 - MATERIAL - SHELL: SA 533 GRADE A CLASS 1 CARBON STEEL.
HEAD: SA 216 GR. WCC CARBON STEEL
- MEASURED WITHOUT INSULATION.

REVISION	
E-1	KAP 01-001639 ADDED 4TH INTERVAL. REVISED MATERIAL. BY: NTH 02-12-02 APP'D: PEB 04-05-02
F	KAP 01-001639 COMPL. SEE REVISION E-1. FILMED: (WPS) 04-16-02
B-1	ADD PRESSURIZER HEATERS & REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED: (WPS) 10-19-93
C-1	PDR 0149 ADDED CALBR. DATA WPS-45, WPS-46 INFO AND PRESS. HEATERS 78 WAS 72. BY: J.S.PICE 2-21-97 APP'D: PCM 02-21-97
D	PDR 0149 COMPL. SEE REV. C-1 FILMED: (WPS) 02-25-97
D-1	RE PUR 0295 ADDED ITEM NO. BY: BJD 7-19-99 APP'D: OAK 7-26-99
E	RE PUR 0295 COMPL. SEE REV. D-1 FILMED: (WPS) 8-3-99

LOCATION: CONTAINMENT PRESSURIZER VAULT

163-011

CADD

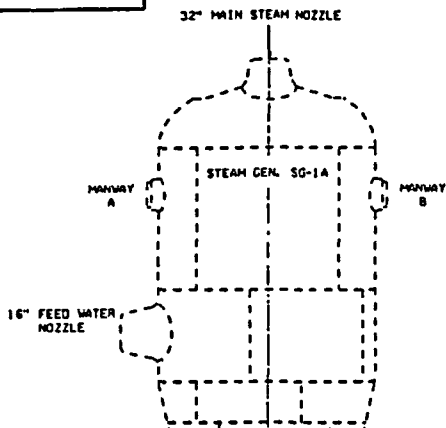
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**PRESSURIZER
PZR**

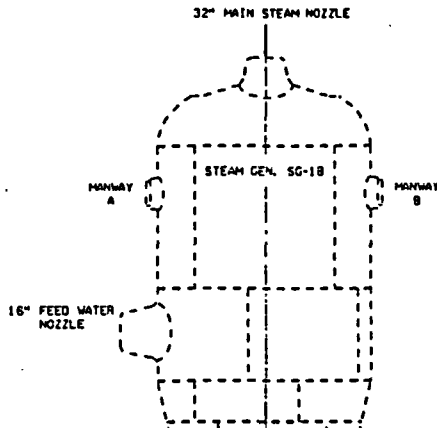
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
CREATED	PHILLIP E. BUKES 04/24/03
D. M.	PROJECT APPROVED
DATE	11/17/03
SCALE	SCALE
DRW. NO.	0, R, / O, S 11/17/03
OWG. NO.	M-1200
REV.	F

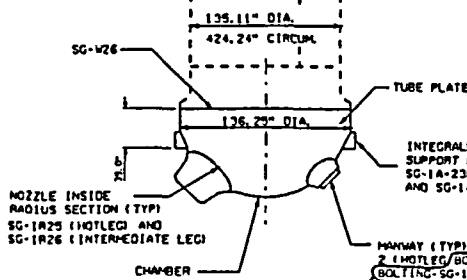
1021-W



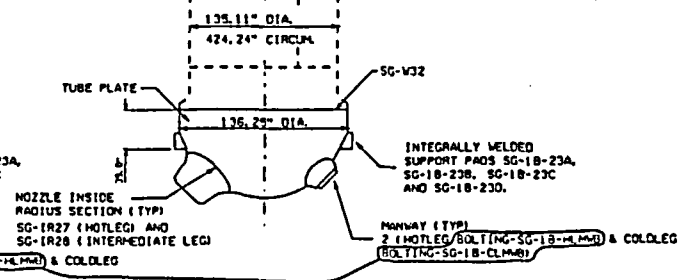
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2 REFERENCE M-1208



ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2 REFERENCE M-1208



E-1 KAP 01-001639 134-011, 134-012



LOCATION: CONTAINMENT

MANWAY BOLTING DATA EACH MANWAY

STDS. # / DIA. / LGTH NUTS #	WASERS #
15 / 1.31" / 15.5" 18	12

• INDIVIDUALLY STAMPED I.D.'s

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
SG-V26	5.25"	SA508 CL. 3A CS
SG-V32	5.25"	SA508 CL. 3A CS
SG-1R25 (HOTLEG)	8.18" MAX.	SA508 CL. 3A CS
SG-1R26 (INTER. LEG)	8.18" MAX.	SA508 CL. 3A CS
SG-1R27 (HOTLEG)	8.18" MAX.	SA508 CL. 3A CS
SG-1R28 (INTER. LEG)	8.18" MAX.	SA508 CL. 3A CS
SG-1A-23A	13.13"	AS08 C28 CS
SG-1A-23B	13.13"	AS08 C28 CS
SG-1A-23C	13.13"	AS08 C28 CS
SG-1A-23D	13.13"	AS08 C28 CS
SG-1B-23A	13.13"	AS08 C28 CS
SG-1B-23B	13.13"	AS08 C28 CS
SG-1B-23C	13.13"	AS08 C28 CS
SG-1B-23D	13.13"	AS08 C28 CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-34	5.0" / 18.9" L x 2.91" W	SA508 CL. 3A CS
WPS-35	1.27" / 15.74" x 13.62" W	SA508 CL. 3A CS / SA738 CL. F. 316 LMO

NOTES:

- DRAWING APPLICABLE FOR 3-d & 4th ISI INTERVAL
- ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1
- STEAM GENERATOR SG-1A AND SG-1B INTEGRALLY WELDED SUPPORT PADS NUMBERED CLOCKWISE FROM CENTERLINE OF HOTLEG MANWAY: 23A, 23B, 23C & 23D
- O REFERENCE: TOP CENTERLINE OF HOTLEG MANWAY FOR SG-V26 AND SG-V32
- SG-V26 AND SG-V32 WELD CENTERLINE LOCATED 18.0" ABOVE BOTTOM CURVATURE OF CHANNEL HEAD.

REVISION

E-1	KAP 01-001639
ADDED NOTES TO MANWAY BY: PJB 04/30/03 APP'D:	
F	KAP 01-001639
COMPL. SEE REV. E-1 FILMED: (WPS)	
B	ESR 92-177 COMPL. SEE REV. A-1 FILMED: (WPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED: (WPS) 10-19-93
C-1	RE PUR 0295 ADDED ITEM NO'S. BY: BJD 7-19-99 APP'D: OAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILMED: (WPS) 8-3-99
D-1	OCR 2858-1 ADDED REVISIONS FOR FUTURE AS BUILTS. BY: JMS 01-29-01 APP'D:
ADDED 4th INTERVAL TO NOTE 1, REFERENCE KAP 01-001639 APP'D:	
E	OCR 2858-1 COMPL. SEE REV. D-1 FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

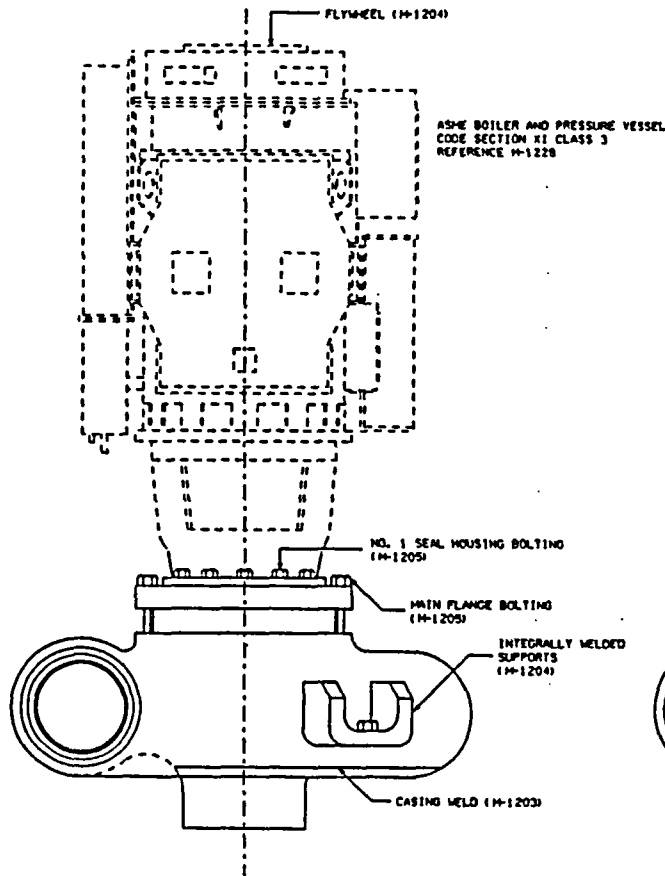
REPLACEMENT
STEAM GENERATORS
SG-1A AND SG-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

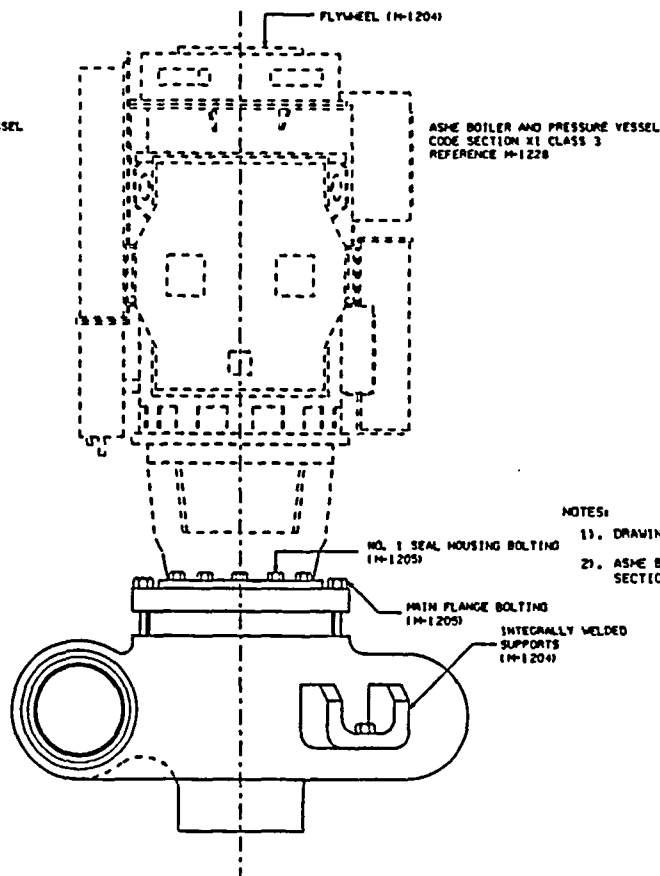
DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES	6/1/93
PROJECT APPROVED		
D.M.	1/17/83	
DATE	ESS	DWG. NO.
1/21/93	SCALE	M-1201
NONE		REV.
		F

CADD

2021-H



RCP-1A
145-021
LOCATION: CONTAINMENT



RCP-1B
145-022

NOTES:

- 1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
- 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

D-1
KAP 01-001639

REVISION

A	PDD 0011 COMPL SEE REV. 0-1 APP'D: CAT 10/23/89 FILMED (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL. SEE REV. A-1 FILMED (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177- BY: LHM 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILMED (MPS) 10-19-93
C-1	RE PUR 0295
D	ADDED ITEM NO. 5. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D-1	RE PUR 0295 COMPL. SEE REV. C-1 FILMED (MPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILMED (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

REACTOR COOLANT PUMPS
RCP-1A AND RCP-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
PHILLIP E. BUKES	10/16/89	
CHECKED	PROJECT APPROVED	
D. H.	1/17/91	
ESS	DWG. NO.	REV.
WALK	M-1202	E
NONE		

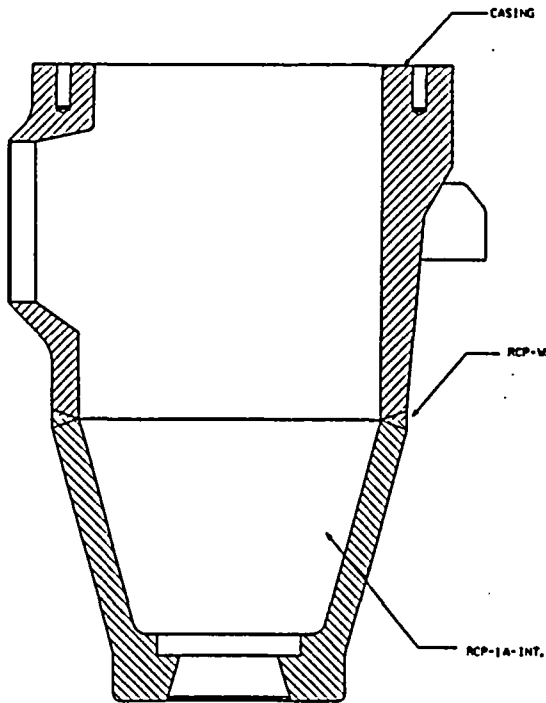
CADD

EOZI-W

REVISION

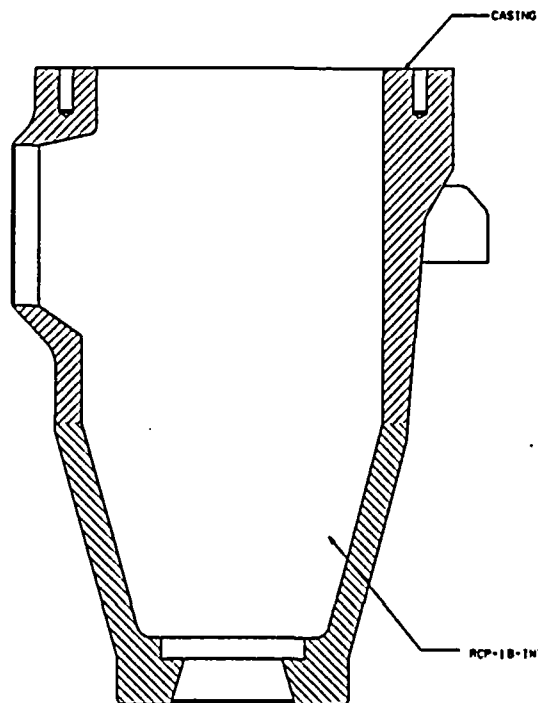
A	POD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SARTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL SEE REV. A-1 FILM'D: (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-1-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL SEE REV. B-1 FILM'D: (MPS) 10-19-93
C-1	RE PUR 0295 ADDED ITEM NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL SEE REV. C-1 FILM'D: (MPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (MPS)

COMPONENT DATA		
I.D.	THICKNESS	MATERIAL
RCP-1A	4.5" MIN.	A 351 CFB M
RCP-1A-INT.	INTERIOR SURFACE	A 351 CFB M
RCP-1B-INT.	INTERIOR SURFACE	A 351 CFB M



REACTOR COOLANT PUMP RCP-1A

145-021



REACTOR COOLANT PUMP RCP-1B

145-022

NOTE: RCP-1B ONE PIECE CASING

D-1
KAP 01-001639

NOTES:

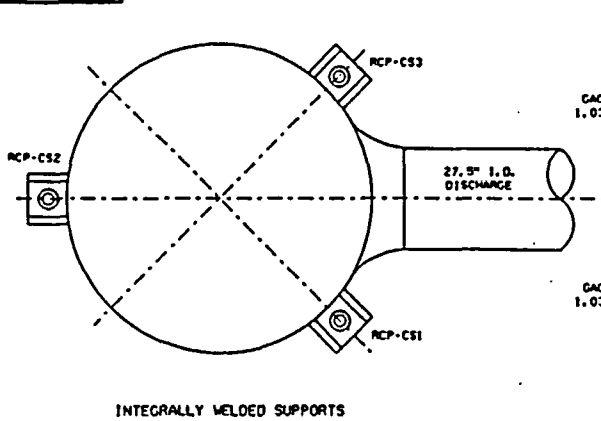
- DRAWING APPLICABLE FOR 3rd (AND 4th) ISI INTERVAL
- ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

LOCATION: CONTAINMENT

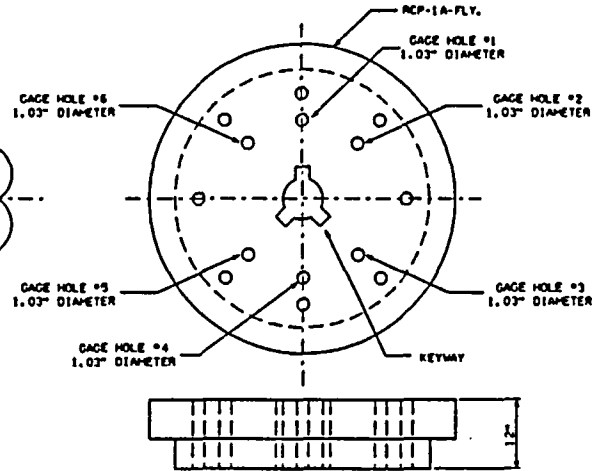
WISCONSIN PUBLIC SERVICE CORPORATION KEWAUNEE NUCLEAR POWER PLANT CARLTON, KEWAUNEE COUNTY, WISCONSIN			
REACTOR COOLANT PUMP RCP-1A AND RCP-1B CASING			
DESIGNED BY WISCONSIN PUBLIC SERVICE CORP. GREEN BAY, WISCONSIN			
DESIGNED	APPROVED		
	PHILLIP E. BUKES	6/16/93	
CHECKED	PROJECT APPROVED		
D. H.	1/13/93		
DATE	SCALE	DWG. NO.	REV.
ESS 12/1/93	NONE	M-1203	E

CADD

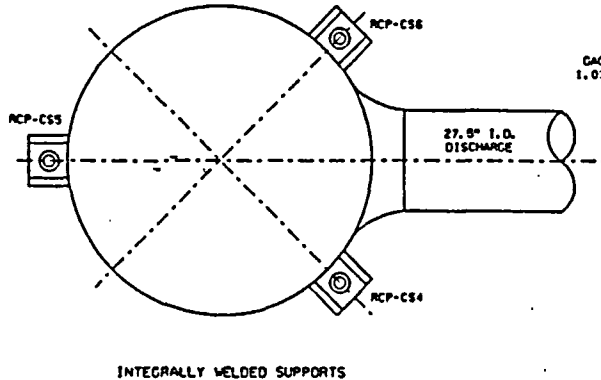
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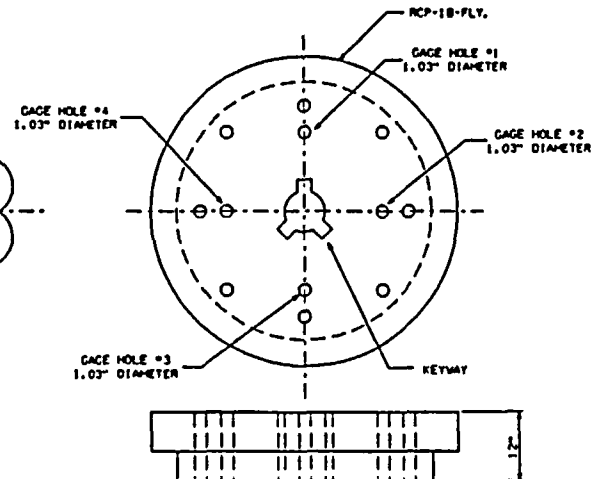
REACTOR COOLANT PUMP RCP-1A
145-021



FLY WHEEL



REACTOR COOLANT PUMP RCP-1B
145-022



FLY WHEEL

LOCATION: CONTAINMENT

COMPONENT DATA		
I.D.	THICKNESS	MATERIAL
RCP-1A-FLY.	12"	ASTM A517 TP. B CL. 1
RCP-1B-FLY.	12"	ASTM A517 TP. B CL. 1

INTEGRALLY WELDED ATTACHMENT DATA		
I.D.	THICKNESS	MATERIAL
RCP-CS1	4.0"	304SS1A-751-65 CF 8
RCP-CS2	4.0"	304SS1A-751-65 CF 8
RCP-CS3	4.0"	304SS1A-751-65 CF 8
RCP-CS4	4.0"	304SS1A-751-65 CF 8
RCP-CS5	4.0"	304SS1A-751-65 CF 8
RCP-CS6	4.0"	304SS1A-751-65 CF 8

- NOTES:
11. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
 21. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

D-1
KAP 01-001639

REVISION

REVISION	DESCRIPTION
A	PDD 0011 COMPL SEE REV. 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 OWN: E. SARTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 7-23-93
B	ESR 92-177 COMPL. SEE REV. A-1 FILM'D: (MPS) 08-03-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMPL. SEE REV. B-1 FILM'D: (MPS) 10-19-93
C-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILM'D: (MPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

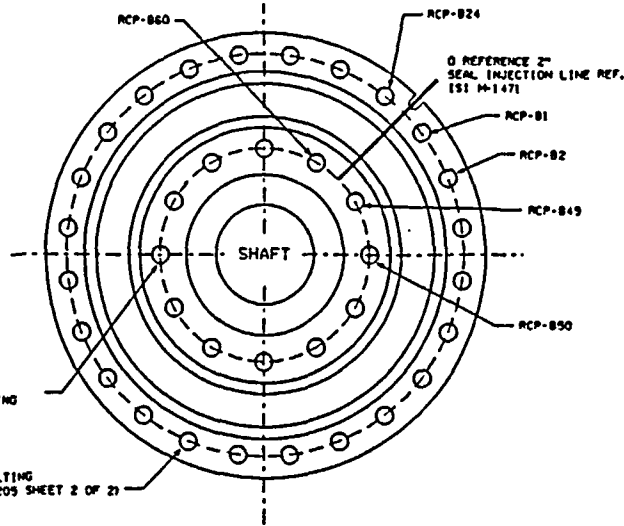
REACTOR COOLANT PUMPS
RCP-1A AND RCP-1B
FLYWHEEL & SUPPORTS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES	6/16/93
D. M.	PROJECT APPROVED	
DATE	1/17/03	
SCALE	1/1/93	
ESS	SCALE	1/1/93
NONE	SCALE	1/1/93
OWG. NO.	M-1204	
REV.	E	

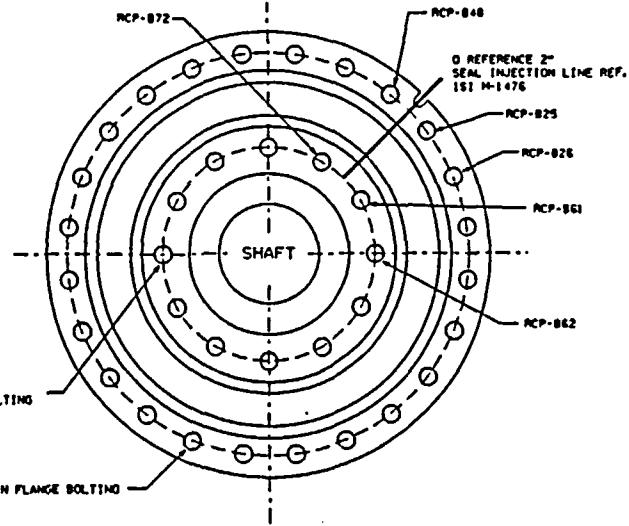
CADD

1 HS 9021-W



REACTOR COOLANT PUMP RCP-1A

145-021



REACTOR COOLANT PUMP RCP-1B

145-022 C-1 KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH 151 INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS I

NO. 1 SEAL HOUSING BOLTING DATA			
BOLTS/ DIA.	LGTH.	NUTS	PATENT
12 / 2.0"	19.0"	N/A	SA-192 CL. 97

MAIN FLANGE BOLTING DATA			
BOLTS/ DIA.	LGTH.	NUTS	PATENT
24 / 4.5"	170.5"	N/A	SA-540 CL. 824 CL. 4

REVISION	
A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: MPSI 11/77/89
A-1	REDRAFTED TO CAO PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP.
	SEE REV. A-1 FILM'D: MPS 8-17-93
B-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP.
	SEE REV. B-1 FILM'D: MPS 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 MPP'D
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILM'D: MPS

LOCATION: CONTAINMENT

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**REACTOR COOLANT PUMPS
RCP-1A AND RCP-1B MAIN FLANGE
AND NO. 1 SEAL HOUSING BOLTING**

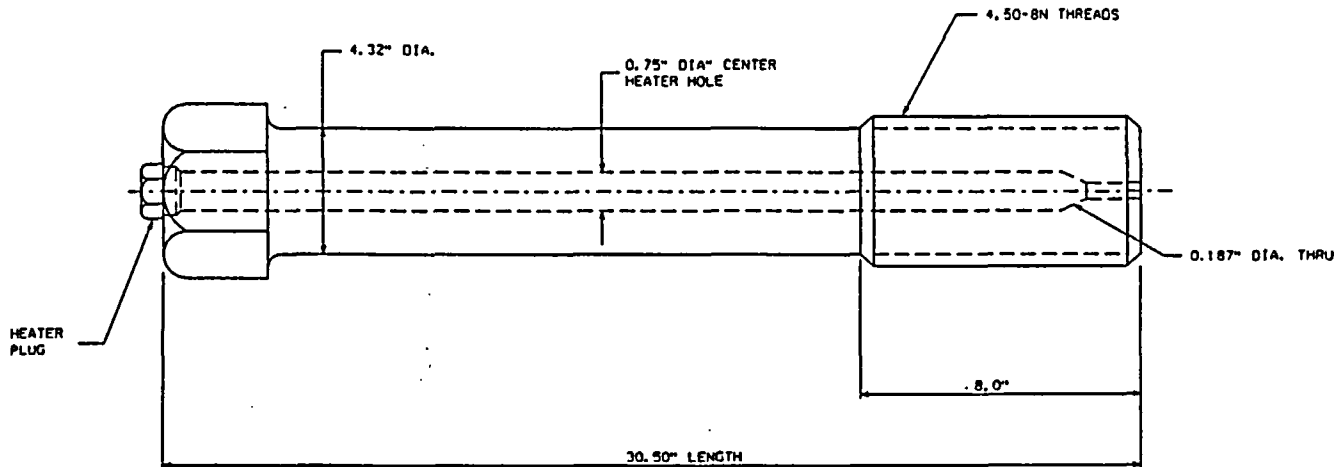
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	DATE
	PHILLIP E. BUKES	1/21/93
CHECKED	PROJECT APPROVED	
D. H.	1/17/83	
DATE	DWG. NO.	REV.
Q.R./D.S. 11/2/83	M-1205	0
SCALE		
NONE		

SHT. 1 OF 2

CADD

2 HS 5021-M



REVISION	
0-1	REDRAFTED TO CAO PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D. B. TROTTER 5/12/93 APP'D. CAT 8-4-93
A	ESR 92-177 COPP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295. ADDED REF NO'S BY: BJD 7-19-93 APP'D. DAK 7-26-93
B	RE PUR 0295 COPP. SEE REV. A-1 FILMED: WPS 8-3-93
B-1	KAP 01-001639 REVISED NOTE 1. BY: AIF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: WPS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS I

MAIN FLANGE BOLTING DATA EACH REACTOR COOLANT PUMP			
BOLTS DIA.	A.C.M.	NUTS	MATERIAL
24 / 4.32" / 30.5"	N/A		SA-510 GR. B22 CL. 1

CALIBRATION BLOCK		
I.D.	DIAMETER/LENGTH	MATERIAL
WPS-41	4.32" / 30.5"	SA-510-68A GR. B22

145-021
145-022

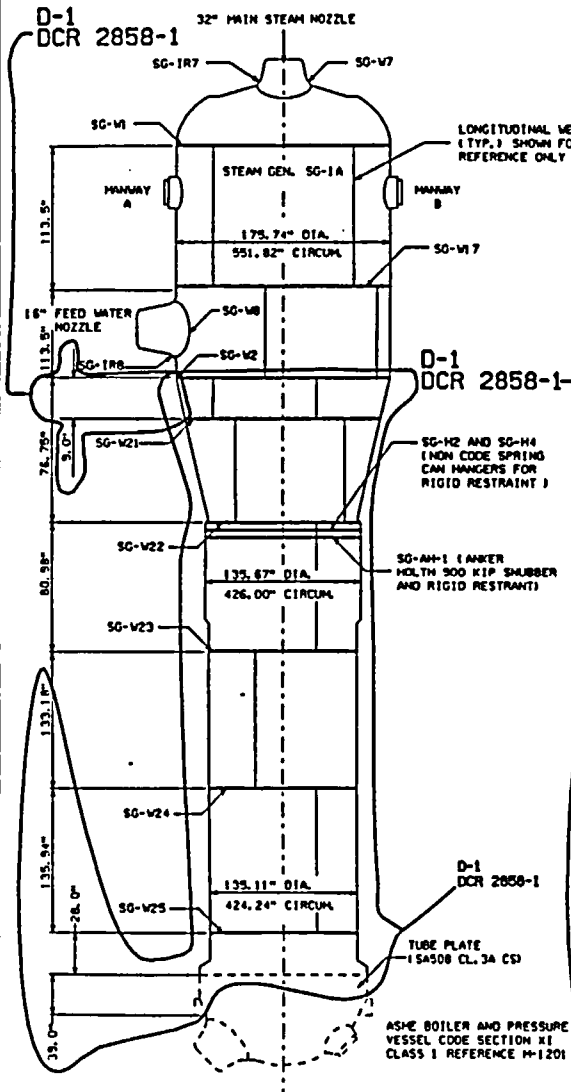
WISCONSIN PUBLIC SERVICE CORPORATION KEWAUNEE NUCLEAR POWER PLANT CARLTON, KEWAUNEE COUNTY, WISCONSIN			
REACTOR COOLANT PUMP RCP-1A AND RCP-1B MAIN FLANGE BOLT			
DESIGNED BY WISCONSIN PUBLIC SERVICE CORP. GREEN BAY, WISCONSIN			
DESIGNED	APPROVED		
	PHILLIP E. BUKES	1/22/93	
CHECKED	PROJECT APPROVED		
D. H.	1/17/83		
DATE	DWG. NO.	REV.	
Q. R. / O. S. 1/12/83	M-1205	2 OF 2	
SCALE		C	
NONE			

CADD

LOCATION: CONTAINMENT

9021-W

D-1
DCR 2858-1



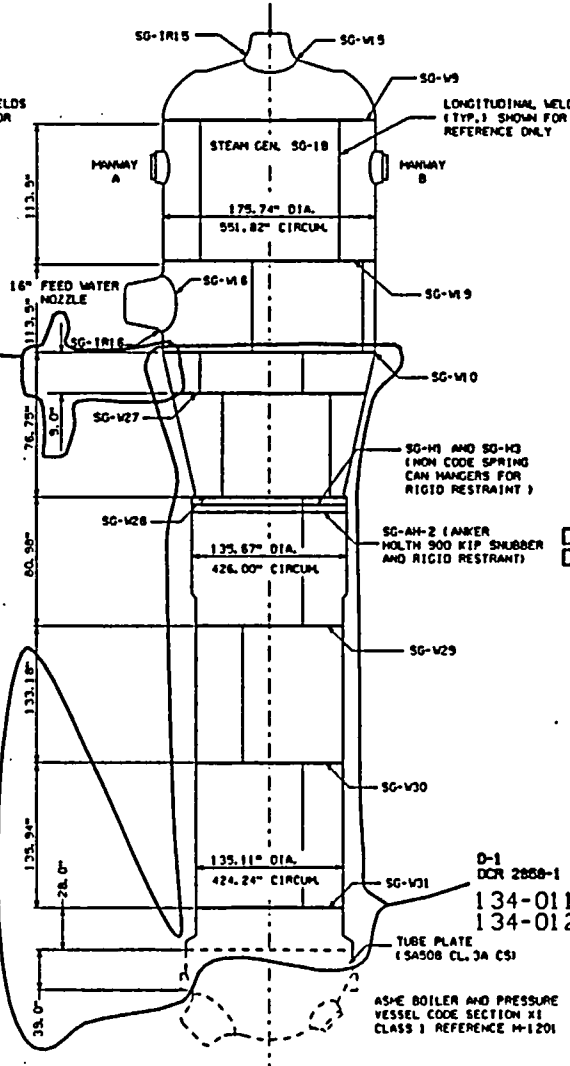
D-1
DCR 2858-1

D-1
DCR 2858-1

TUBE PLATE
(SASOB CL. 3A CS)

ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI
CLASS I REFERENCE H-1201

32" MAIN STEAM NOZZLE



D-1
DCR 2858-1

134-011
134-012

ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI
CLASS I REFERENCE H-1201

LOCATION: CONTAINMENT

MANWAY BOLTING DATA EACH MANWAY

BOLTS / DIA. / LGTH NUTS
20 / 1.25" / 8.0"
N/A

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
SG-M1	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M2	3.92	SA533 GR. A CL. 1CS
SG-M22	3.15	SA533 TYP. B CL. 2CS
SG-M24	2.87	SA533 TYP. B CL. 2CS
SG-M25	2.87	SA533 TYP. B CL. 2CS
SG-M7	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-IR7	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-IR8	3.92	SA533 GR. A CL. 1CS
SG-IR9	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M0	3.15	SA533 TYP. B CL. 2CS
SG-M20	3.15	SA533 TYP. B CL. 2CS
SG-M30	2.87	SA533 TYP. B CL. 2CS
SG-M31	2.87	SA533 TYP. B CL. 2CS
SG-M5	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-IR5	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M6	3.92	SA533 GR. A CL. 1CS
SG-IR6	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M7	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M9	3.62 (MIN.)	SA533 GR. A CL. 1CS
SG-M29	2.87	SA533 TYP. B CL. 2CS
SG-M21	3.66	SA533 TYP. B CL. 2CS
SG-M27	3.66	SA533 TYP. B CL. 2CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-36	3.5" x 1.875" x 6.0" W	SA533 GR. B CL. 1CS
WPS-42	1.8" FU NOZZLE FORGING	SA508 CL. 2 CS
WPS-33	3.15" x 3.82" x 7.5" W	SA533 TYP. B CL. 2 CS

D REFERENCE: SG-M24, SG-M25, SG-M30 AND SG-M31
CENTERLINE OF CLASS I SIDE MOTLEG MANWAY.
(REFERENCE M-201)

D REFERENCE: SG-M1, SG-M2, SG-M22, SG-M7, SG-IR7, SG-M6, SG-IR6,
SG-M5, SG-M10, SG-M20, SG-M15, SG-IR5, SG-M8, SG-M9, SG-M23, SG-M21, SG-M27,
AND SG-M29,
CENTERLINE OF 18" FEEDWATER NOZZLE.

*FOR PRESERVATION EXAMS D REFERENCE CENTERLINE OF
CLASS I SIDE MOTLEG MANWAY (REFERENCE M-201)

D-1
RE PUR

DRAWING APPLICABLE FOR 3rd & 4th ISI
INTERVAL ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS 2

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**STEAM GENERATORS
EXISTING AND REPLACEMENT
SG-1A AND SG-1B**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

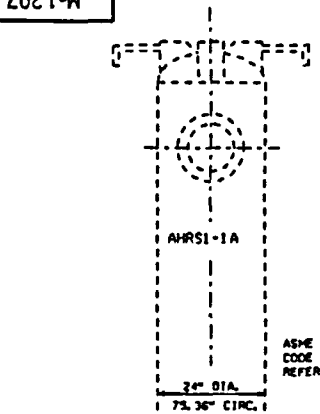
DESIGNED	APPROVED
	PHILLIP E. BUKES 6/1/93
CHECKED	PROJECT APPROVED
D. M.	1/17/83
ESS	6/1/93
SCALE	DWG. NO. M-1206
NONE	REV. E

CADD

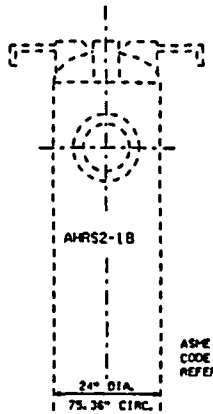
REVISION

A	PDD 0011 COMPL SEE REV. D-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP.
	SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	PDR 0149 ADDED CODE SPRING AND CAN HANGER NOTES . 900 KIP WAS 900 K. BY: JSPICE 2-21-97 APP'D: PCM 02-21-97
C	PDR 0149 COMPL. SEE REV. B-1 FILM'D: (WPS) 02-25-97
C-1	RE PUR 0295 ADDED REF. NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILM'D: (WPS) 8-3-99
D-1	DCR 2858-1 ADDED REVISIONS FOR FUTURE AS BUILTS. BY: JMS 02-01-01 APP'D:
	RE PUR-ADDED 4th INTERVAL TO NOTE 1, REFERENCE KAP 01-001639 APP'D:
E	DCR 2858-1 COMPL. SEE REV. D-1 FILM'D: (WPS)

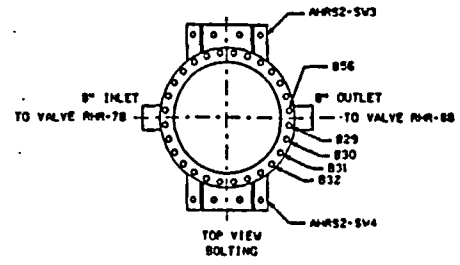
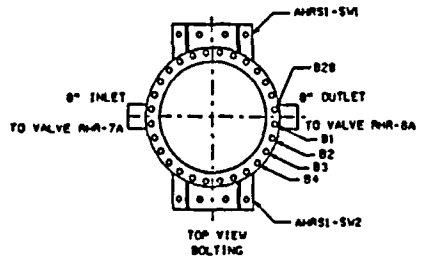
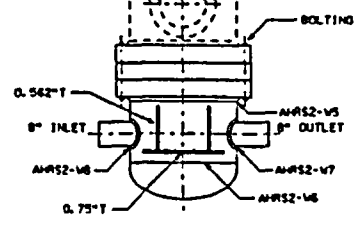
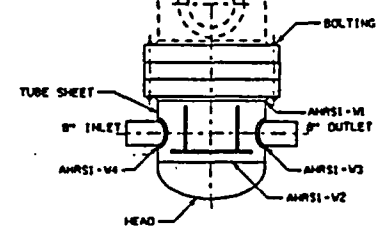
M-1207



ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS 3
REFERENCE M-1224



ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS 3
REFERENCE M-1224



LOCATION: AUXILIARY BUILDING 605; RESIDUAL HEAT EXCHANGER AHRS1-1A GATE 256
AND RESIDUAL HEAT EXCHANGER AHRS2-1B GATE 173

BOLTING DATA EACH HEAT EXCHANGER

STUDS / DIA / LGTH UNITS
28 / 1.125" / 8.0" 156

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AHRS1-V1	0.5"	A240 TP304SS
AHRS1-V2	0.5"	A240 TP304SS
AHRS1-V3	0.5"	A240 TP304SS
AHRS1-V4	0.5"	A240 TP304SS
AHRS2-V5	0.5"	A240 TP304SS
AHRS2-V6	0.5"	A240 TP304SS
AHRS2-V7	0.5"	A240 TP304SS
AHRS2-V8	0.5"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AHRS1-SV1	.562" & .75"	A289 CL.C
AHRS1-SV2	.562" & .75"	A289 CL.C
AHRS2-SV3	.562" & .75"	A289 CL.C
AHRS2-SV4	.562" & .75"	A289 CL.C

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-V9	0.5" 1.315, 0.75 1.315	S4240 TP304SS

D-1
KAP 01-001639
DRAWING APPLICABLE FOR 3RD AND 4TH ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 2

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**RESIDUAL HEAT EXCHANGERS
AHRS1-1A AND AHRS2-1B**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	DATE
	PHILLIP E. BUKES	8/1/93
CHECKED	PROJECT APPROVED	
DWG. NO.	REV.	
M-1207	E	

REVISION

B	PDD 0011 COMPL SEE REV. 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
B-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
C	ESR 92-177 COMP. SEE REV. B-1 FILM'D: WPS 8-17-93
C-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-93 APP'D: DAK 7-26-93
D	RE PUR 0295 COMP. SEE REV. C-1 FILM'D: WPS 8-3-93
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (WPS)

CADD

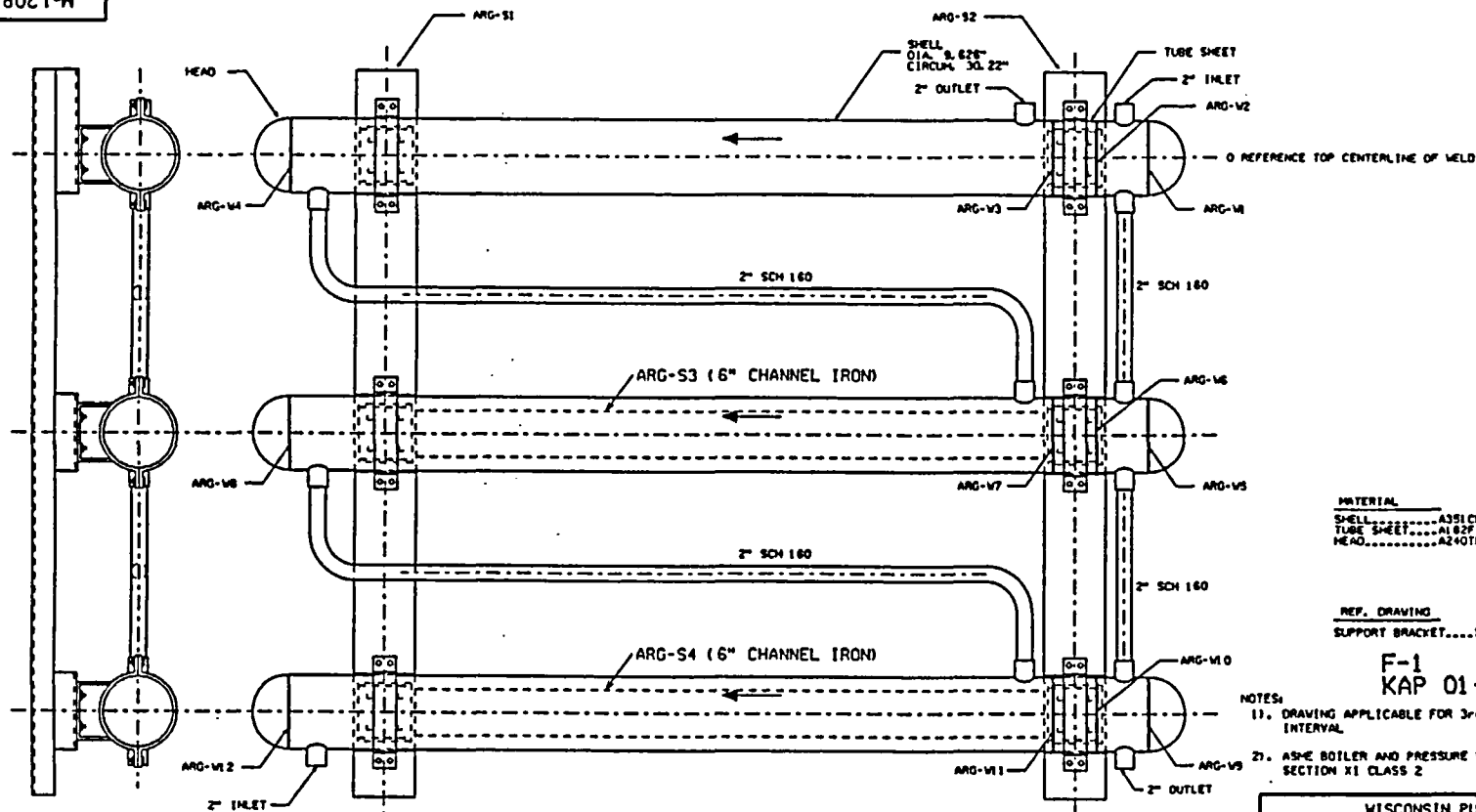


ESS
WALK
NONE

DWG. NO.
M-1207

REV.
E

8021-W



MATERIAL
 SHELL.....A351CF8
 TUBE SHEET.....A182F304
 HEAD.....A240TP304

REF. DRAWING
 SUPPORT BRACKET.....XK-100-492

F-1
 KAP 01-001639

- NOTES:
 1. DRAWING APPLICABLE FOR 3rd AND 4th 151 INTERVAL
 2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

REVISION	
E-1	POR 0175 ADDED ARG-S3 & S4 16" CHANNEL IRON BY: JMS 06-06-00 APP'D: DAK 06-09-00
F	POR 0175 COMP. SEE REV. E-1 FILMED: (MPS) 06-13-00
F-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
G	KAP 01-001639 COMPLETE SEE REV. F-1. FILMED: (MPS)
C	ESR 92-177 COMP. SEE REV. B-1 FILMED: (MPS) 10-19-93
C-1	REVISED NOTE 2 PER ESR 92-177 BY: DDG 11-17-93 CHK'D: RJS 11-17-93 APP'D: CAT 11-19-93
D	ESR 91-277 COMP. SEE REV. C-1 FILMED: (MPS) 11-30-93
D-1	RE PUR 0295 ADDED REF NUMBER BY: BJD 7-19-99 APP'D: DAK 7-26-99
E	RE PUR 0295 COMP. SEE REV. D-1 FILMED: (MPS) 8-3-99

CALIBRATION BLOCK		
I. D.	DIAMETER / SCHEDULE	MATERIAL
WPS-27	3.4" / 8.75"	A351 CF8

135-031

COMPONENT WELD DATA	
I. D.	THICKNESS
ARG-V1	.900"
ARG-V5	.900"
ARG-V9	.900"
ARG-V2	.938"
ARG-V6	.938"
ARG-V10	.938"
ARG-V3	.938"
ARG-V7	.938"
ARG-V11	.938"
ARG-V4	.900"
ARG-V8	.900"
ARG-V12	.900"

LOCATION: CONTAINMENT 593' ELEVATION

WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT
 CARLTON, KEWAUNEE COUNTY, WISCONSIN

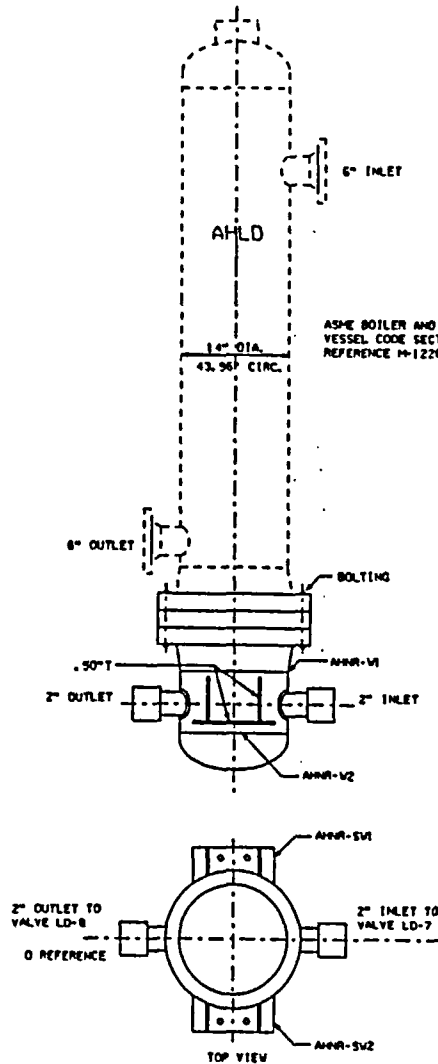
REGENERATIVE HEAT EXCHANGER ARG

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DESIGNED	APPROVED
CREATED	PROJECT APPROVED
D. M.	1/17/83
DATE	DWG. NO.
O. R. / D. S. 1/13/83	M-1208
SCALE	REV.
NONE	G

CADD

6021-W



ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3 REFERENCE H-1228

BOLTING DATA

BOLTS / DIA. / LGTH	19315
20 / 0.75 / 8.5	149

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
Annr-V1	0.375"	A240 TP304SS
Annr-V2	0.375"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
Annr-SW	0.50"	
Annr-SZ	0.50"	

CALIBRATION BLOCK

I.D.	DIA/METER/SCHEDULE	MATERIAL
WPS-23	14" SCH 40S 0.375"	A358 CL2 TP304SS

REVISION

A	PDO 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILMED: WPS 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D. B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: WPS 8-17-93
B-1	RE PUR 0295 ADDED REF NUMBER BY BJD 7-13-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILMED: WPS 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILMED: WPS

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 2

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**LETDOWN HEAT EXCHANGER
AHLD**
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

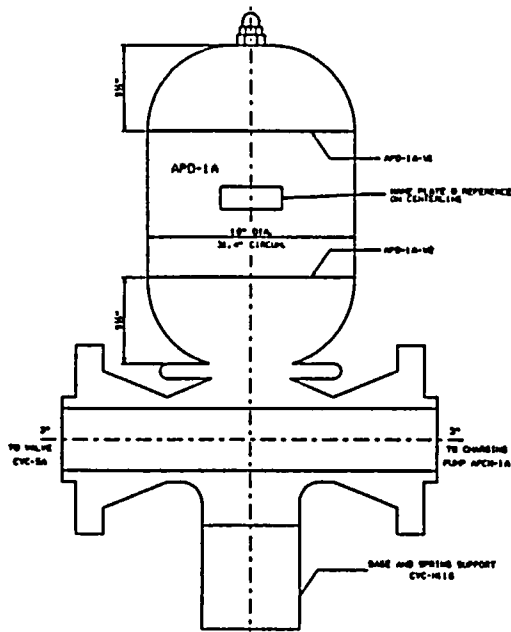
DESIGNED	APPROVED	DATE
	PHILLIP E. BUKES	6/1/93
CHECKED	PROJECT APPROVED	
D. PL		1/17/83
DATE	DWG. NO.	REV.
ESS NONE	M-1209	0

CADD

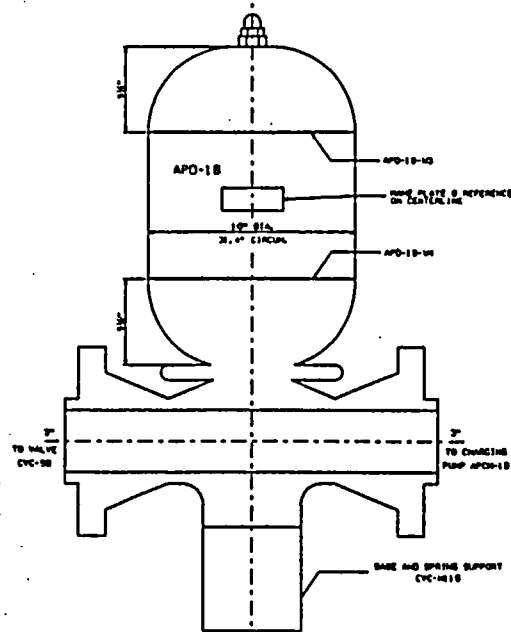
LOCATION: AUXILIARY BUILDING 606 LETDOWN HEAT EXCHANGER ROOM GATE 33

135-041

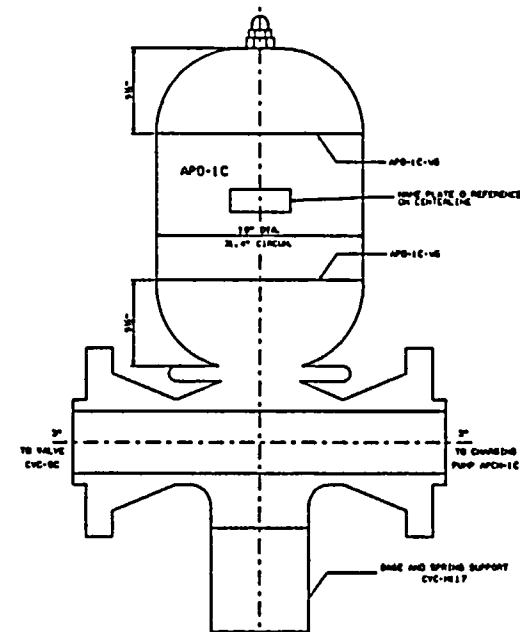
0121-W



101-021



101-022



101-023

COMPONENT WELD DATA		
I.D.	THICKNESS	MATERIAL
APD-1A-W1	1/2"	SA240 TP304SS
APD-1A-W2	1/2"	SA240 TP304SS
APD-1B-W1	1/2"	SA240 TP304SS
APD-1B-W2	1/2"	SA240 TP304SS
APD-1C-W1	1/2"	SA240 TP304SS
APD-1C-W2	1/2"	SA240 TP304SS

CALIBRATION BLOCK		
I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-10	1.0" SCH 140 1.0" I	A312 TP304SS

NOTES:

- DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
- APD-1A-W1, APD-1A-W2, APD-1B-W3, APD-1B-W4, APD-1C-W5 AND APD-1C-W6 LOCATION PER DATA RECEIVED FROM MANUFACTURER.
- NO BOLTING OR INTEGRALLY WELDED ATTACHMENTS ON CHARGING PUMP PULSATION DAMPERS APD-1A, APD-1B AND APD-1C.

C-1
KAP 01-001639WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSINCHARGING PUMP PULSATION
DAMPENERS
APD-1A, APD-1B AND APD-1CDESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
	P. E. BUKES	8/13/93
CHECKED	PROJECT APPROVED	
D. H.	1/17/83	
CRANN	DWG. NO.	REV.
O. R. / D. S.	M-1210	0
SCALE		
NONE		

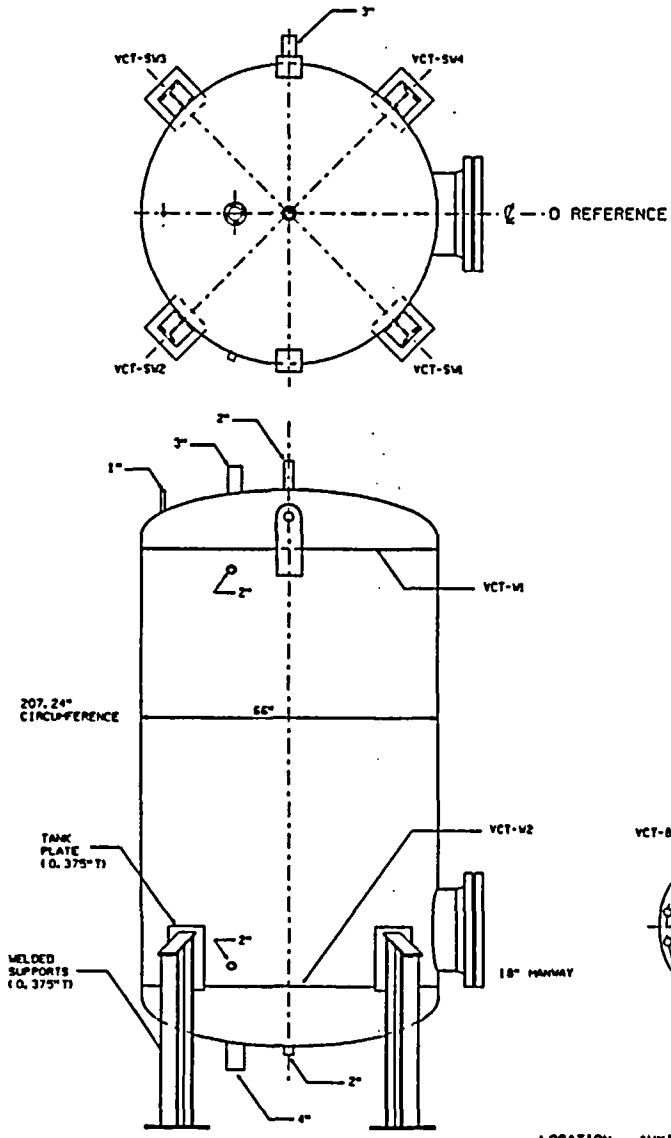
CADD

LOCATION: AUXILIARY BUILDING 586' ELEVATION CHARGING PUMP ROOM GATE 208

REVISION

A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	REVISED NAME PLATE LOCATION: ADDED NOTES 2 & 3 AND DIM. PER RE PUR 0283 BY: BCY 3/9/95 CHK'D: DOG 3/9/95 APP'D: RMH 3/9/95
C	RE PUR 0283 COMP. SEE REV. B-1 FILM'D: WPS 3/21/95 C-1 KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D: D) KAP 01-001639 COMPLETE SEE REV. C-1. FILM'D: (MPS)

1121-W



BOLTING DATA

BOLTS / DIA. / LGTH (INCH)
16 21.125" / 4.75" 16

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
VCT-M	.312"	A240 TP304SS
VCT-W2	.312"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
VCT-SW3	.375"	A240 TP304SS
VCT-SW2	.375"	A240 TP304SS
VCT-SW1	.375"	A240 TP304SS
VCT-SW4	.375"	A240 TP304SS

• TANK PLATE

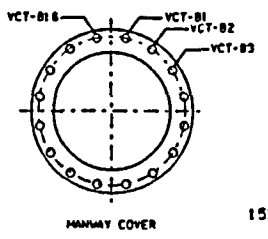
CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-24	0.312" / 1.9, 0" / 2.2, 2" / 2	S4240 TP304SS

- NOTES:**
- 1). DRAWING APPLICABLE FOR 3-d (AND 4th) ISI INTERVAL
 - 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
 - 3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY

D-1
KAP 01-001639

REVISION	
A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SARTON 4/1/93 CHK'D: B. TROTIER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMP. SEE REV. B-1 FILM'D: WPS 10-19-93
C-1	RE PUR 0295 ADDED REF NUMBER BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMP. SEE REV. C-1 FILM'D: WPS 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (WPS)



153-061

LOCATION: AUXILIARY BUILDING 606' ELEVATION GATE 211

CADD

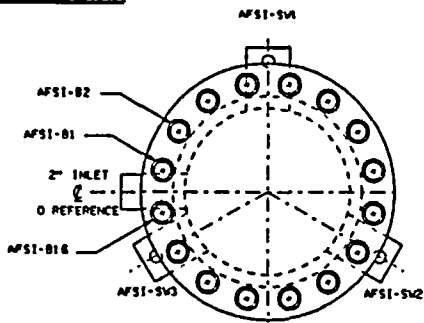
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

VOLUME CONTROL TANK - VCT

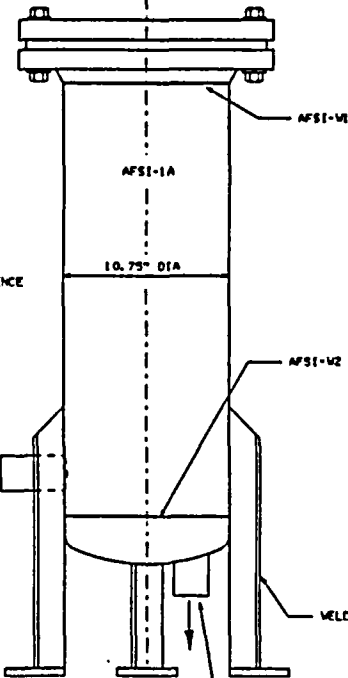
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	PROJECT APPROVED	6/13/93
D. H.	1/21/7/83	
DATE	DWG. NO.	REV.
Q.R./O.S. 1/21/83	M-1211	E
NONE		

M-1212



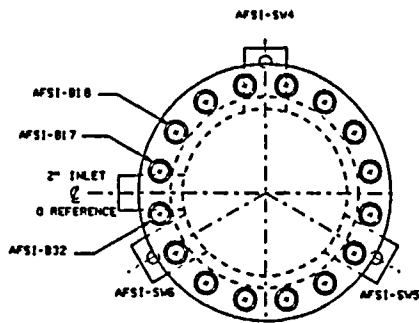
TOP VIEW
BOLTING (TYP)



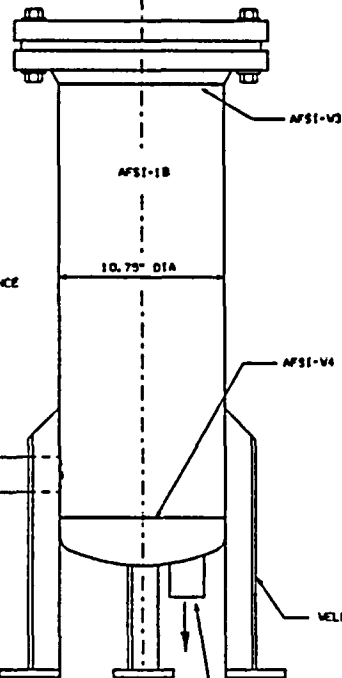
2\"/>

WELDED SUPPORTS (TYP.)

2\"/>



TOP VIEW
BOLTING (TYP)



2\"/>

WELDED SUPPORTS (TYP.)

2\"/>

BOLTING DATA

BOLTS / DIA. / LGTH. / NUTS
16 / 1/2\"/>

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AFSI-1A	1.00"	SA240 TP304SS
AFSI-1B	1.00"	SA240 TP304SS
AFSI-1C	1.00"	SA240 TP304SS
AFSI-1D	1.00"	SA240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AFSI-1E	0.40"	
AFSI-1F	0.40"	
AFSI-1G	0.40"	
AFSI-1H	0.40"	
AFSI-1I	0.40"	
AFSI-1J	0.40"	

CLAMPATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-10	11\"/>	A312 TP304SS

169-011
169-012

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 2

REVISION

REVISION	DESCRIPTION
A	POD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	RE PUR 0295 ADDED REF NO'S. BY: BJD, 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILM'D: WPS 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILM'D: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SEAL WATER INJECTION FILTERS
AFSI-1A AND AFSI-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES 6/1/93
D. PL.	PROJECT APPROVED
DATE	11/17/83
DESIGNER	ESS 6/1/93
SCALE	1:1
DATE	6/1/93
REV.	0

CADD

ESS

SCALE

DATE

1:1

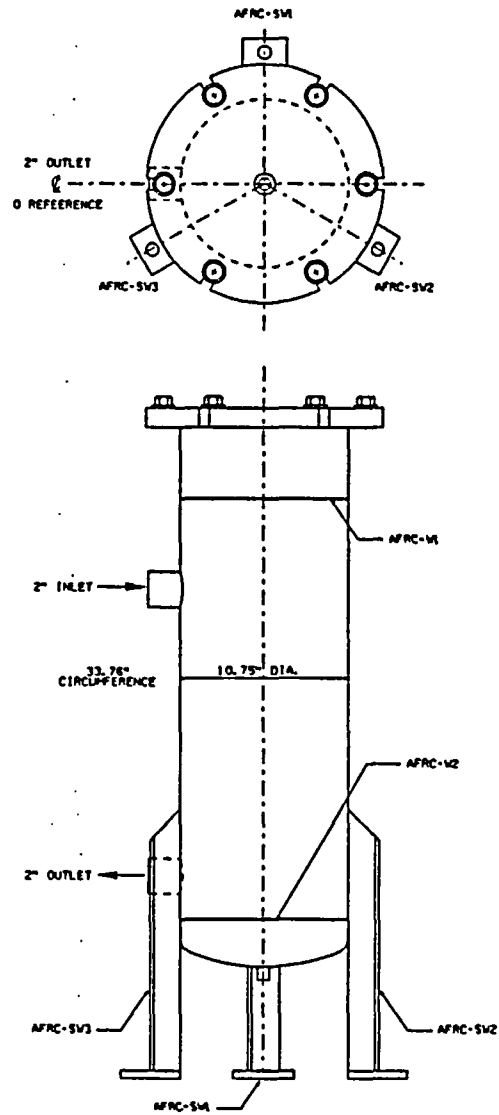
6/1/93

REV.

0

LOCATION: AUXILIARY BUILDING ELEVATION 606' FILTER ROOM GATE 257

E121-W



LOCATION: AUXILIARY BUILDING 606' ELEVATION FILTER ROOM GATE 257

BOLTING DATA		
BOLTS / DIA. / LGTH.	INITS	
6 / 625" / 4.5"	N/A	

COMPONENT WELD DATA		
I.D.	THICKNESS	MATERIAL
AFRC-M	1.189"	TP304SS
AFRC-M2	1.189"	TP304SS

INTEGRALLY WELDED ATTACHMENT DATA		
I.D.	THICKNESS	MATERIAL
AFRC-SM	1.29"	
AFRC-SV2	1.29"	
AFRC-SV3	1.29"	

D-1
KAP 01-001639

NOTES:

1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
3. COMPONENT SUBJECT TO PRESSURE TESTING ONLY

169-061

REVISION

REVISION	
A	POD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMP. SEE REV. B-1 FILM'D: WPS 10-19-93
C-1	RE PUR 0295 ADDED REF NUMBER BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMP. SEE REV. C-1 FILM'D: WPS 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

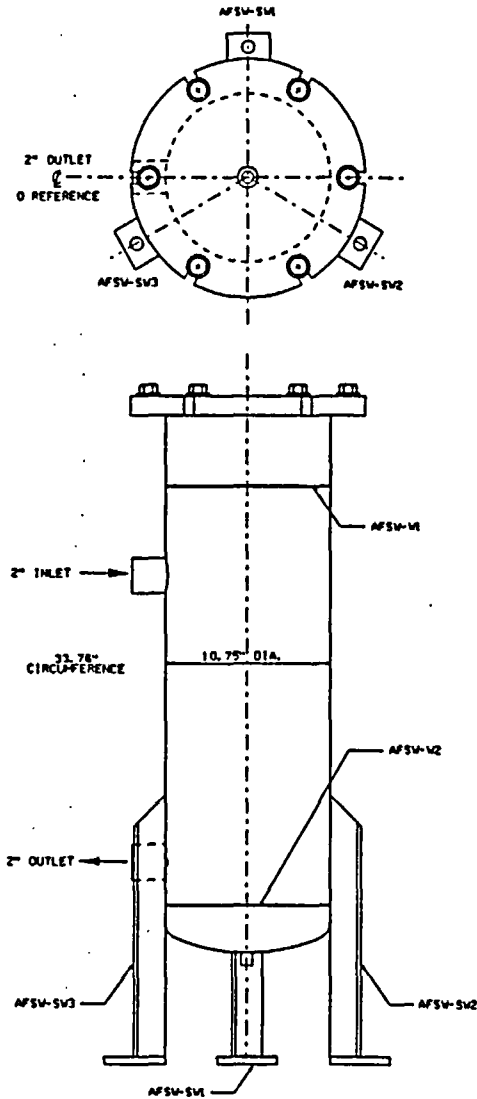
REACTOR COOLANT FILTER AFRC

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	DATE
	P. E. BUKES	8/13/93
CHECKED	PROJECT APPROVED	
D. M.		1/17/83
DRAWN	SCALE	DATE
O. R. / O. S.	1/13/83	
DWG. NO.	REV.	
M-1213	E	

CADD

M-1214



BOLTING DATA			
BOLTS	DIA.	LGTH	MUTS
6	1/2"	4.5"	N/A

COMPONENT WELD DATA			
I. D.	THICKNESS	MATERIAL	
AFSW-V1	.185"	TP304SS	
AFSW-V2	.185"	TP304SS	

INTEGRALLY WELDED ATTACHMENT DATA			
I. D.	THICKNESS	MATERIAL	
AFSW-SW1	1.25"		
AFSW-SW2	1.25"		
AFSW-SW3	1.25"		

NOTES:

- 1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
- 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
- 3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY

D-1
KAP 01-001639

169-051

LOCATION: AUXILIARY BUILDING 606 ELEVATION FILTER ROOM GATE 237

CADD

REVISION

A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMP. SEE REV. B-1 FILM'D: WPS 10-19-93
C-1	RE PUR 0295 ADDED REF NUMBER BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMP. SEE REV. C-1 FILM'D: WPS 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (WPS)

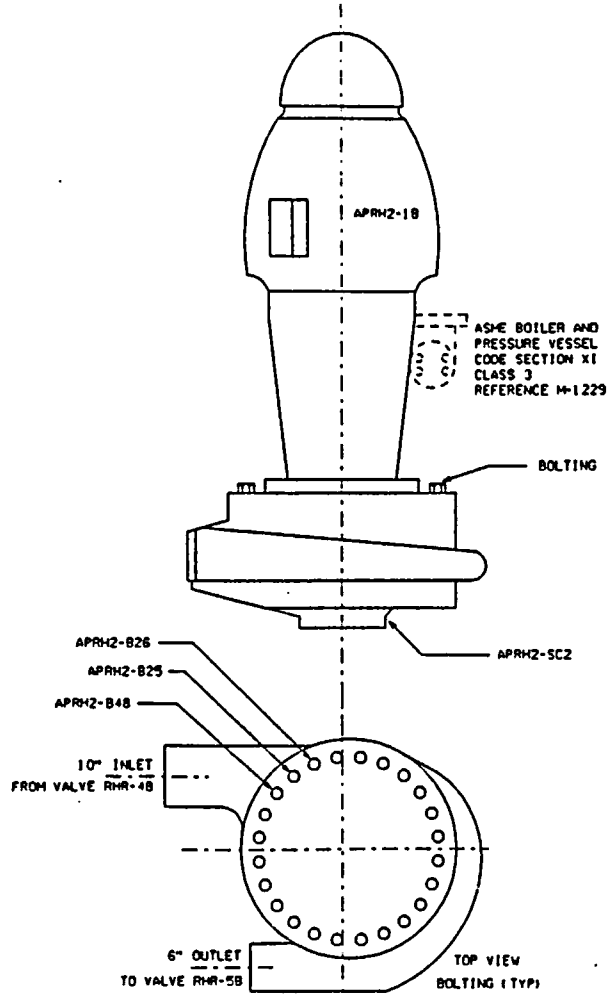
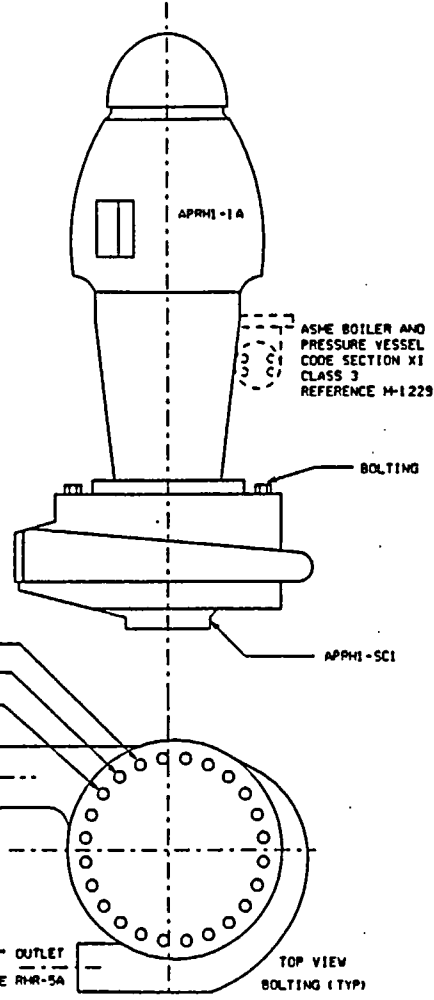
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SEAL WATER FILTER AFSW

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
CHECKED		PROJECT APPROVED	
D. H.	1/17/93		
DATE	1/17/93	DWG. NO.	M-1214
REV.			E

S121-W



C-1
KAP 01-001639

BOLTING DATA EACH PUMP
BOLTS 7 DIA. 2 LGTH 14015
24 21.125" x 4.5" (2)

NOTE: NO CLASS 2 INTEGRALLY WELDED ATTACHMENTS OR PUMP CASING WELDS.

145-141
145-141

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

REVISION	
A	POD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (MPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWA E. SEXTON 4/1/93 CHK'D B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: (MPS) 8-17-93
B-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILM'D: (MPS) 8-3-99
C-1	KAP 01-001639 ADDED 4TH INTERVAL REVISED QUANTITY OF BOLTS. BY: RTH 02-12-02 APP'D: PER 04-05-02 D) KAP 01-001639 COMPLETE. SEE REVISION C-1. FILM'D: (MPS) 04-16-02

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**RESIDUAL HEAT REMOVAL PUMPS
APRH1-1A AND APRH2-1B**

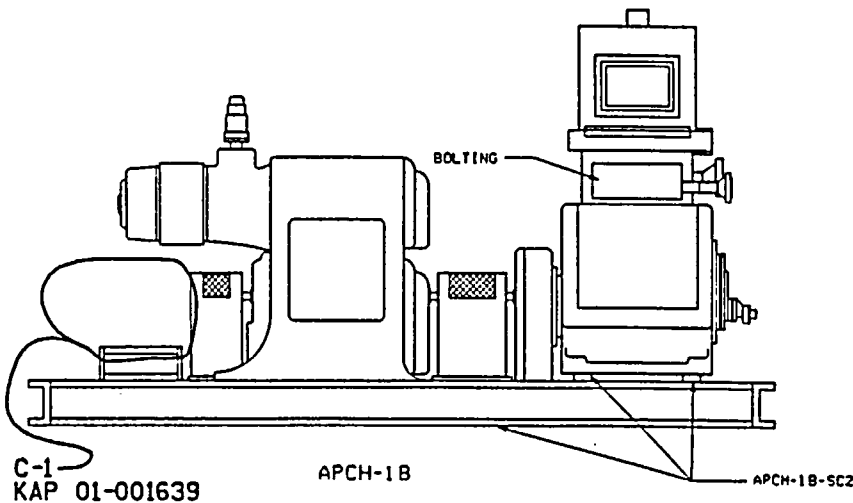
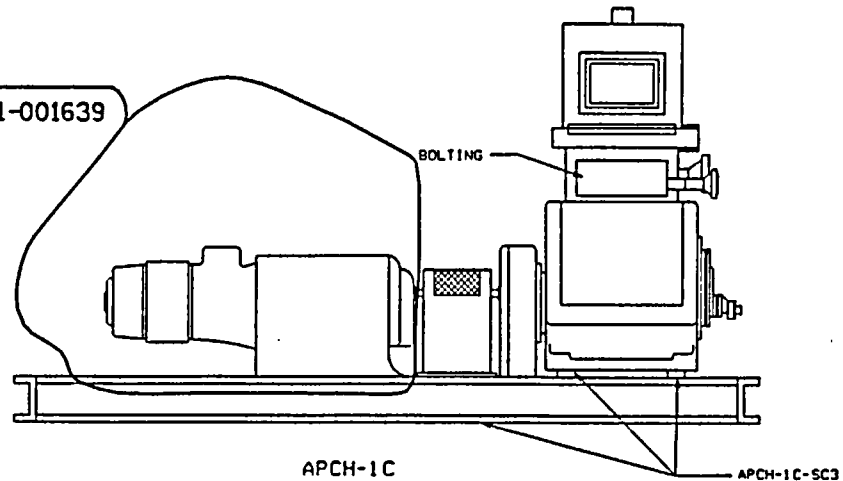
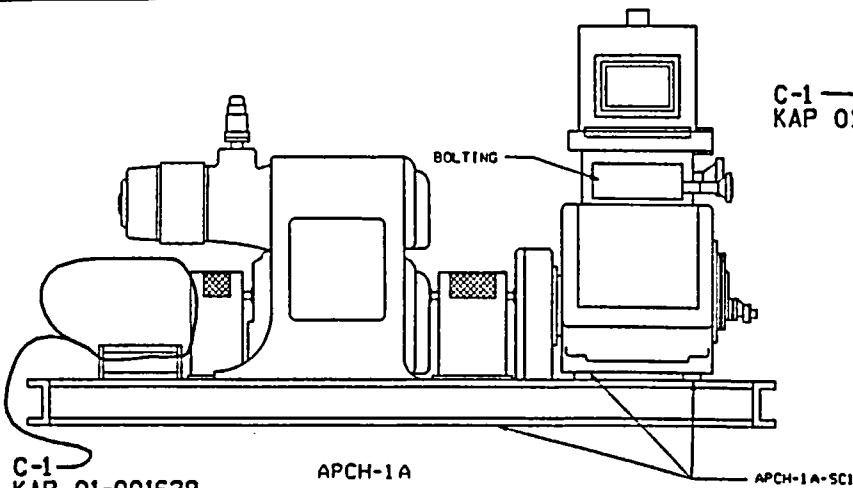
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES 02/1/93	
U. P.L.	PROJECT APPROVED	
DATE	1/17/83	
ESS	DWG. NO.	REV.
NONE	M-1215	0

LOCATION: AUXILIARY BUILDING ELEVATION 566'-6" RHR PUMP PITS 1A AND 1B

CADD

9121-W



BOLTING DATA EACH PUMP

STDS / DIA.	LGTH	QTY
12 / 1.25 / 2"	20	

NOTE: NO PUMP CASING WELDS OR INTEGRALLY WELDED ATTACHMENTS ON CHARGING PUMPS APCH-1A, APCH-1B AND APCH-1C.

DRAWING APPLICABLE FOR 3RD AND 4TH 151 INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

REVISION	
A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 DWR: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	RE PUR 0295 ADDED REF NO S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILM'D: WPS 8-3-99
C-1	KAP 01-001639 ADDED 4TH INTERVAL REMOVED MOTOR. BY: WTH 02-12-02 APP'D: PEB 04-03-02
D	KAP 01-001639 COMPLETE. SEE REVISION C-1. FILM'D: (WPS) 04-16-02

C-1
KAP 01-001639

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

CHARGING PUMPS
APCH-1A, APCH-1B AND APCH-1C

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

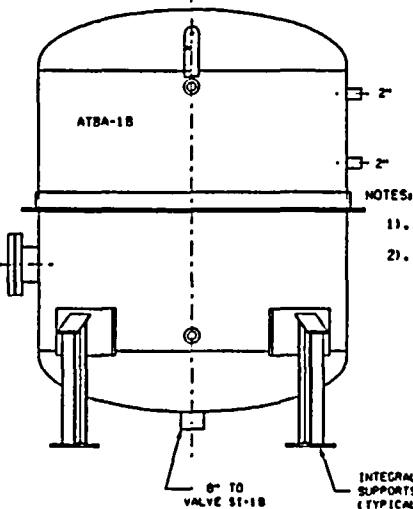
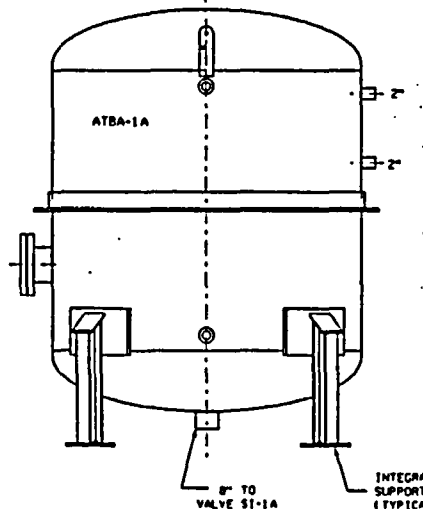
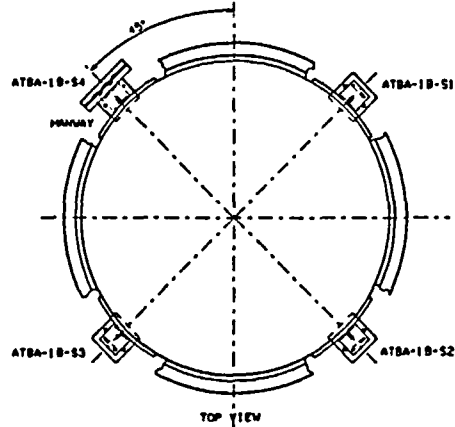
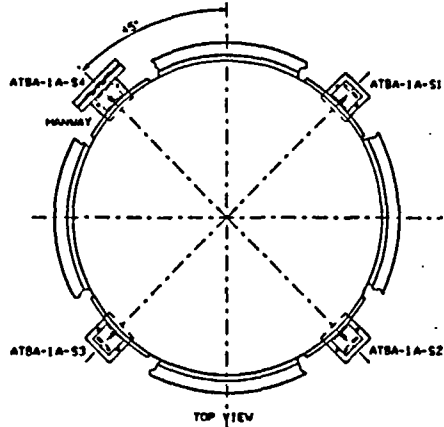
DESIGNED	APPROVED	
ENGINEER	PROJECT APPROVED	6/1/93
D. M.	11/17/93	
ESS	DATE	DWG. NO.
NONE	1/1/93	M-1216
		REV.
		0

LOCATION: AUXILIARY BUILDING 586' CHARGING PUMP ROOM GATE 208

145-101
145-102
145-103

CADD

M-1217



- NOTES:
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
 2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON-CODE CLASS

E-1
KAP 01-001639

REVISION	
E-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
F	KAP 01-001639 COMPLETE SEE REV. E-1. FILMED: (MPS)
A-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: (MPS) 10-13-93
B-1	RE PUR 0256 DWG. REVISED TO REFLECT CORRECT CLASSIFICATION. BY: LAM 12-08-93 CHK'D: RJS 12-08-93 APP'D: CAT 12-08-93
C	RE PUR 0256 COMPL. SEE REV. B-1 FILMED: (MPS) 12-08-93
C-1	DCR 2786-2/3 DELETED NOTE AND CHANGED THE ELEVATION BY: SJD 8-2-96 APP'D: CAT 12-18-96
D	DCR 2786-2/3 COMPL. SEE REV. C-1 FILMED: (MPS) 01-21-97
D-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
E	RE PUR 0295 COMPL. SEE REV. D-1 FILMED: (MPS) 8-3-99

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

**BORIC ACID TANKS
ATBA-1A AND ATBA-1B**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

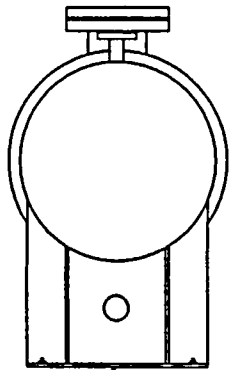
DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES 6/1/93
PROJECT APPROVED	
D. M.	1/17/93
ESS	DWG. NO.
SCALE	M-1217
NONE	REV. F

153-081
153-082

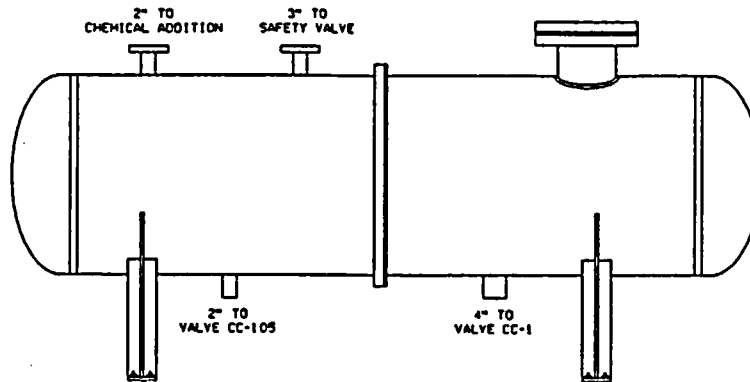
LOCATION: AUXILIARY BUILDING ELEVATION 633' DOOR 121

CADD

8121-W



INTEGRALLY WELDED
COMPONENT SUPPORT



153-401

ATCS-S1
INTEGRALLY WELDED
COMPONENT SUPPORT

ATCS-S2
INTEGRALLY WELDED
COMPONENT SUPPORT

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

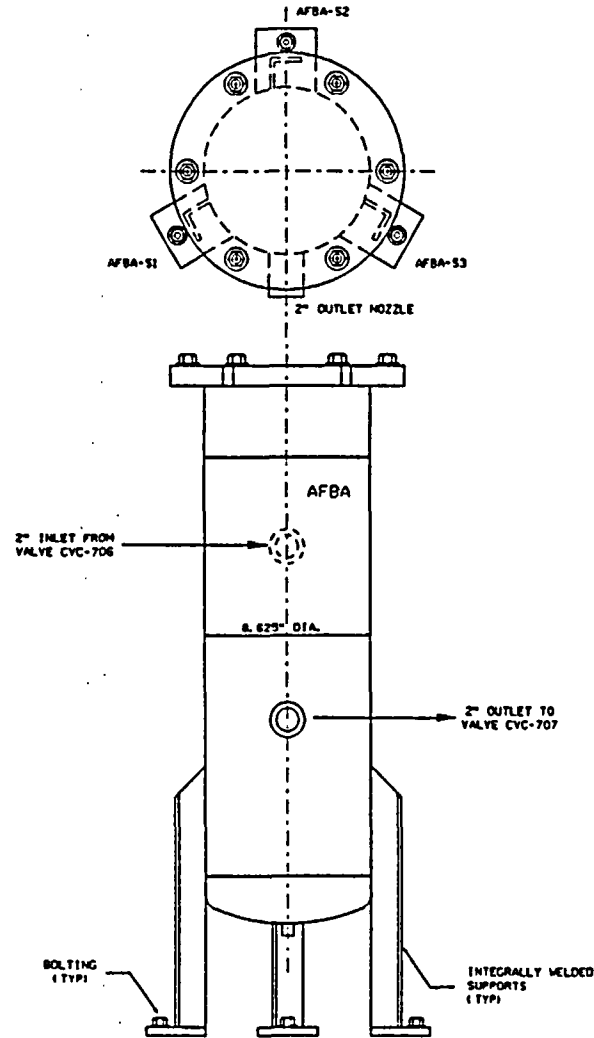
LOCATION: AUXILIARY BUILDING ELEVATION 657'

CADD

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 OWN E. SAXTON 4/1/93 CHK'D: S. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF NUMBER BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: WPS 8-3-99
B-1	KAP 01-001639 REVISED-NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION KEWAUNEE NUCLEAR POWER PLANT CARLTON, KEWAUNEE COUNTY, WISCONSIN			
COMPONENT COOLING SURGE TANK ATCS			
DESIGNED BY WISCONSIN PUBLIC SERVICE CORP. GREEN BAY, WISCONSIN			
DESIGNED	APPROVED		
	PHILLIP E. BUKES		11/20/93
CHECKED	PROJECT APPROVED		
D. H.	1/17/93		
DWG. NO.	REV.		
Q. R. / O. S. 11/12/93	M-1218	C	
SCALE			
NONE			

6121-W



NOTES:

- 1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
- 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON-CODE CLASS

D-1
KAP 01-001639

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SARTON 4/1/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: WPS 10-19-93
B-1	DCR 2786-2/3 DELETED NOTE BY: SJD 8-2-96 APP'D: CAT 12-18-9
C	DCR 2786-2/3 COMPL. SEE REV. B-1 FILMED: (WPS) 01-21-97
C-1	RE PUR 0295 ADDED REF NUMBER BY: SJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILMED: (WPS) 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

BORIC ACID FILTER
AFBA

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

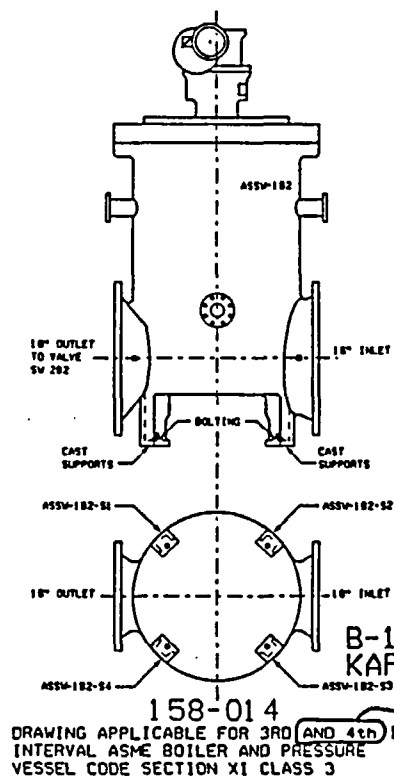
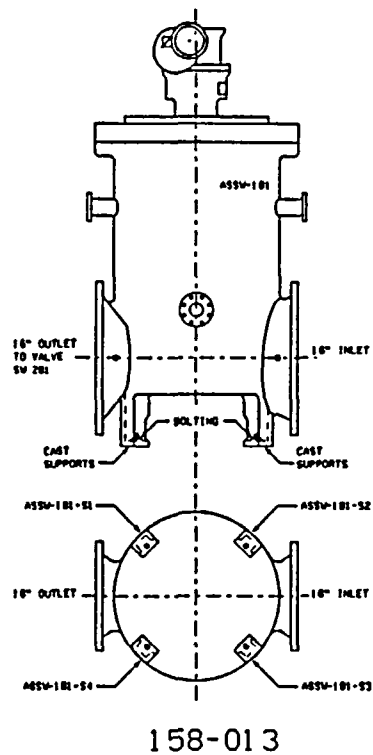
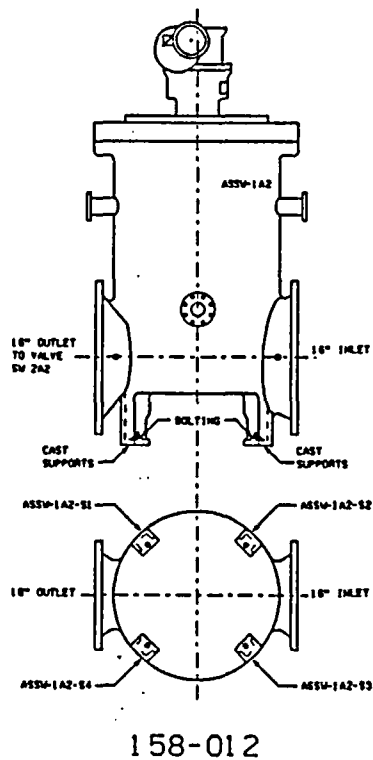
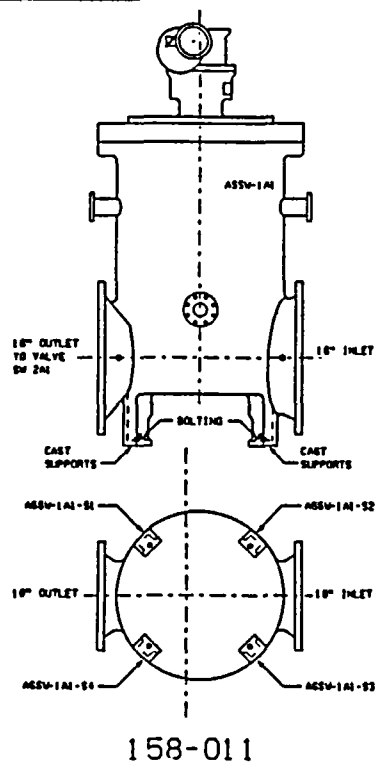
DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES 6/1/93
D. H.	PROJECT APPROVED
DATE	1/17/83
ESS SCALE 1/1/93	DWG. NO. M-1219
NONE	REV. E

CADD

169-031

LOCATION: AUXILIARY BUILDING ELEVATION 586'

0221-W



DRAWING APPLICABLE FOR 3RD (AND 4th) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWN E. SAXTON 4/1/93 CHK'D B. TROTTER 5/12/93 APP'D DAK 8-4-93
A	ESR 92-177 COMP.
	SEE REV. 0-1 FILMED: MFS 8-17-93
A-1	RE PUR 0295
	ADDED REF NO. 5. BY: BJD 7-19-99 APP'D DAK 7-26-99
B	RE PUR 0295 COMP.
	SEE REV. A-1 FILMED: MFS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D D
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (MFS)

NOTE:
NO CLASS 3 INTEGRAALLY WELDED ATTACHMENTS

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SERVICE WATER PUMP STRAINERS
ASSW-1A1, ASSW-1A2, ASSW-1B1,
AND ASSW-1B2

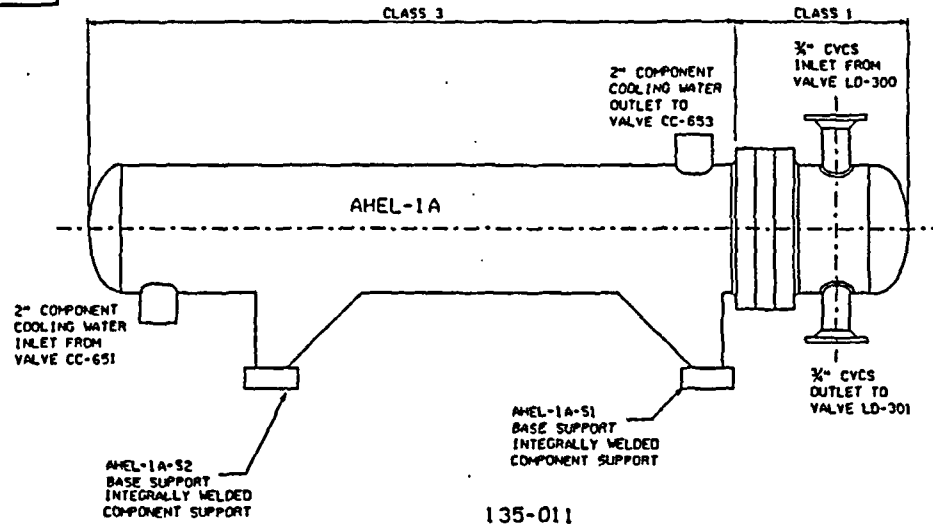
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	P. E. BUKES	5/13/93
D. H.	PROJECT APPROVED	
DATE	1/17/93	
DRG. NO.	M-1220	REV. C
SCALE	NONE	

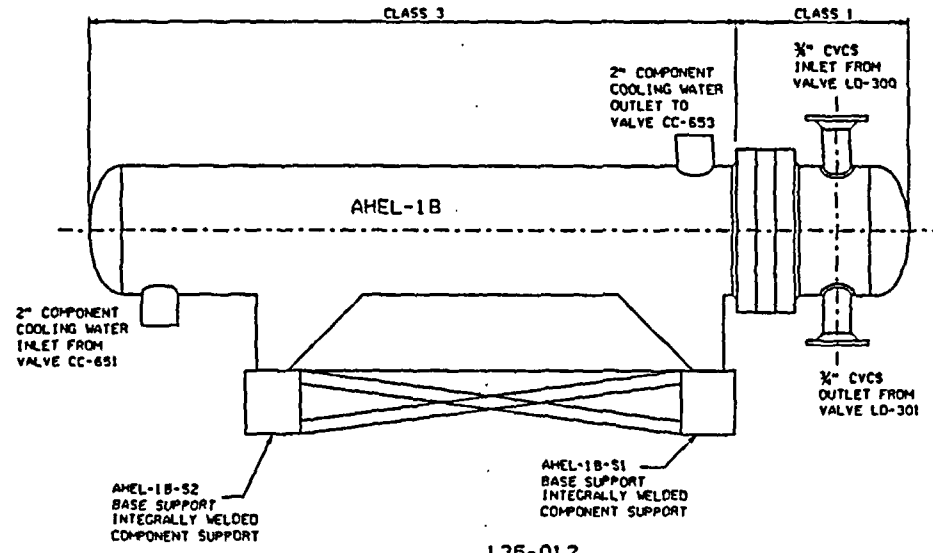
LOCATION: TURBINE BUILDING SCREENHOUSE 586'

CADD

1221-W



135-011



135-012

LOCATION: CONTAINMENT 593'

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SAXTON 4/1/93 APP'D: CAT 8-17-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	REVISED TANKS AND NOTES. PER ESR 92-177 BY: DOG 11-17-93 CHK'D: RJS 11-17-93 APP'D: CAT 11-19-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: WPS 11-30-93
B-1	RE PUR 0295 ADDED REF. NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILMED: WPS 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILMED: (WPS)

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) 151
INTERVAL ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS I AND CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

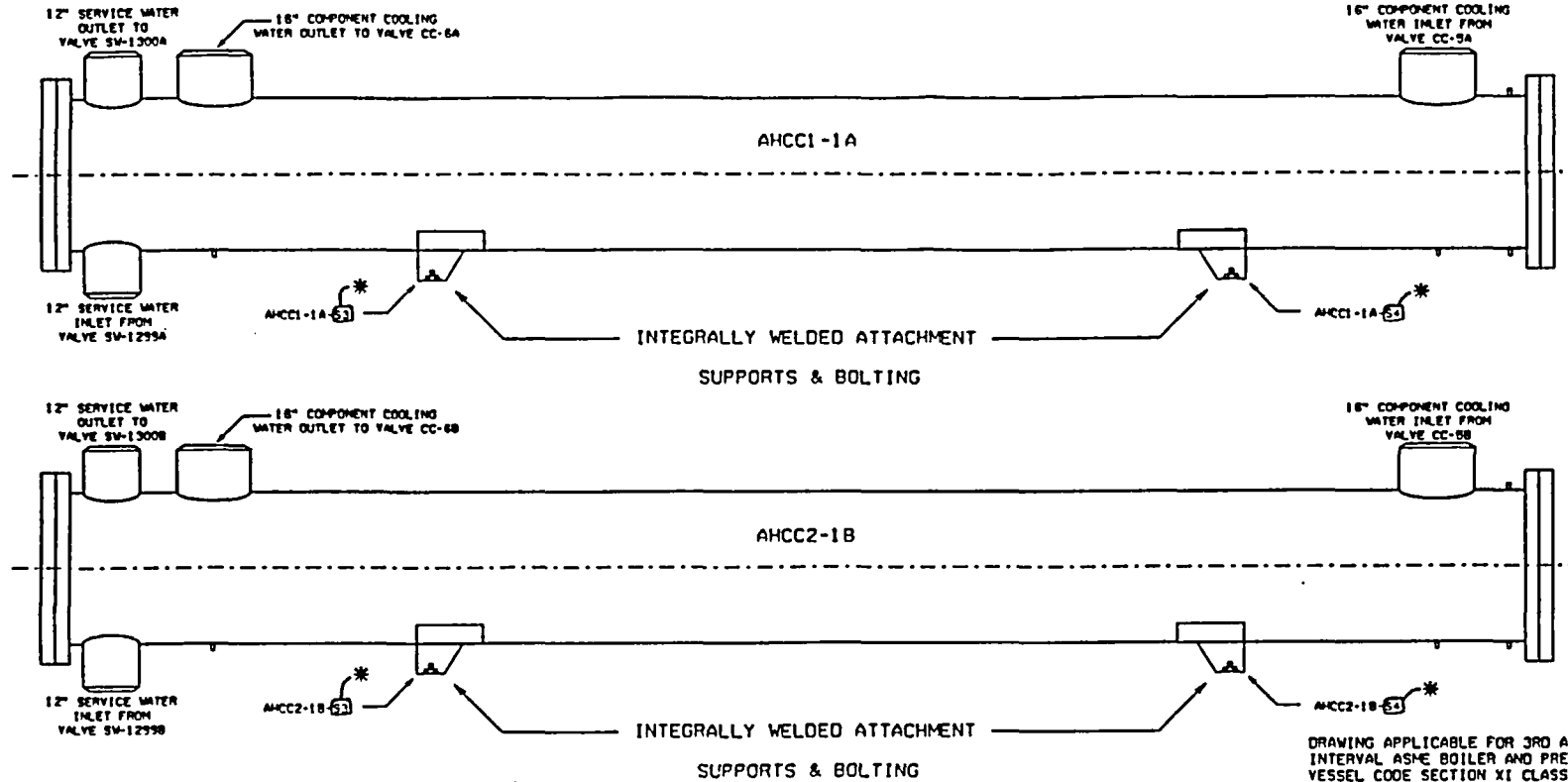
**EXCESS LETDOWN HEAT
EXCHANGERS AHEL-1A & AHEL-1B**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES 6/1/93
D. H.	PROJECT APPROVED
DATE	1/17/03
SCALE	DWG. NO. M-1221
REV.	D

CADD

M-122



REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 OWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: TAO 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED (MPS) 8-17-93
A-1	RE PUR 0295
	ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED (MPS) 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ASB 06-03-02 APP'D: FEB 06-04-02
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED (MPS) 06-11-02
C-1	KAP 01-001639 REVISED AHCC1'S AND AHCC2'S BY: PJB 05/05/03 APP'D:
D	KAP 01-001639 COMPL. SEE REV. C-1. FILMED (MPS)

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3

C-1 * KAP 01-001639

135-081
135-082

LOCATION: AUXILIARY BUILDING 606'

CADD

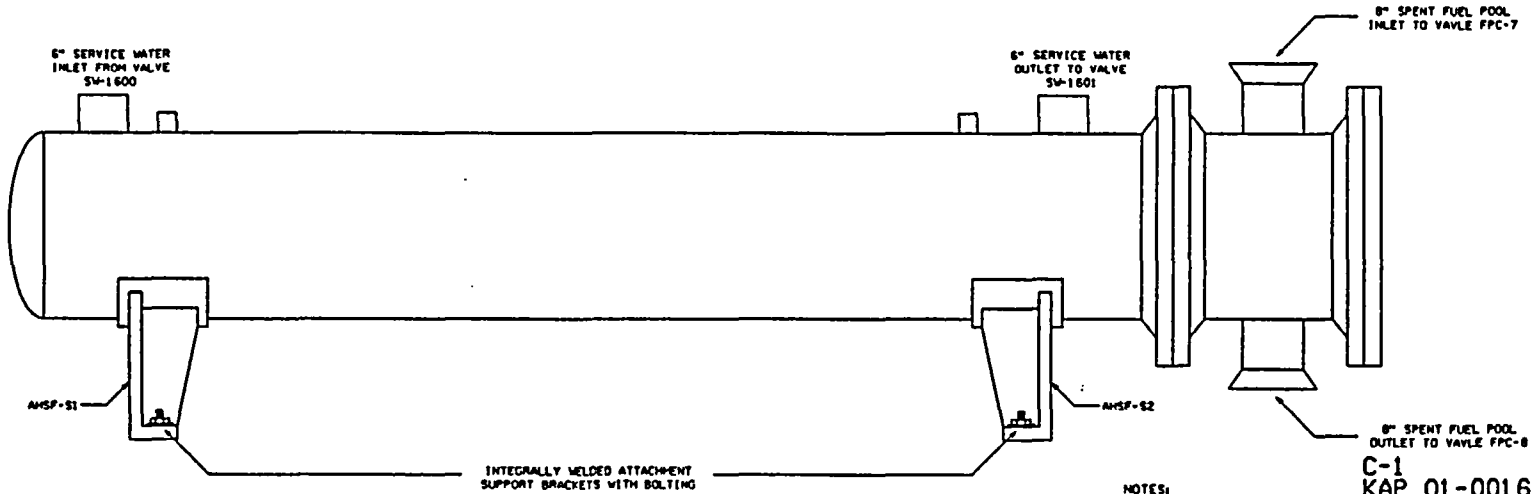
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

REPLACEMENT COMPONENT COOLING HEAT EXCHANGERS AHCC1-1A AND AHCC2-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
	PHILLIP E. BUKES	6/1/93
CHECKED	PROJECT APPROVED	
DRAWN	DWG. NO.	REV.
ESS	M-1222	C
NONE		

6221-W



NOTES:

- 1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
- 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3
- 3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY

C-1
KAP 01-001639

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWN: E. SARTON 4/1/93 CHK: D. B. TROTTER 5/12/93 APP: D. CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	REV. NOTES PER ESR 92-177 BY: LNL 10-1-93 CHK: D. RJS 10-4-93 APP: D. CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: WPS 10-19-93
B-1	RE PUR 0295 ADDED REF. NO. BY: BJD 7-19-99 APP: D. DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILMED: WPS 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP: D.
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILMED: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SPENT FUEL POOL HEAT EXCHANGER AHSF

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

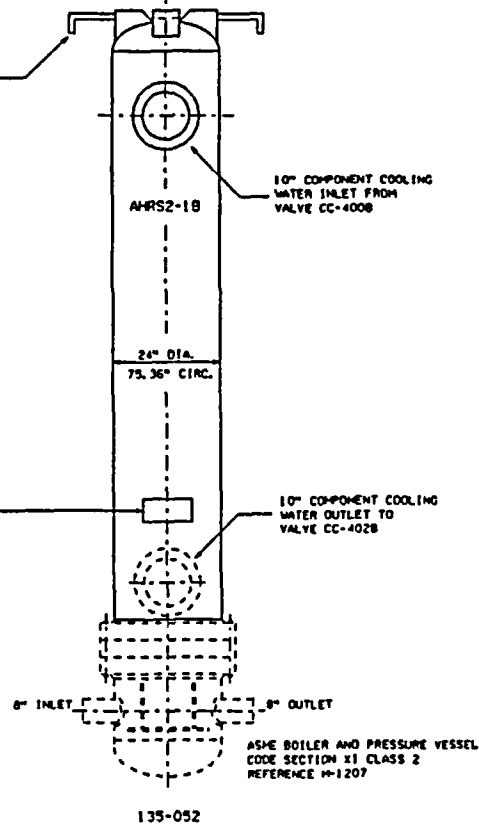
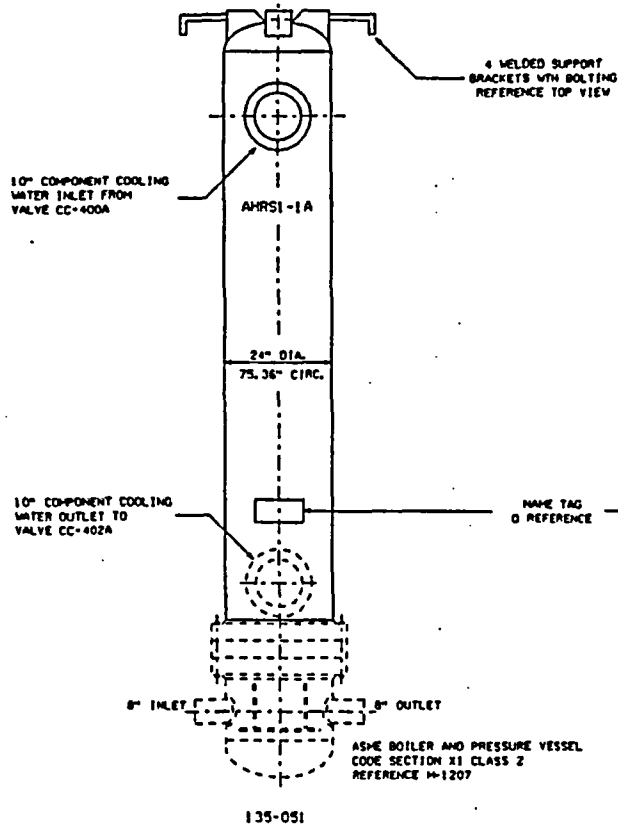
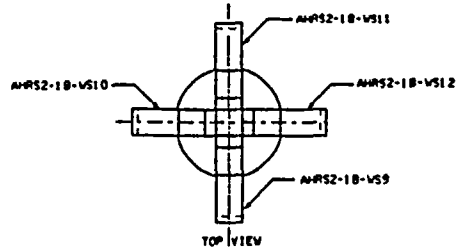
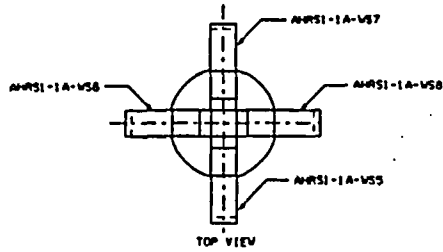
DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES	1/22/93
D. M.	[1/17/93]	PROJECT APPROVED
DWG. NO.	M-1223	REV.
SCALE	NONE	D

135-091

CADD

LOCATION: AUXILIARY BUILDING ELEVATION 622' SPENT FUEL POOL HEAT EXCHANGER ROOM DOOR 140

M-1224



LOCATION: AUXILIARY BUILDING 608; RESIDUAL HEAT EXCHANGER AHRS1-1A GATE 256 AND RESIDUAL HEAT EXCHANGER AHRS2-1B GATE 173

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DAWN E. SARTON 4/1/93 DWG'D BY B. TROTTER 5/12/93 APP'D BY CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: MFS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D BY DAK 7-26-99
B	RE PUR 0295 COMPL. SEE REV. A-1 FILMED: MFS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D BY
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (MFS)

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) 151 INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

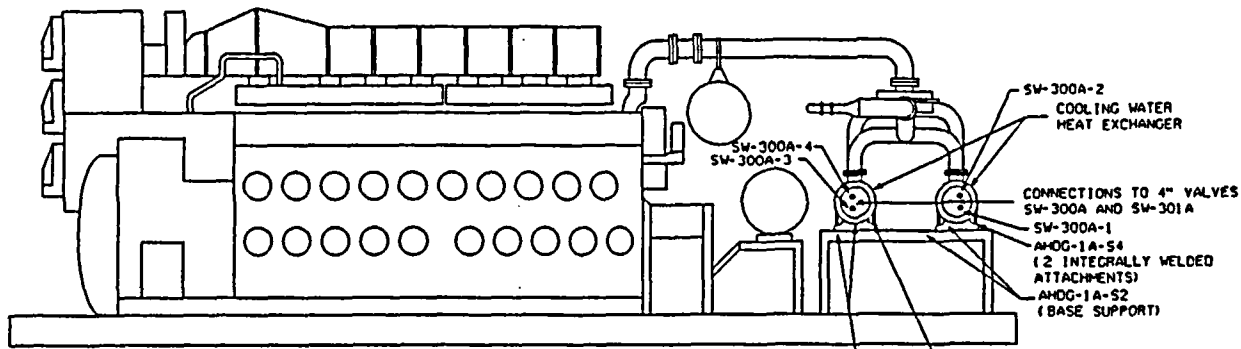
**RESIDUAL HEAT EXCHANGERS
AHRS1-1A AND AHRS2-1B**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

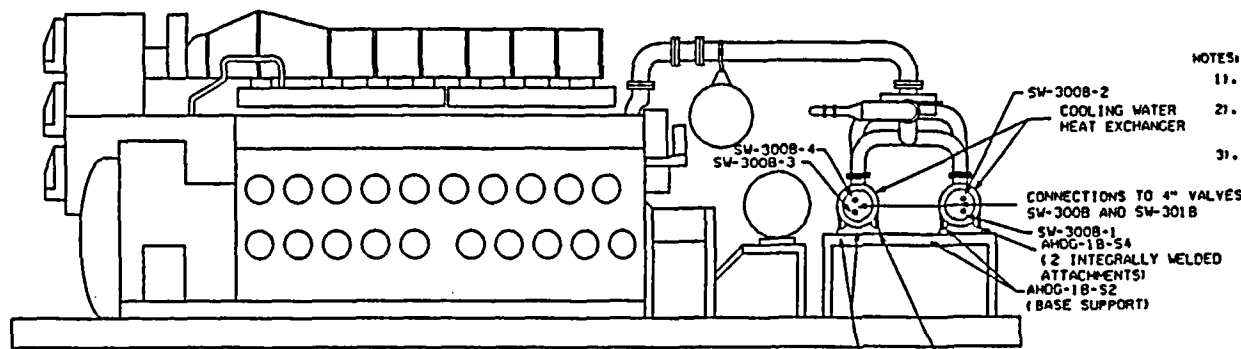
DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES 6/1/93
D. H.	PROJECT APPROVED
DATE	1/17/93
DRW. NO.	REV.
ESS 6/1/93	M-1224
SCALE	C
NONE	

CADD

9221-W



AHOG-1A
134-031



AHOG-1B
134-032

D-1
KAP 01-001639

NOTES:

1. DRAWING APPLICABLE FOR 3rd (AND 4th) ISI INTERVAL
2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3
3. EACH COOLING WATER HEAT EXCHANGER HAS A DRAIN SAMPLE VALVE

LOCATION: TURBINE BUILDING ELEVATION 586'

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 OWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: MPS 8-17-93
A-1	REV. NOTES & BASE SUPPORT LBLs PER ESR 92-177 BY: LAL 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: MPS 10-19-93
B-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-93 APP'D: DAK 7-26-93
C	RE PUR 0295 COMP. SEE REV. B-1 FILMED: MPS 8-3-93
C-1	DCR 3139 REVISED NOTE 3, REVISED AND ADDED LABELS BY: JMS 06-06-00 APP'D: DAK 06-09-00
D	DCR 3139 COMP. SEE REV. C-1 FILMED: (MPS) 06-13-00
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILMED: (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

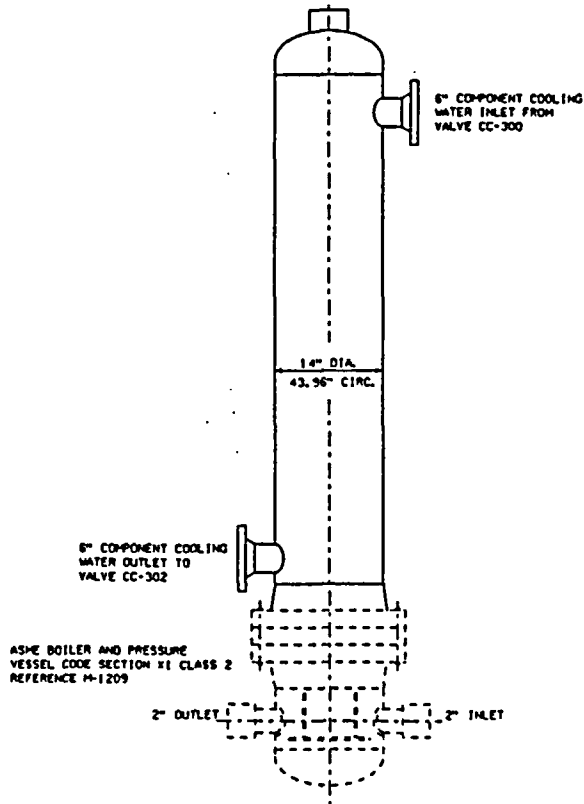
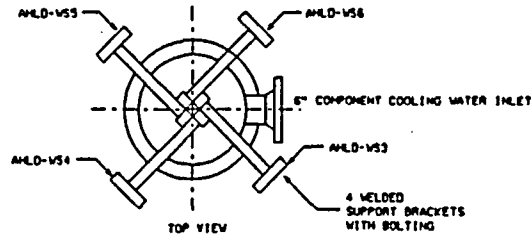
DIESEL GENERATOR
AHOG-1A AND AHOG-1B
COOLING WATER HEAT EXCHANGERS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	PHILLIP E. BUKES	1/22/93
CHECKED	PROJECT APPROVED	
D.H.	1/17/93	
Q.R./D.S.	1/13/93	DWG. NO. M-1225
SCALE	NONE	REV. E

CADD

9221-W



135-041

LOCATION: AUXILIARY BUILDING 606' LETDOWN HEAT EXCHANGER ROOM GATE 53

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: MFS 8-17-93
A-1	RE PUR 0295 ADDED REF. NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: MFS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (MFS)

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

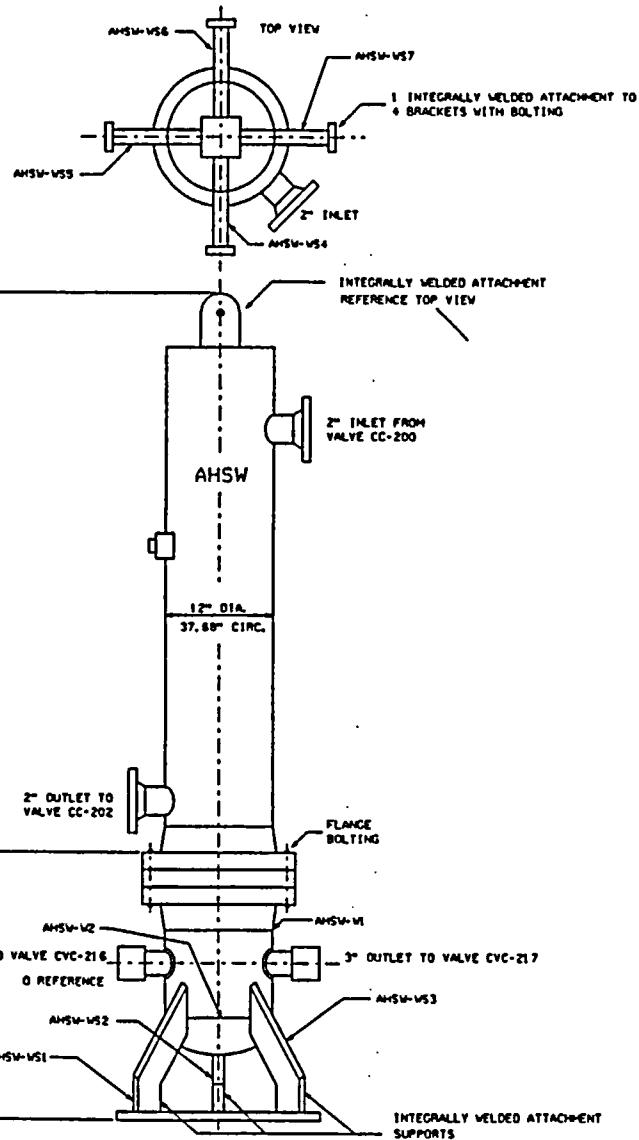
LETDOWN HEAT EXCHANGER
AHLD

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED		
	PHILLIP E. BUKES	6/1/93	
CHECKED	PROJECT APPROVED		
U. M.	1/17/83		
DESIGN	DATE	DWG. NO.	REV.
ESS	4/1/93	M-1226	C
SCALE			
NONE			

CADD

2221-W



LOCATION: AUXILIARY BUILDING 606' SEAL WATER HEAT EXCHANGER ROOM GATE 79

BOLTING DATA

STDS / DIA / LGTH	UNITS
12 / 0.875 / 3.875	IN

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AHSW-V1	0.1875" T SHELL	S3220 TP304SS
AHSW-V2	0.1875" T SHELL	S3220 TP304SS
AHSW-V3	0.125" T HEAD	S3220 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AHSW-V51	0.375" T	
AHSW-V52	0.375" T	
AHSW-V53	0.375" T	

D-1
KAP 01-001639

- NOTES:
- DRAWING APPLICABLE FOR 3" (AND 4" IN) ISI INTERVAL
 - ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2 AND CLASS 3
 - COMPONENT SUBJECT TO PRESSURE TESTING ONLY

REVISION	
A	PDD 0011 COMPL SEE REV 0-1 APP'D: CAT 10/23/89 FILM'D: (WPS) 11/7/89
A-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SARTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
B	ESR 92-177 COMP. SEE REV. A-1 FILM'D: WPS 8-17-93
B-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
C	ESR 92-177 COMP. SEE REV. B-1 FILM'D: WPS 10-19-93
C-1	RE PUR 0295 ADDED REF NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMP. SEE REV. C-1 FILM'D: WPS 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1 BY: ABF 06-03-02 APP'D: EJ KAP 01-001639 COMPLETE SEE REV. D-1. FILM'D: (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SEAL WATER HEAT EXCHANGER
AHSW

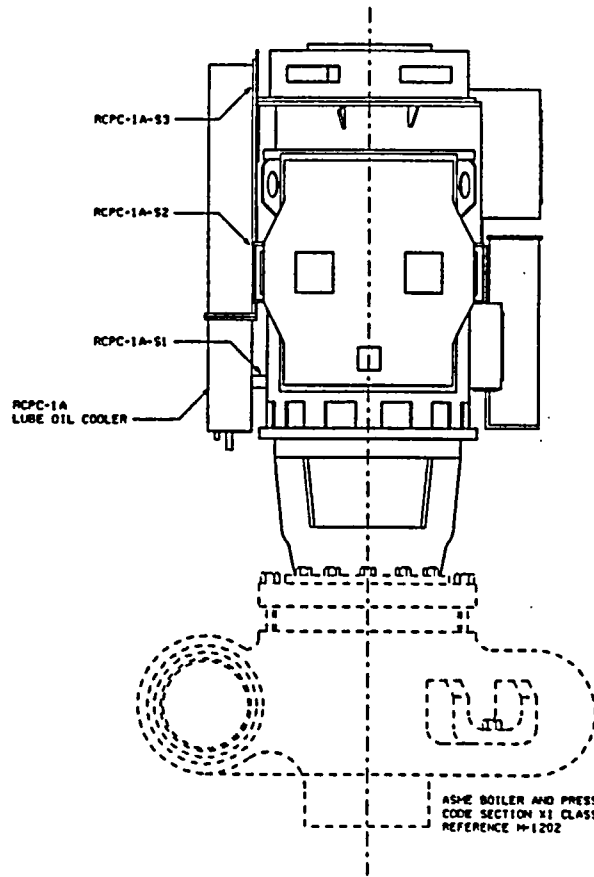
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	PHILLIP E. BUKES	APPROVED	1/17/93
CHECKED		PROJECT APPROVED	
D.M.	1/17/93		
DATE	1/17/93	DWG. NO.	M-1227
SCALE	NONE	REV.	E

135-021

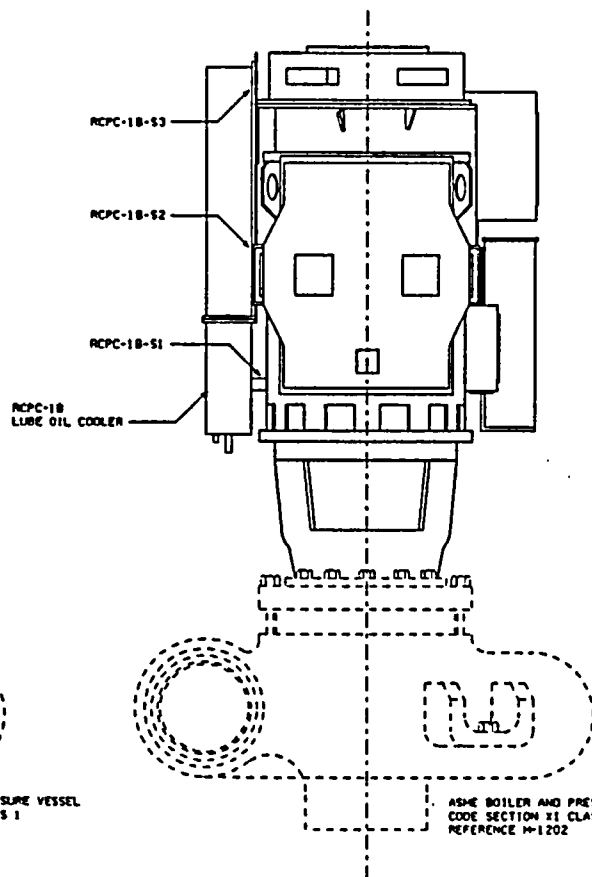
CADD

8221-W



RCP-1A
145-021

ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS 1
REFERENCE M-1202



RCP-1B
145-022

ASME BOILER AND PRESSURE VESSEL
CODE SECTION XI CLASS 1
REFERENCE M-1202

NOTE: INTEGRALLY WELDED ATTACHMENTS

RPCP-1A-S1 RPCP-1B-S1
RPCP-1A-S2 RPCP-1B-S2
RPCP-1A-S3 RPCP-1B-S3

NOTE: RPCP-1B-S2 NOT INTEGRALLY WELDED

LOCATION: CONTAINMENT

- NOTES:
- D-1
KAP 01-001639
- 1). DRAWING APPLICABLE FOR 3-d (AND 4-d) ISI INTERVAL.
 - 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3.
 - 3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY.

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWN E. SAXTON 4/1/93 CHK'D: B. TROTTER 9/21/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: WPS 10-19-93
B-1	PDR 0149 ADDED NOTES 2 AND 3. BY: J.SPICE 2-21-97 APP'D: PCM 02-21-97
C	PDR 0149 COMPL. SEE REV. B-1 FILMED: WPS 12-25-97
C-1	RE PUR 0295 ADDED REF NOS BY: BJD 7-19-99 APP'D: DAK 7-26-99
D	RE PUR 0295 COMPL. SEE REV. C-1 FILMED: WPS 8-3-99
D-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
E	KAP 01-001639 COMPLETE SEE REV. D-1. FILMED: WPS

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

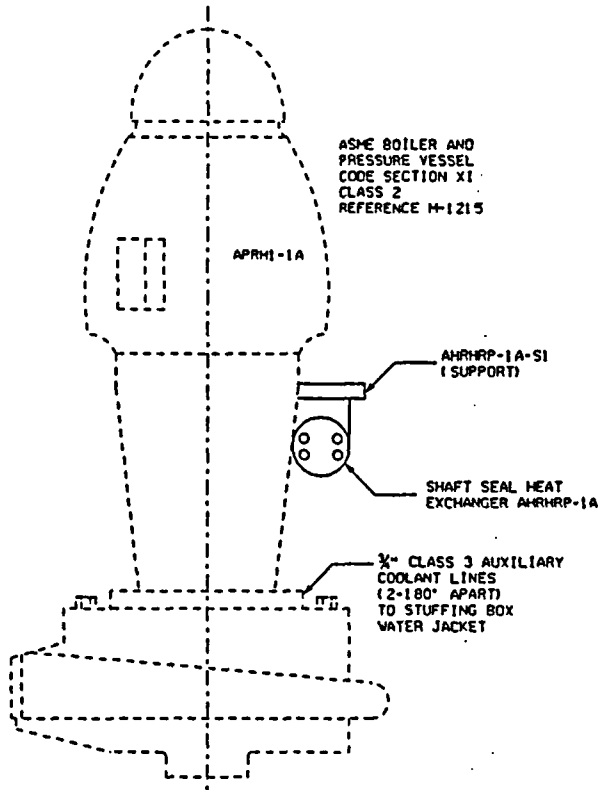
**REACTOR COOLANT PUMPS
RPCP-1A AND RPCP-1B
LUBE OIL COOLER**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

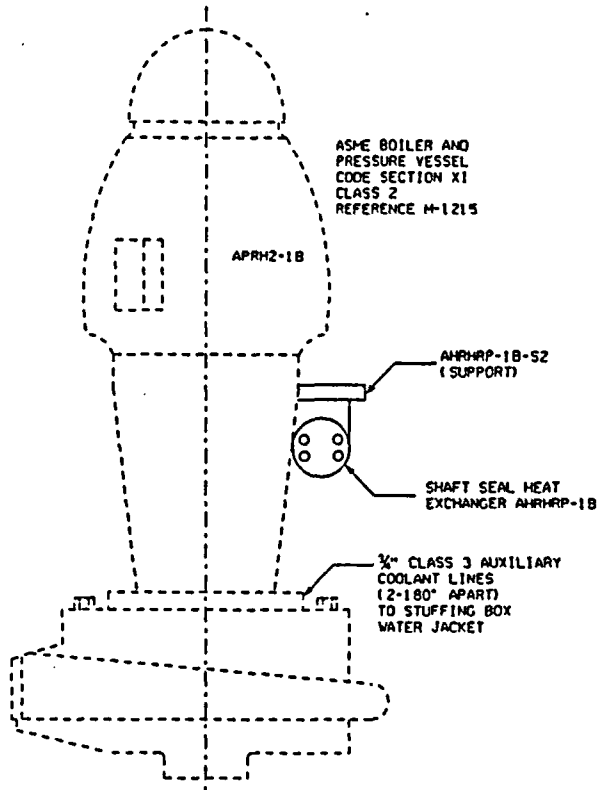
DESIGNED	APPROVED
PHILIP E. BUKES	7/21/93
CHECKED	PROJECT APPROVED
D. M.	1/17/93
SCALE	DWG. NO.
NONE	M-1228
REV.	E

CADD

6221-H



145-141



145-142

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: AUXILIARY BUILDING ELEVATION 566'-6" RHR PUMP PITS 1A AND 1B

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: WPS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (WPS)

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

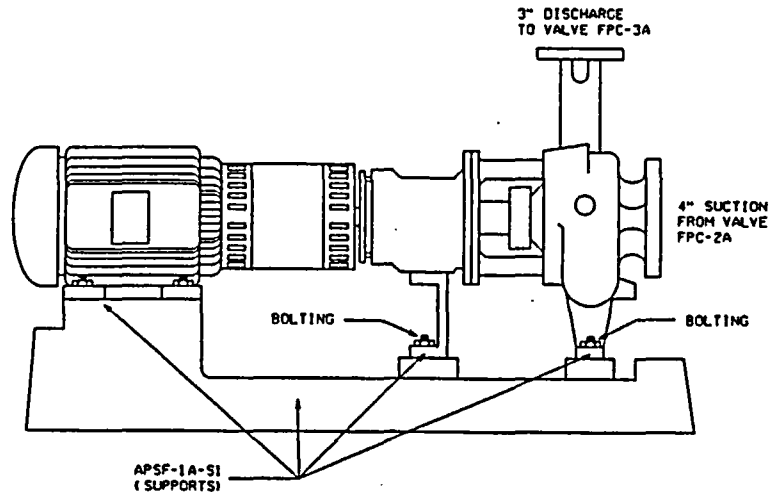
RESIDUAL HEAT REMOVAL PUMPS
SHAFT SEAL HEAT EXCHANGERS
AHRHRP-1A AND AHRHRP-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

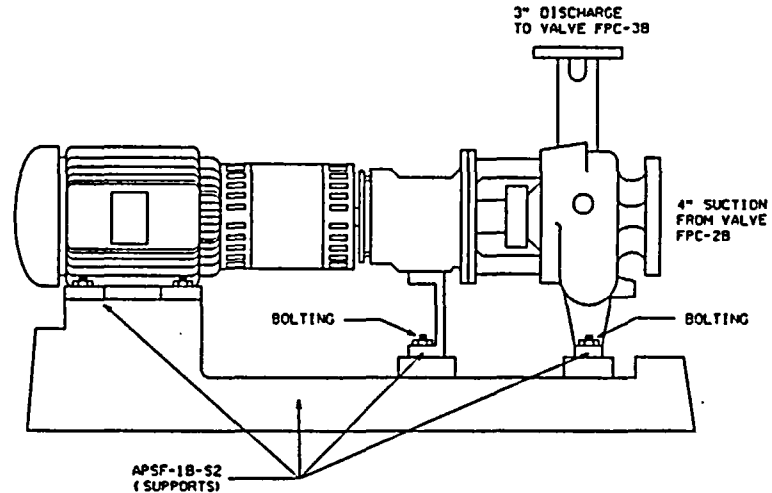
DESIGNED	APPROVED	
PHILLIP E. BUKES	8/1/93	
CHECKED	PROJECT APPROVED	
D. PL	1/17/93	
DRAWN	DWG. NO.	REV.
ESS	M-1229	C
SCALE		
NONE		

CADD

0E21-W



APSF-1A
145-171



APSF-1B
145-172

C-1
KAP 01-001639

- NOTES:
- 1). DRAWING APPLICABLE FOR 3-D (AND 4th) ISI INTERVAL
 - 2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3
 - 3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY
 - 4). NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 CHK'D: E. SEXTON 4/1/93 CHK'D: B. TROTTER 5/21/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: (MPS) 8-17-93
A-1	REV. NOTES PER ESR 92-177 BY: LML 10-1-93 CHK'D: RJS 10-4-93 APP'D: CAT 10-07-93
B	ESR 92-177 COMP. SEE REV. A-1 FILMED: (MPS) 10-19-93
B-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
C	RE PUR 0295 COMP. SEE REV. B-1 FILMED: (MPS) 8-3-99
C-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILMED: (MPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SPENT FUEL POOL PUMPS
APSF-1A AND APSF-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

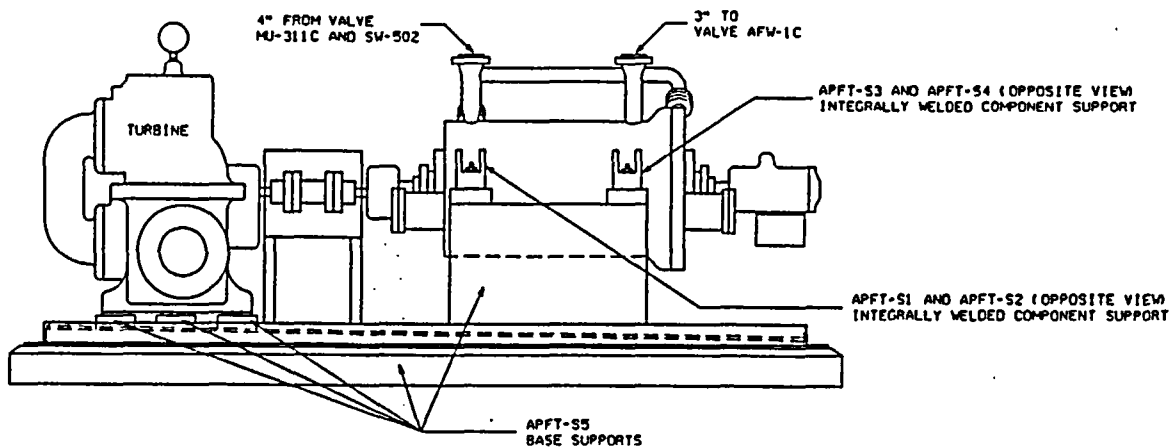
DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKE'S
D. H.	PROJECT APPROVED

D. H.	DATE	DWG. NO.	REV.
	1/17/83	M-1230	D
Q. R. / O. S.	1/12/83	SCALE	
NONE			

LOCATION: AUXILIARY BUILDING ELEVATION 622' SPENT FUEL POOL HEAT EXCHANGER ROOM DOOR 140

CADD

1231-W



145-413

LOCATION: TURBINE BUILDING ELEVATION 586'

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 DWN. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF. NO. BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: WPS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: WPS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

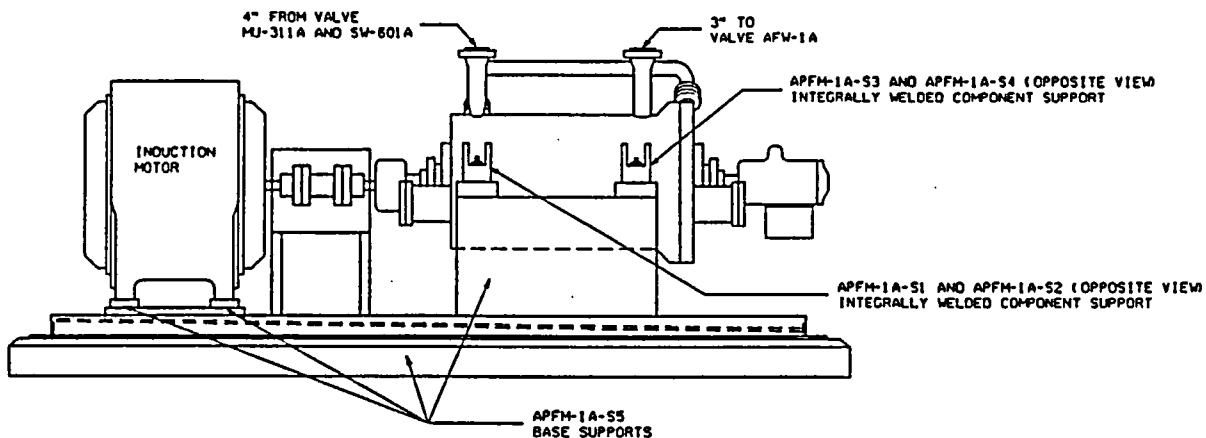
AUXILIARY FEEDWATER PUMP
TURBINE DRIVEN
APFT

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

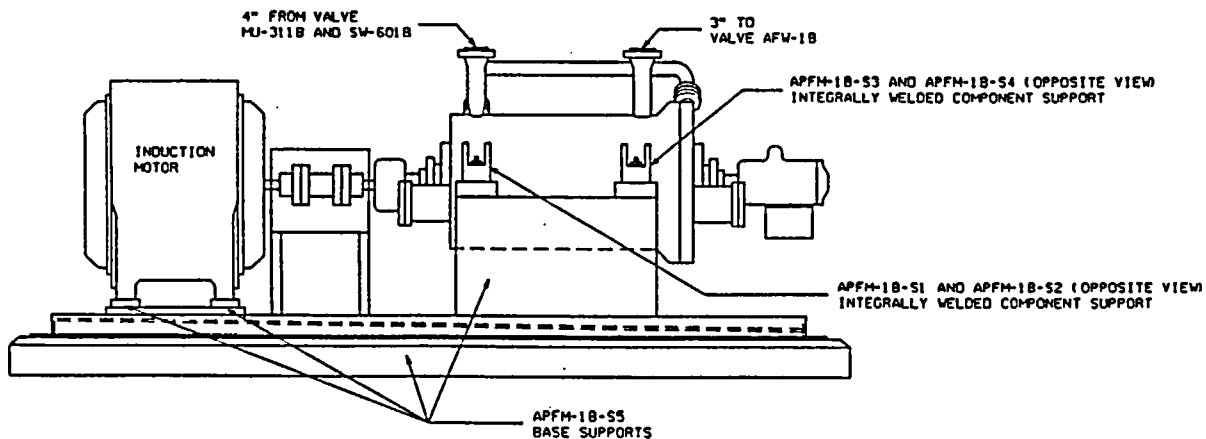
DESIGNED	APPROVED	
	PHILLIP E. BUKES	1/22/93
CHECKED	PROJECT APPROVED	
D. H.		1/17/93
DATE	SCALE	DWG. NO.
1/17/93	NONE	M-1231
		REV.
		C

CADD

2E21-W



APFM-1A
145-411



APFM-1B
145-412

LOCATION: TURBINE BUILDING ELEVATION 586'

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 Dwn: E. SAXTON 4/1/93 Chk: D. B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: MFS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S. BY: 7-15-93 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: MFS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: MFS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) 1ST
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

AUXILIARY FEEDWATER PUMPS
MOTOR DRIVEN
APFM-1A AND APFM-1B

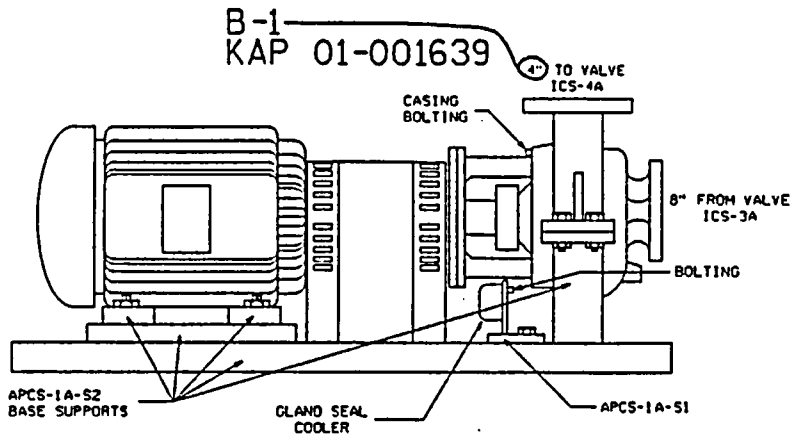
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
	PHILLIP E. BUKES 1/22/93
CHECKED	PROJECT APPROVED
D. M.	1/17/83

Q. R. / D. S. 1/23/83	DWG. NO.	REV.
NONE	M-1232	C

CADD

0021-W



APCS-1A
145-131

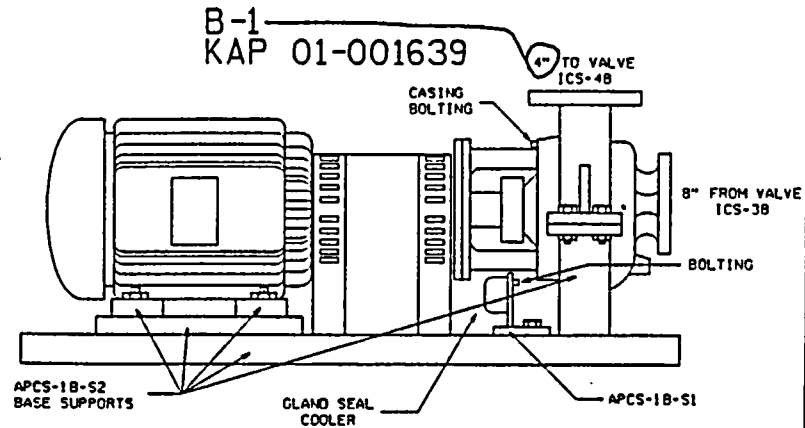
CASING BOLTING DATA EACH PUMP			
STUDS	DIA.	LGTH.	NUTS
16	1.0"	4.0"	16

BOLTING DATA EACH GLAND SEAL COOLER			
STUDS	DIA.	LGTH.	NUTS
7	0.5"	1.75"	7

NOTE 1: NO CLASS 2 INTEGRALLY WELDED ATTACHMENTS OR PUMP CASING WELDS

NOTE 2: GLAND SEAL COOLER PIPING INCLUDES 2-1/2" CLASS 2 SEAL PIPING AND 2-1/2" CLASS 3 AUXILIARY COOLANT PIPING

LOCATION: AUXILIARY BUILDING ELEVATION 586'



APCS-1B
145-132

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISL
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 2

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

CONTAINMENT SPRAY PUMPS
AND GLAND SEAL COOLERS
APCS-1A AND APCS-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

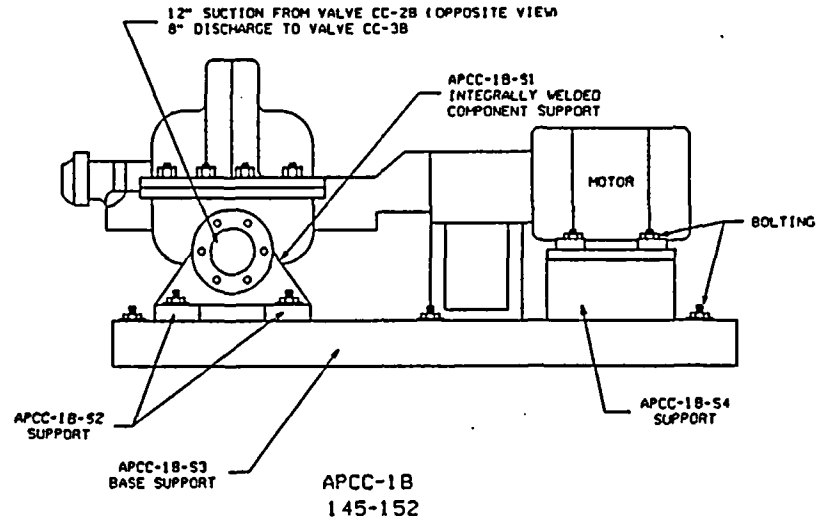
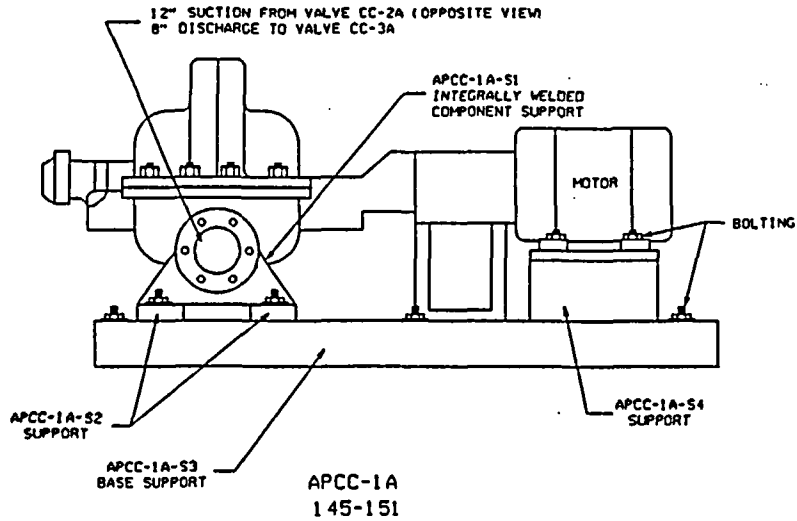
DESIGNED	APPROVED
CHECKED	PHILLIP E. BUKES
D. M.	PROJECT APPROVED
DATE	1/17/83
SCALE	1/12/83
DWG. NO.	M-1233
REV.	C

CADD

REVISION

0-1	REDRAFTED TO CAD PER ESR 92-177 OWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: WPS 8-3-99
B-1	KAP 01-001639 ADDED 4TH INTERVAL, REVISED FLANGE DIAMETER, BY: MTH 02-12-02 APPROV. FEB 04-05-02 [C] KAP 01-001639 COMPLETE. SEE REVISION B-1 FILMED: WPS 04-16-02

M-1234



REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DRAWN BY: E. SAKTON 4/1/93 CHK'D BY: B. TROTTER 5/12/93 APP'D BY: CAT 8-4-93
A	ESR 92-177 COMP SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S BY: BJD 7-19-99 APP'D:
B	RE PUR 0295 COMP SEE REV. A-1 FILMED: WPS
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: WPS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) 151
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

COMPONENT COOLING PUMPS
APCC-1A AND APCC-1B

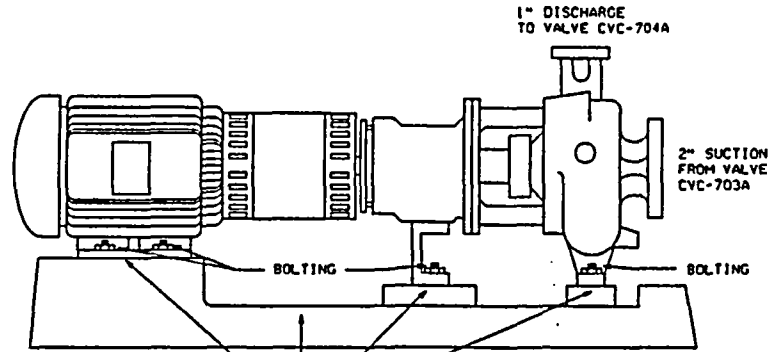
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES	1/22/93
D. PL	PROJECT APPROVED	
	1/17/93	
DWG. NO.	REV.	
M-1234	C	

LOCATION: AUXILIARY BUILDING ELEVATION 606'

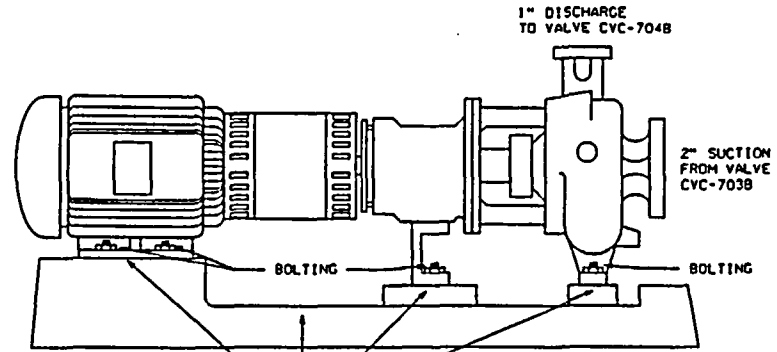
CADD

9C21-W



APBT-1A-51
(SUPPORTS)

APBT-1A
145-111



APBT-1B-52
(SUPPORTS)

APBT-1B
145-112

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI NON-CODE CLASS

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

BORIC ACID TRANSFER PUMPS
APBT-1A AND APBT-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
	PHILLIP E. BUKES	1/20/93
CHECKED	PROJECT APPROVED	
U. M.	1/17/93	

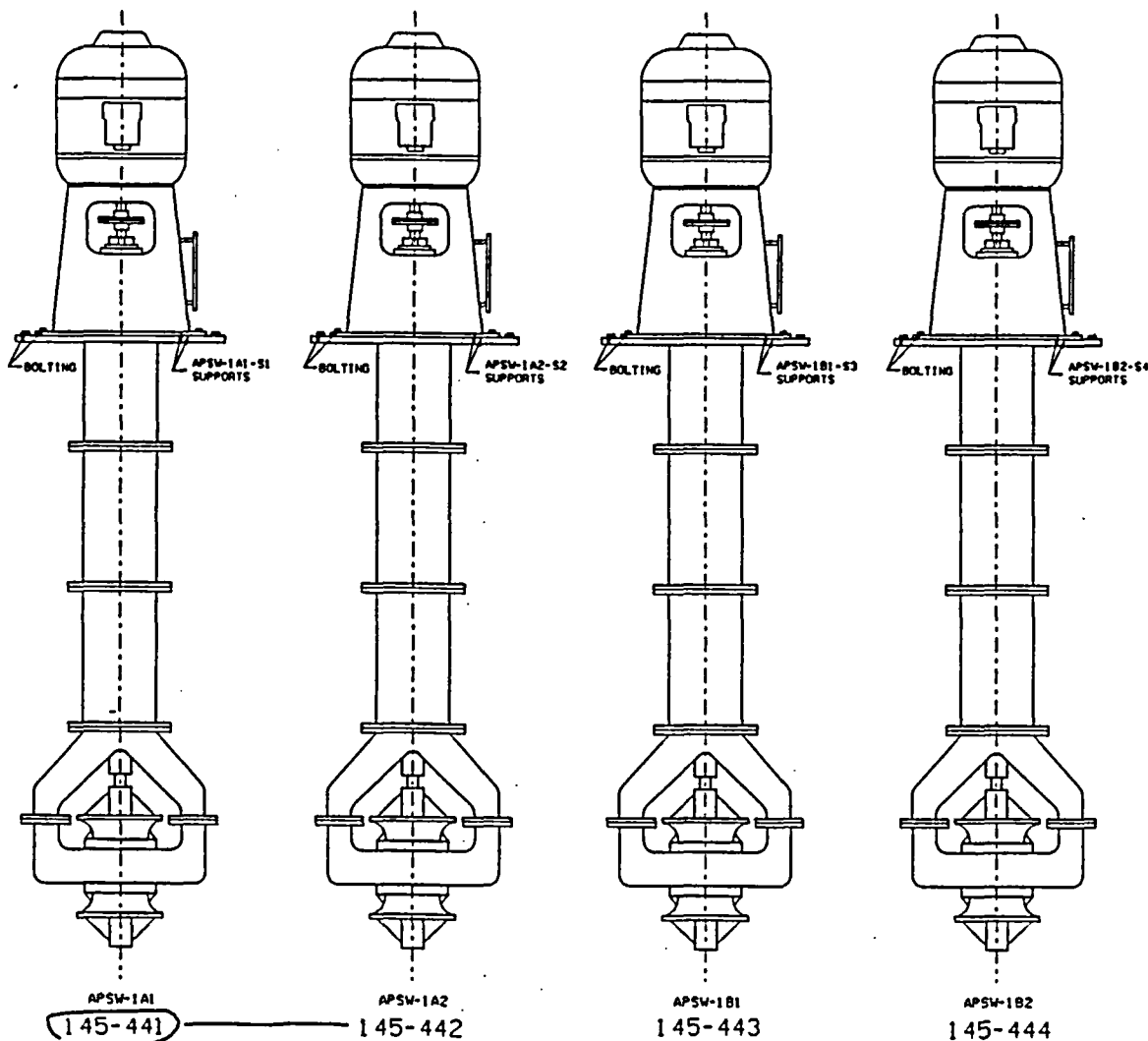
DRAWN	DWG. NO.	REV.
O. R. / D. S. 1/12/93	M-1235	0
SCALE		
NONE		

CADD

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWG. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D:
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED:WPS 8-17-93 A-1] DCF 2786-273 DELETED NOTE AND CHANGED CLASS BY: SJD 8-2-96 APP'D: CAT 12-18-96
B	DCR 2786-2/3 COMPL. SEE REV. A-1 FILMED:WPS] 81-21-97 B-1] RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: OAK 7-26-99
C	RE PUR 0295 COMPL. SEE REV. B-1 FILMED:WPS] 8-3-99 C-1] KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
D	KAP 01-001639 COMPLETE SEE REV. C-1. FILMED:WPS]

LOCATION: AUXILIARY BUILDING ELEVATION 606'

9CZ1-W



LOCATION: TURBINE BUILDING SCREEN HOUSE 586'

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 OWN: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILED: WPS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILED: WPS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILED: WPS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH 151
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

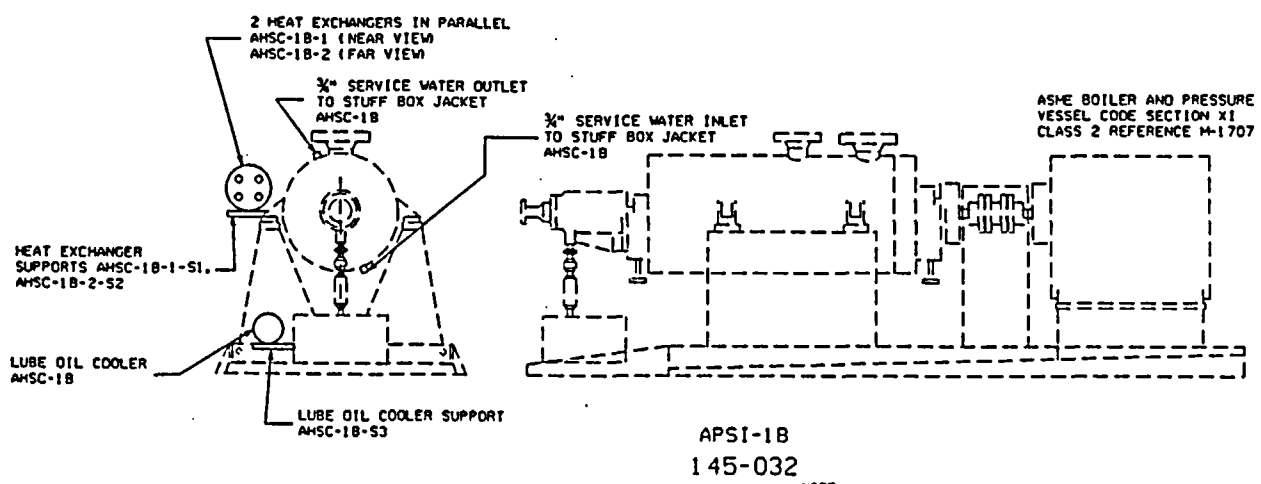
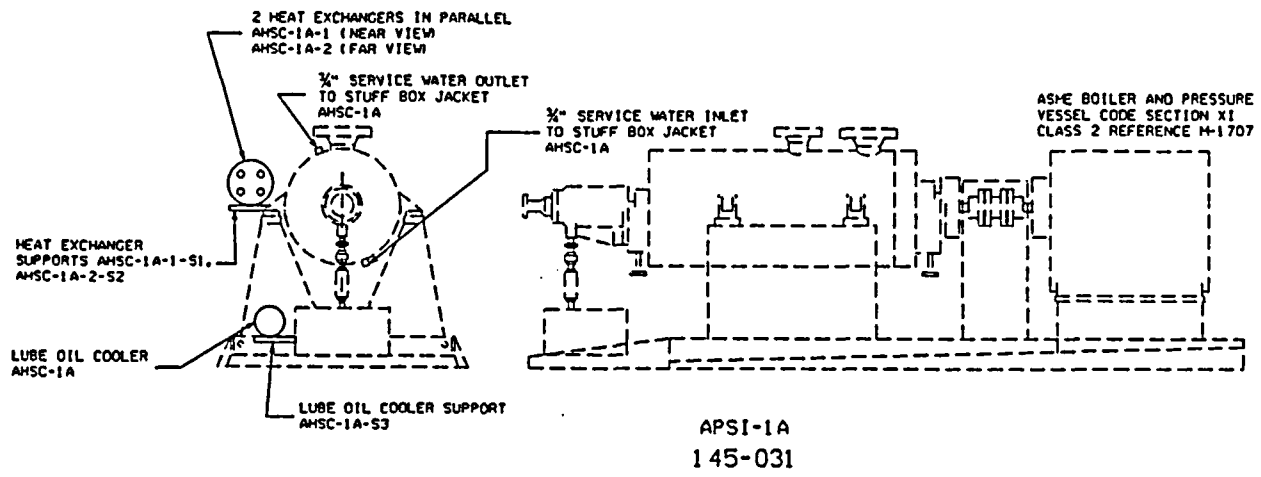
SERVICE WATER PUMPS
APSW-1A1, APSW-1A2,
APSW-1B1 AND APSW-1B2

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	DATE
	PHILLIP E. BUKES	1/22/93
CHECKED	PROJECT APPROVED	
D. M.	1/17/93	
DATE	DWG. NO.	REV.
Q. R. / D. S. 1/13/93	M-1236	C
SCALE		
NONE		

CADD

4221-H



NOTE:
NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: AUXILIARY BUILDING ELEVATION 586'

REVISION	
O-1	REDRAFTED TO CAD PER ESR 92-177 DWN. E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP. SEE REV. 0-1 FILMED: MPS 8-17-93
A-1	RE PUR 0295 ADDED REF NO'S BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295 COMP. SEE REV. A-1 FILMED: MPS 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (MPS)

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

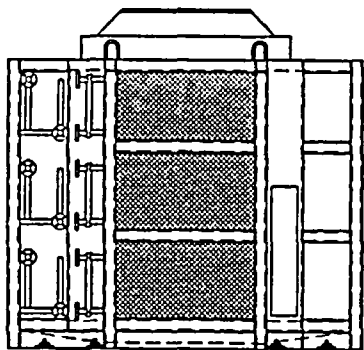
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SAFETY INJECTION PUMP
HEAT EXCHANGERS (2), LUBE
OIL COOLER AND STUFF BOX
JACKET AHSC-1A AND AHSC-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

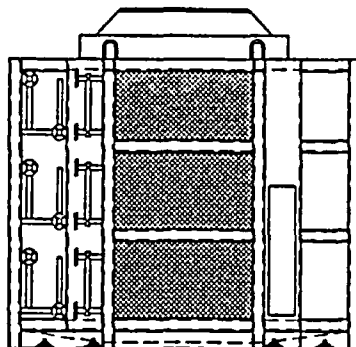
DESIGNED	APPROVED	DATE
DRAWN	PHILLIP E. BUKES	1/21/93
D.P.L.	PROJECT APPROVED	
DATE	1/21/93	
DRW. NO.	M-1237	REV.
CADD		C

6E21-W



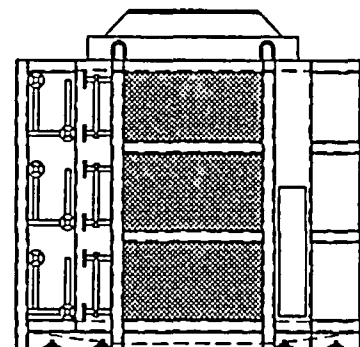
AHCF-1A-S1
(ANCHOR BOLTING 8 TOTAL)

AHCF-1A
155-011



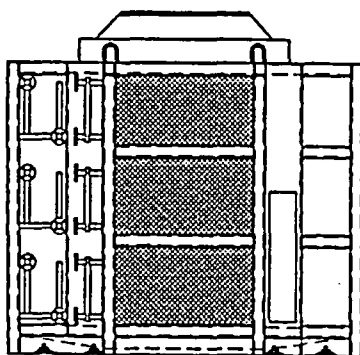
AHCF-1B-S1
(ANCHOR BOLTING 8 TOTAL)

AHCF-1B
155-012



AHCF-1C-S1
(ANCHOR BOLTING 8 TOTAL)

AHCF-1C
155-013



AHCF-1D-S1
(ANCHOR BOLTING 8 TOTAL)

AHCF-1D
155-014

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: CONTAINMENT BUILDING ELEVATION 606' (AHCF-1C AND AHCF-1D) AND 626' (AHCF-1A AND AHCF-1B)

REVISION	
0-1	REDRAFTED TO CAD PER ESR 92-177 DWG: E. SAXTON 4/1/93 CHK'D: B. TROTTER 5/12/93 APP'D: CAT 8-4-93
A	ESR 92-177 COMP.
	SEE REV. 0-1 FILMED: WPS 8-17-93
A-1	RE PUR 0295
	ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 7-26-99
B	RE PUR 0295
	SEE REV. A-1 FILMED: WPS. 8-3-99
B-1	KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
C	KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (WPS)

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD (AND 4TH) ISI
INTERVAL ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

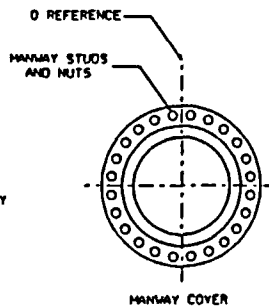
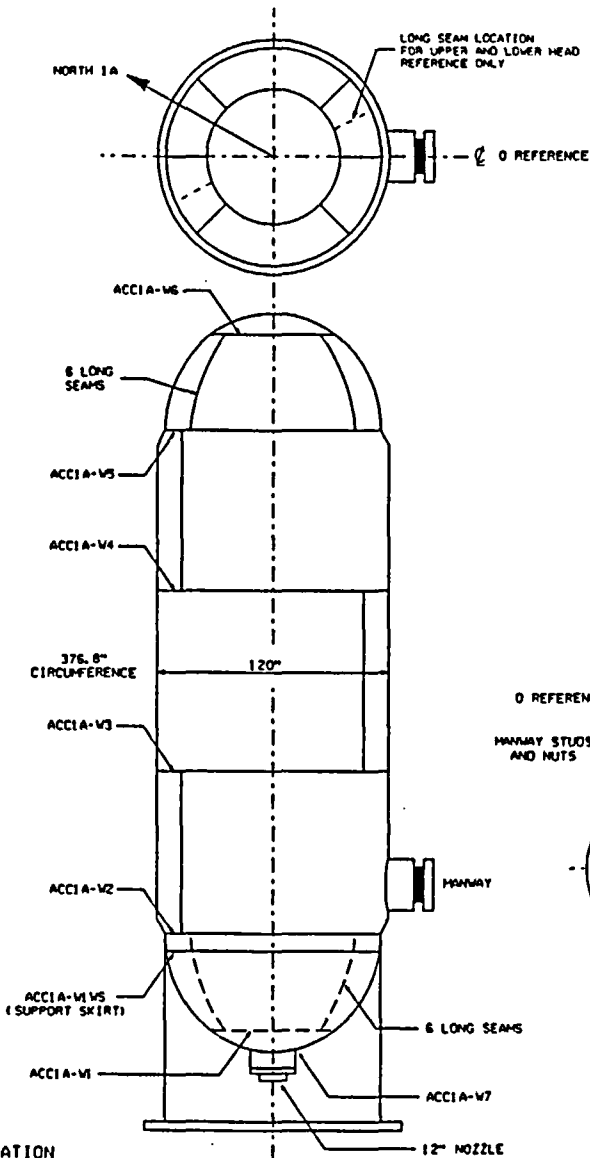
CONTAINMENT FAN COOLERS
AHCF-1A, AHCF-1B,
AHCF-1C AND AHCF-1D

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
CHECKED	PHILLIP E. BUKES	1/20/93
D. M.	PROJECT APPROVED	
DATE	1/17/93	
DRAWN	DWG. NO.	REV.
O. R. / D. S.	M-1239	C
SCALE		
NONE		

CADD

5021-W



WELDING DATA

STUDS / DIA. / LGTH	NOTES
24 / 1.375" / 7.5"	24

COMPONENT WELD DATA

L.O.	THICKNESS	MATERIAL
ACCIA-V1	1.5"	NOTE 1
ACCIA-V2	2.2"	NOTE 1
ACCIA-V3	2.2"	NOTE 1
ACCIA-V4	2.2"	NOTE 1
ACCIA-V5	2.2"	NOTE 1
ACCIA-V6	1.5"	NOTE 1
ACCIA-V7	1.5"	NOTE 1

INTEGRALLY WELDED ATTACHMENT DATA

L.O.	THICKNESS	MATERIAL
ACCIA-V8	0.6"	NOTE 1

NOTES:

1. DRAWING APPLICABLE FOR 3-D (AND 4-D) ISI INTERVAL
2. ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
3. COMPONENT SUBJECT TO PRESSURE TESTING ONLY
4. MATERIAL **B-1 KAP 01-001639**

SHELL, HEAD AND NOZZLE: SA266 CARBON STEEL WITH 0.156" TP304 STAINLESS STEEL CLADDING
 SUPPORT SKIRT: SA _ CARBON STEEL

• VERIFICATION REQUIRED

REVISION

FILMED FIRST ISSUE
 BY: WPS
 PER ESR 92-177
 APP'D CAT 6-25-93
 FILMED (WPS) 7-6-93

0-1
 REV. NOTES
 PER ESR 92-177
 BY: LNL 10-1-93
 CHK'D: RJS 10-4-93
 APP'D: CAT 10-07-93

A] ESR 92-177 COMPL.
 SEE REV. 0-1
 FILMED (WPS) 10-19-93

A-1] RE PUR 0295

ADDED REF NO.
 BY: BJD 7-15-99
 APP'D: DAK 7-26-99

B] RE PUR 0295 COMPL.
 SEE REV. A-1
 FILMED (WPS) 8-3-99

B-1] KAP 01-001639
 REVISED NOTE 1.
 BY: ABF 06-03-02
 APP'D:

C] KAP 01-001639
 COMPLETE
 SEE REV. B-1.
 FILMED (WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT
 CARLTON, KEWAUNEE COUNTY, WISCONSIN

ACCUMULATOR TANK ACC-1A

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DESIGNED BY: PHILLIP E. BUKES
 CHECKED BY: PROJECT APPROVED

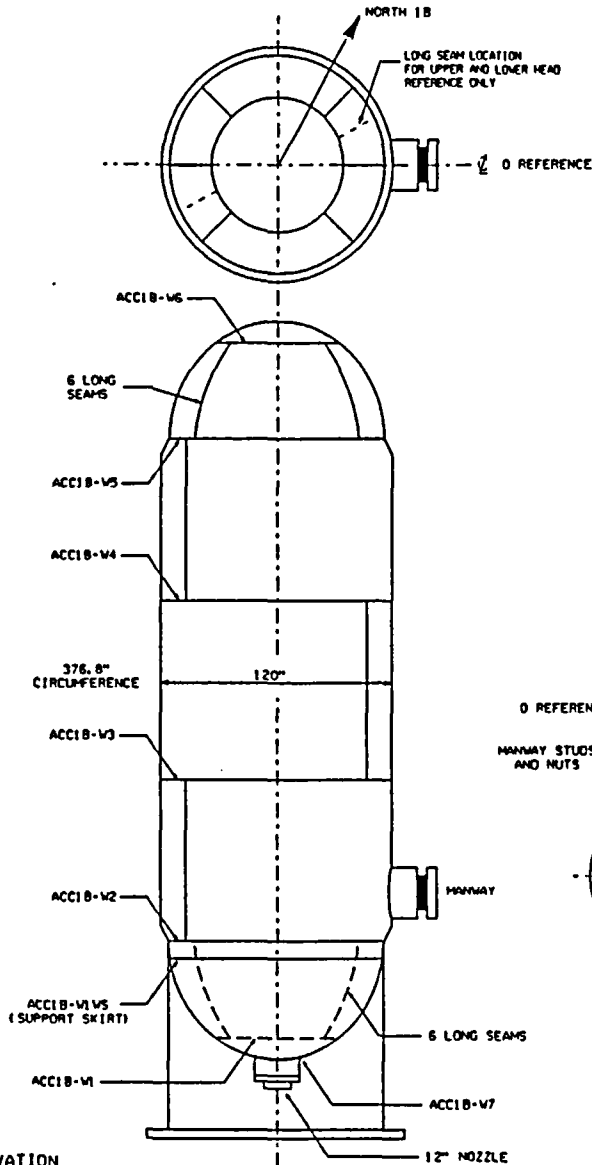
101-011

DATE: 12/1/93
 SCALE: M-1705
 DWG. NO.: M-1705
 REV.: C

LOCATION: CONTAINMENT 606' ELEVATION

CADD

9011-W



LOCATION: CONTAINMENT 606' ELEVATION

BOLTING DATA

STUDS / DIA. / LGTH	INITS
24 / 1.375" / 7.5"	24

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
ACC1B-W	1.5"	NOTE 1
ACC1B-W2	2.2"	NOTE 1
ACC1B-W3	2.2"	NOTE 1
ACC1B-W4	2.2"	NOTE 1
ACC1B-W5	2.2"	NOTE 1
ACC1B-W6	1.2"	NOTE 1
ACC1B-W7	1.2"	NOTE 1

INTERIALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
ACC1B-W5	0.60"	NOTE 1

NOTES:

- DRAWING APPLICABLE FOR 3-D (AND 2-D) ISI INTERVAL
- ASME BOILER AND PRESSURE VESSEL CODE SECTION II CLASS 2
- COMPONENT SUBJECT TO PRESSURE TESTING ONLY
- MATERIAL **B-1**
KAP 01-001639
SHELL, HEAD AND NOZZLE: SA264 CARBON STEEL WITH 0.156" T
TP304 STAINLESS STEEL CLADDING
SUPPORT SKIRT: SA CARBON STEEL

• VERIFICATION REQUIRED

REVISION

FILMED FIRST ISSUE
BY WPS
PER ESR 92-177
APP'D: CAT 6-25-93
FILMED(WPS) 7-6-93

0-1

REV. NOTES
PER ESR 92-177
BY: LML 10-1-93
CHK'D: RJS 10-4-93
APP'D: CAT 10-07-93

A] ESR 92-177 COMPL.
SEE REV. 0-1
FILMED(WPS) 10-19-93

A-1] RE PUR 0295

ADDED REF NO.
BY: BJD 7-19-99
APP'D: DAK 7-26-99

B] RE PUR 0295 COMPL.
SEE REV. A-1
FILMED(WPS) 8-3-99

B-1] KAP 01-001639
REVISED NOTE 1,
BY: ABF 06-03-02
APP'D:

C] KAP 01-001639
COMPLETE
SEE REV. B-1,
FILMED(WPS)

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

ACCUMULATOR TANK ACC-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

101-012

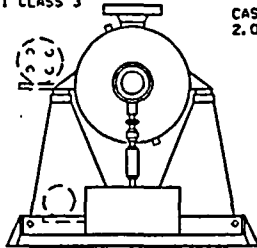
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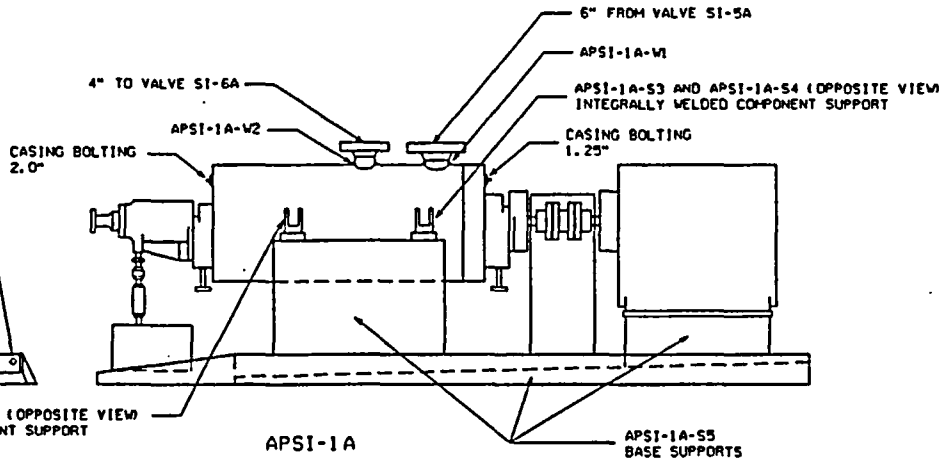
DESIGNED	APPROVED	REV.
	PHILLIP E. BUKES	8/1/93
CHECKED	PROJECT APPROVED	
DATE	DWG. NO.	REV.
ESS 4/1/93	M-1706	C
SCALE		

1021-W

ASME BOILER AND PRESSURE VESSEL
CODE CLASS XI CLASS 3



APSI-1A-S1 AND APSI-1A-S2 (OPPOSITE VIEW)
INTEGRALLY WELDED COMPONENT SUPPORT



APSI-1A
145-031

CASING BOLTING DATA (ACH PUMP)		
SIZE / DIA.	LOCM NUTS	
1/2"	2.00"	A 19
1/2"	2.25"	A 19

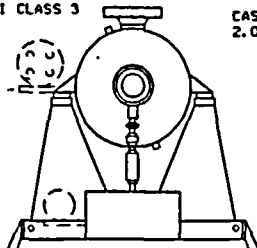
COMPONENT NOZZLE CASING WELD DATA		
P.L.	THICKNESS	MATERIAL
APSI-1A-W	MOZZLE TO CASING	ASTM A286 CL-1
APSI-1A-W2	MOZZLE TO CASING	ASTM A286 CL-1
APSI-1B-W	MOZZLE TO CASING	ASTM A286 CL-1
APSI-1B-W2	MOZZLE TO CASING	ASTM A286 CL-1

INTEGRALLY WELDED ATTACHMENT DATA		
P.L.	THICKNESS	MATERIAL
APSI-1A-S1	0.75"	A216 WC A
APSI-1A-S2	0.75"	A216 WC A
APSI-1A-S3	0.75"	A216 WC A
APSI-1A-S4	0.75"	A216 WC A
APSI-1B-S1	0.75"	A216 WC A
APSI-1B-S2	0.75"	A216 WC A
APSI-1B-S3	0.75"	A216 WC A
APSI-1B-S4	0.75"	A216 WC A

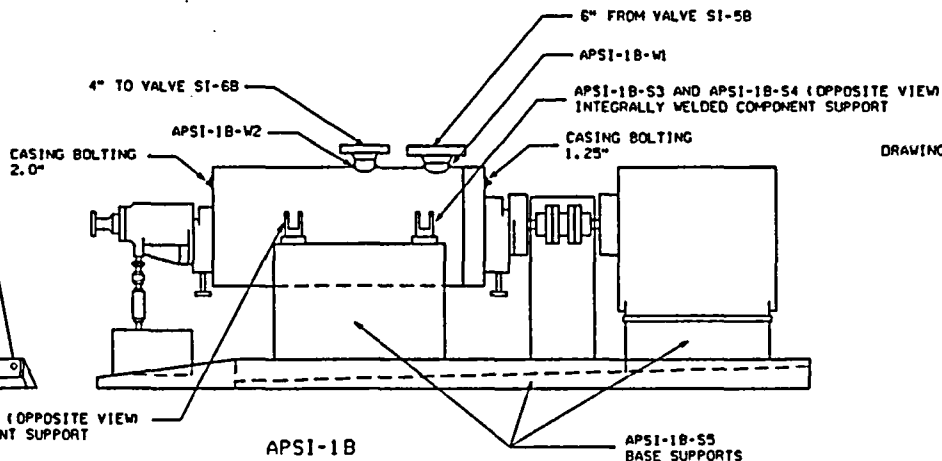
REVISION

FILMED FIRST ISSUE
BY WPS
PER ESR 92-177
APP'D: CAT 8-4-93
FILMED: (WPS) 8-17-93
0-1 RE PUR 0295
ADDED REF NO'S.
BY: BJD 7-19-99
APP'D: DAK 7-26-99
A RE PUR 0295 COMPL.
SEE REV: 0-1
FILMED: (WPS) 8-3-99
A-1 KAP 01-001639
REVISED NOTE 1,
BY: ABF 06-03-02
APP'D:
B KAP 01-001639
COMPLETE
SEE REV. A-1,
FILMED: (WPS)

ASME BOILER AND PRESSURE VESSEL
CODE CLASS XI CLASS 3



APSI-1B-S1 AND APSI-1B-S2 (OPPOSITE VIEW)
INTEGRALLY WELDED COMPONENT SUPPORT



APSI-1B
145-032

A-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL

ASME BOILER AND PRESSURE VESSEL CODE
SECTION XI CLASS 2

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SAFETY INJECTION PUMPS
APSI-1A AND APSI-1B

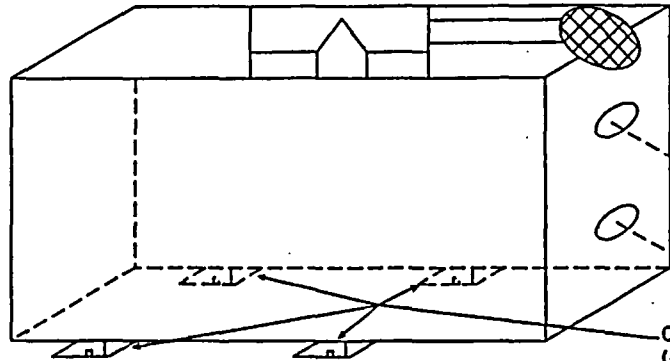
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
DATE	PHILLIP E. BUKES	7/21/93
B. TROTTER	PROJECT APPROVED	
DATE	5/12/93	
SCALE	DWG. NO.	REV.
NONE	M-1707	B

CADD

LOCATION: AUXILIARY BUILDING ELEVATION 586'

501-P

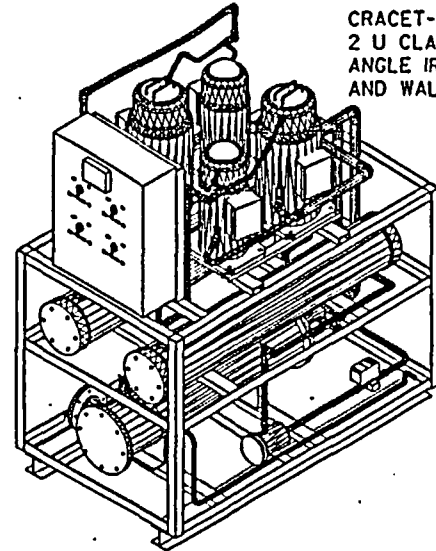


TO VALVE
HS-2203A

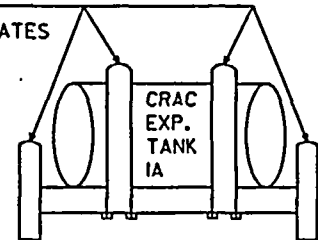
TO VALVE
HS-2204A

CRAC-IA-SIBASE SUPPORTS
(4 TOTAL)
BOLTED TO INTEGRALLY
WELDED SUPPORT PADS

CONTROL ROOM AIR CONDITIONING UNIT IA COIL
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3



CRACET-IA-SI
2 U CLAMPS WITH
ANGLE IRONS
AND WALL PLATES

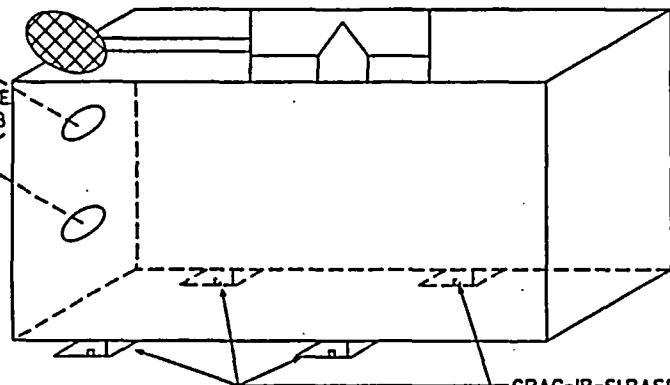


CONTROL ROOM AIR
CONDITIONING EXPANSION
TANK IA ASME BOILER AND
PRESSURE VESSEL CODE
SECTION XI CLASS 3
153-945

CONTROL ROOM AIR CONDITIONING CHILLER UNIT IA
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON CODE CLASS
1-463 145-471

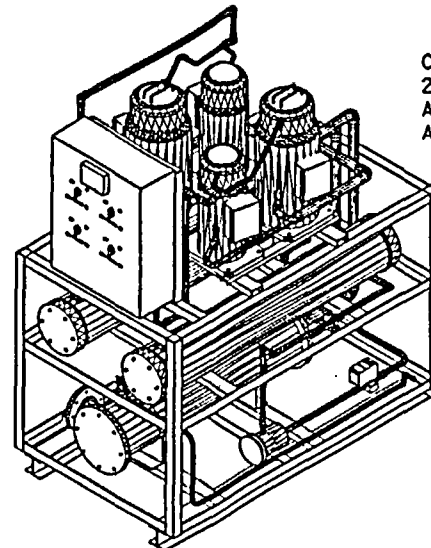
TO VALVE
HS-2203B

TO VALVE
HS-2204B

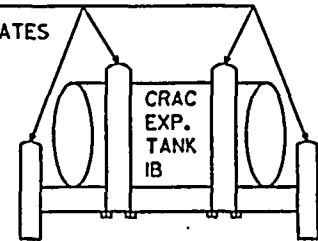


CRAC-IB-SIBASE SUPPORTS
(4 TOTAL)
BOLTED TO INTEGRALLY
WELDED SUPPORT PADS

CONTROL ROOM AIR CONDITIONING UNIT IB COIL
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3



CRACET-IB-SI
2 U CLAMPS WITH
ANGLE IRONS
AND WALL PLATES



CONTROL ROOM AIR
CONDITIONING EXPANSION
TANK IB ASME BOILER AND
PRESSURE VESSEL CODE
SECTION XI CLASS 3
153-944

CONTROL ROOM AIR CONDITIONING CHILLER UNIT IB
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON CODE CLASS
1-464 145-472

LOCATION: AUXILIARY BUILDING ELEVATION 642' ABOVE CONTROL ROOM DOOR 141

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL

REVISIONS

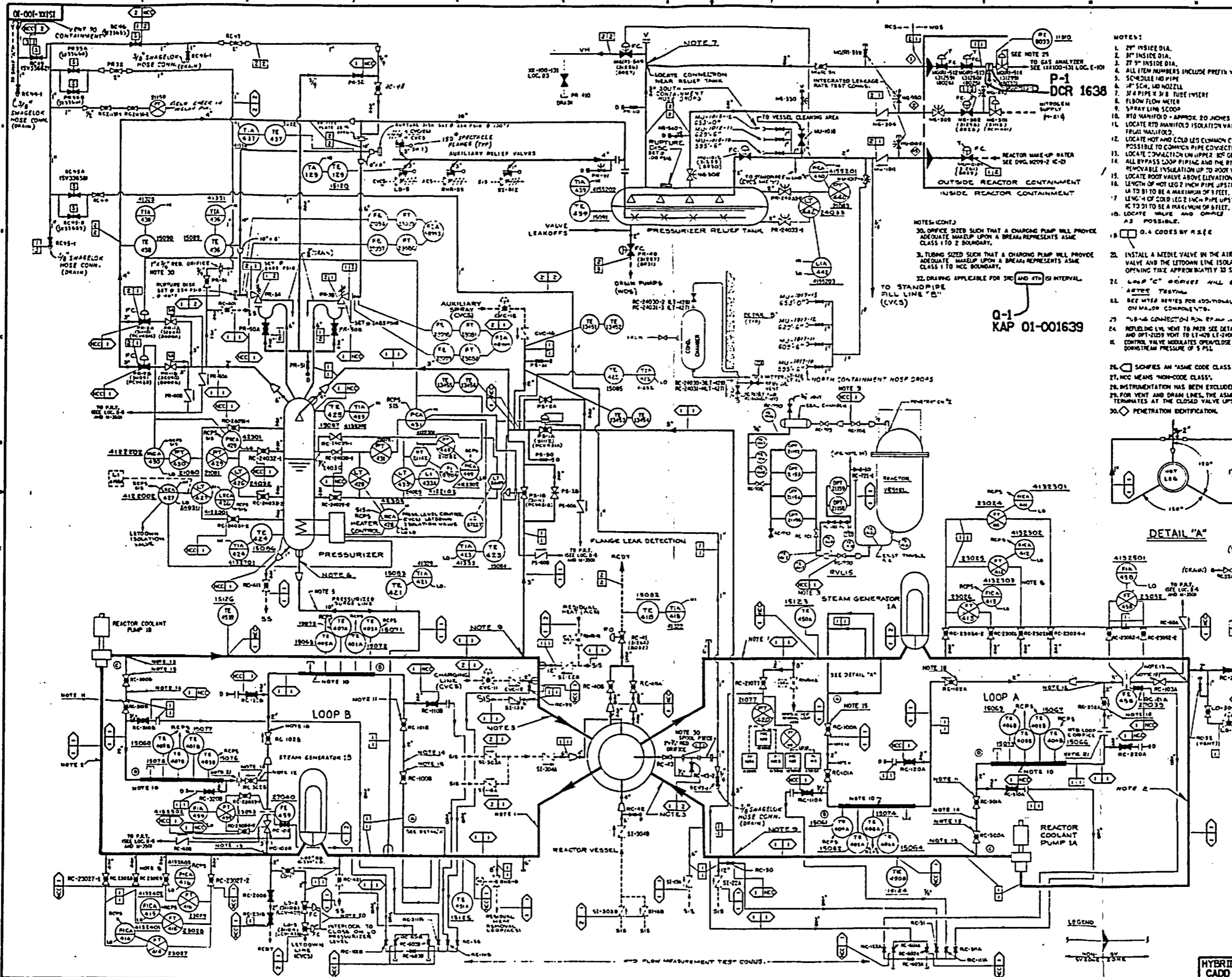
1	REVISED PER 3D SERVICE APPROVAL
2	REVISED PER 4D SERVICE APPROVAL
3	REVISED PER 5D SERVICE APPROVAL
4	REVISED PER 6D SERVICE APPROVAL
5	REVISED PER 7D SERVICE APPROVAL
6	REVISED PER 8D SERVICE APPROVAL
7	REVISED PER 9D SERVICE APPROVAL
8	REVISED PER 10D SERVICE APPROVAL
9	REVISED PER 11D SERVICE APPROVAL
10	REVISED PER 12D SERVICE APPROVAL

M-1708

CONTROL ROOM AIR CONDITIONING CHILLER
UNITS IA AND IB, CONTROL ROOM AIR
CONDITIONING EXPANSION TANK IA AND IB
AND CONTROL ROOM AIR CONDITIONING
COIL UNITS IA AND IB

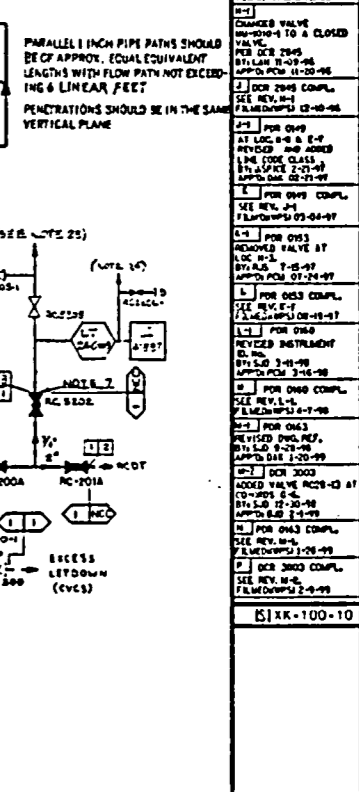
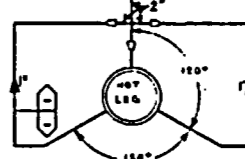
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

HYBRID
CADD



REFERENCE DRAWINGS:
 1. LEGEND X-100-05
 2. LINE LIST X-100-366

- NOTES:
- 2" INSIDE DIA.
 - 2" INSIDE DIA.
 - 2" INSIDE DIA.
 - ALL ITEM NUMBERS INCLUDE PREFIX WPSRC
 - SCHEDULE 40 PIPE
 - 1/2" SCH. 40 NOZZLE
 - 1/2" PIPE X 3/8" TUBE INSERT
 - FLOW METER
 - SPRAY LINE SCOP
 - RTD MANIFOLD - APPROX. 20 INCHES LONG
 - LOCATE RTD MANIFOLD ISOLATION VALVES APPROX. 8 INCHES FROM MANIFOLD
 - LOCATE HOT AND COLD LEG COMMON CONNECTION AS CLOSE AS POSSIBLE TO COMMON PIPE CONNECTION TO PUMP SUCTION LINE
 - LOCATE CONNECTION ON UPPER 180° OF PIPE CIRCUMFERENCE
 - ALL BY-PASS LOOP PIPE AND THE RTD MANIFOLDS SHALL HAVE REMOVABLE INSULATION UP TO ROOT VALVES
 - LOCATE ROOT VALVE ABOVE ELEVATION OF REACTOR VESSEL NOZZLES. LENGTH OF HOT LEG 2 INCH PIPE UPSTREAM OF RTD MANIFOLD IS TO BE A MAXIMUM OF 3 FEET.
 - LENGTH OF COLD LEG 2 INCH PIPE UPSTREAM OF RTD MANIFOLD IS TO BE A MAXIMUM OF 8 FEET.
 - LOCATE WIRE AND GROUND AS NEAR MANIFOLD AS POSSIBLE.
 - Q.4 CODES BY R.S.E.E
 - INSTALL A NEEDLE VALVE IN THE AIR LINE BETWEEN THE SOLENOID VALVE AND THE LETDOWN LINE ISOLATION VALVE OPERATOR, MARKING OPENING TIME APPROXIMATELY 10 SECONDS.
 - LOOP "C" ARMIES WILL BE INSTALLED IF REQUIRED
 - ARTERIAL TESTING
 - SEE INSTR SERIES FOR ADDITIONAL INSTRUMENTS ON MAIN OR COMPONENTS
 - TO BE CONNECTED FOR REPAIR OR CLASS
 - REMOVING W. VIEW TO PREP. SEE DETAIL OF LOC. C.4. OFF-2158 AND OFF-2159 VENT TO LT-48 AT 3000 PSI TO LT-1027 CONTROL VALVE MODULATES OPEN/CLOSE TO MAINTAIN DOWNSTREAM PRESSURE OF 5 PSI
 - ◇ SHOWS AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY"
 - ◇ MEANS "NON-CODE CLASS"
 - INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION
 - FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 - ◇ PENETRATION IDENTIFICATION



WISCONSIN PUBLIC SERVICE CORPORATION
 Kewaunee Nuclear Power Plant
 CANTON, WISCONSIN

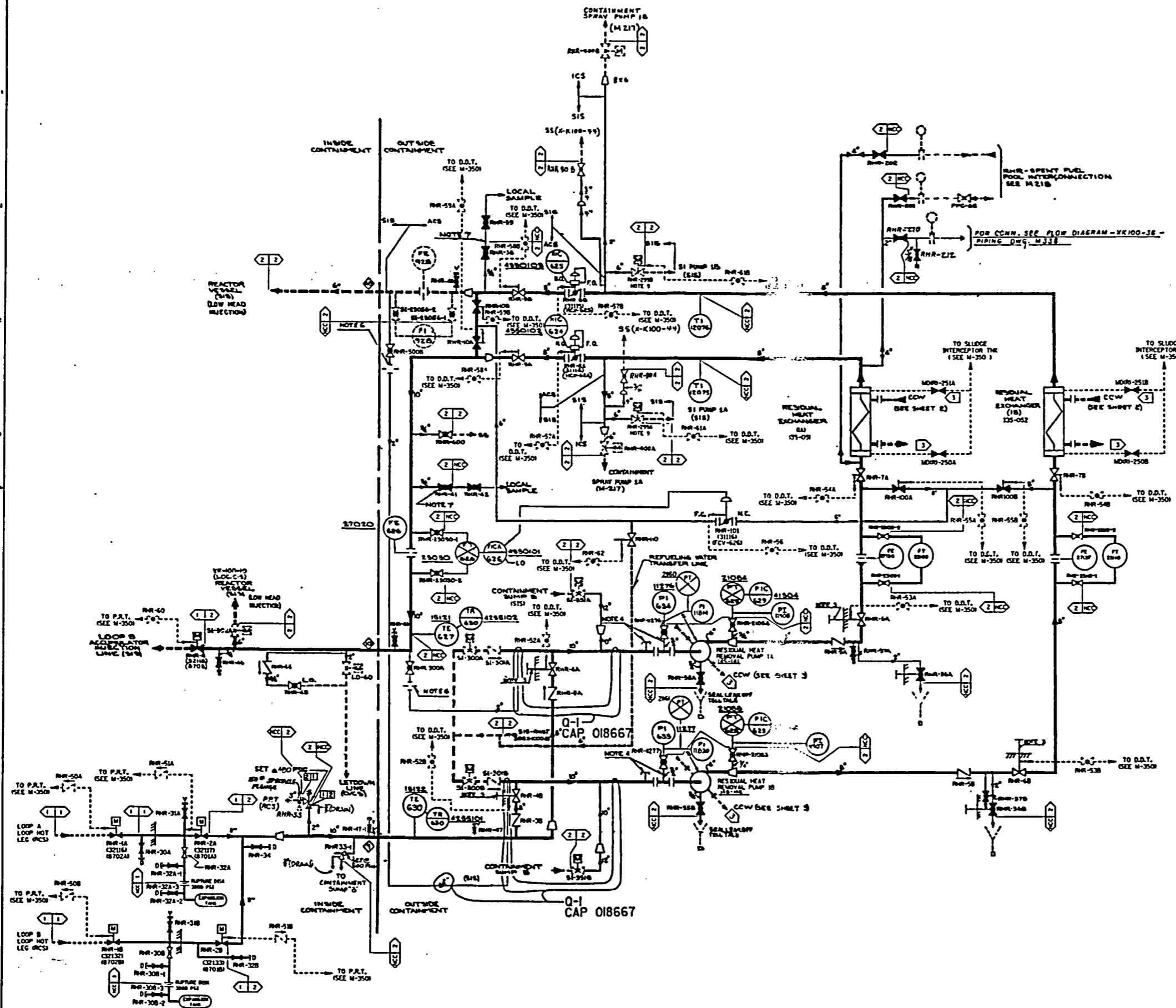
**FLOW DIAGRAM
 REACTOR COOLANT SYSTEM**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

APPROVED
C.A. TONES

HYBRID
 CADD

ISDX-100-10



REFERENCE DRAWINGS:
 1. LEGEND X-K100-48
 2. LINE LIST X-K100-371, 372 & 373

- NOTES:
 1. ALL ITCN NUMBERS INCLUDE PREFIX WPSAC.
 2. BEVEL GEAR OPERATED VALVE.
 3. TEMPORARY STRAINER IS PLACED IN THE SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.
 4. ALL PIPING IS IP, S.A.E. QUALITY ASSURANCE TYPE 1.
 5. MINIFLOW ORIFICE PROVIDED BY PUMP VENDOR.
 6. 3/8" PIPE X 3/8" TUBE INSERT.

ALL PIPING ON THIS DRAWING OUTSIDE CONTAINMENT IS IN SV ZONE

7. SEE M729 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
 8. DCR 2920 REHANCED VALVES, RHR-300A BECAME RHR-299A & RHR-300B BECAME RHR-299B.

- SYMBOLS:
 12. INDICATES AN "ASME CODE CLASS L2 OR L3 BOUNDARY".
 13. NCC MEANS "NON-CODE CLASS".
 14. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 15. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 16. PENETRATOR IDENTIFICATION.
 17. DRAWING APPLICABLE FOR 3RD AND 4TH IS INTERVAL.

REVISED:
 M-1] DCR AB 2911
 REMOVED RUPTURE
 DISK TEMPERATURE
 VALVE, ADDED
 EQUIPMENT NUMBERS
 BY: NTH 01-09-03
 APP'D: EJM 01-09-03
 N] DCR AB 2911
 COMPL. SEE REV. M-4
 FILMED/WPS 01-29-03
 M-1] KAP 01-00632
 REVISED ASME CODE
 CLASS BOUNDARY
 LEADER:
 BY: NTH 02-27-03
 APP'D: PER 02-28-03
 P] KAP 01-00632
 COMPL. SEE REV. M-1
 FILMED/WPS 03-04-03
 P-1] P. P. P. 03-009
 REVISED DRAWING
 TITLE:
 BY: NTH 06-18-03
 APP'D: EJM 08-13-03
 O] RE PLAN 03-009
 COMPL. SEE REV. P-1
 FILMED/WPS 09-02-03
 Q-1] CAP 018667
 REVISED FLOW AFTER
 VALVES RHR-500A
 AND RHR-500B
 BY: NTH 11-11-03
 APP'D: EPB 11-06-03
 R] CAP 018667 COMPL.
 SEE REVISION Q-4
 FILMED/WPS 11-18-03

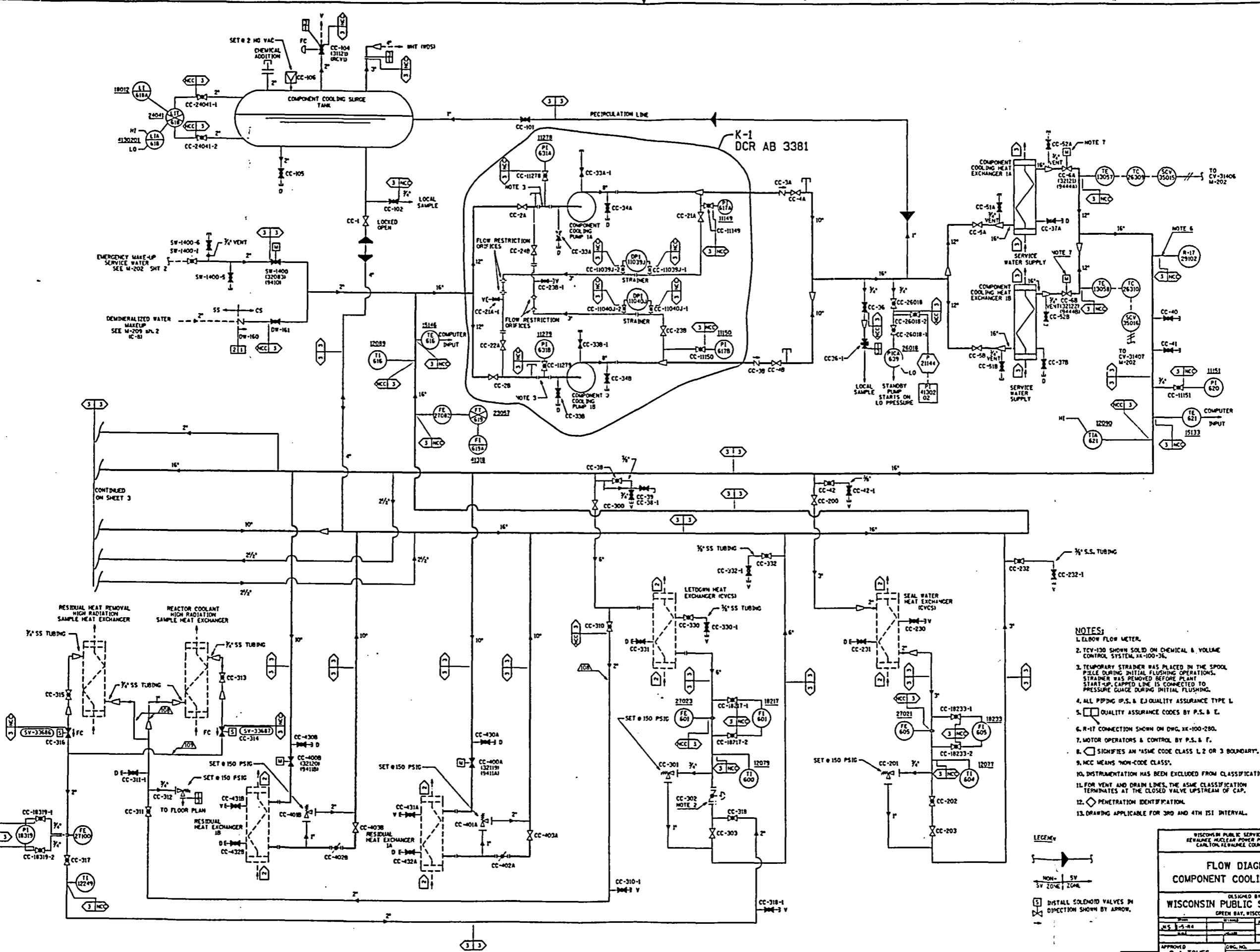
WISCONSIN PUBLIC SERVICE CORPORATION
 WISCONSIN NUCLEAR POWER PLANT
 CARLTON, WISCONSIN COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
 RESIDUAL HEAT REMOVAL SYSTEM**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

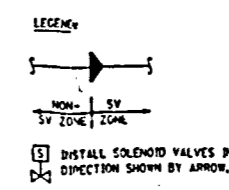
DATE	BY	REV.
LALL 06-26-93	C.A. TOWES	1
DATE	BY	REV.
DATE	BY	REV.

HYBRID CADD APPROVED: C.A. TOWES, DATE: 06-26-93, REV: 1, PROJECT: ISDX-100-18



REVISION
B
P00004 COMP. SEE REV. 0-1 APP'D C.A.T. 7/6/93 FILED WPS 7/13/93
B-1
REDRAFTED TO CADD PER ESR 92-177 DWN LHM 6-28-93 CHN'D BY 10-09-93 APP'D C.A.T. 10-2-93
C
ESR 92-177 COMP. SEE REV. 0-1 FILED WPS 10-26-93
C-1
REVISED INSTRUMENT NO. AT RE-117, REMOVED RECA-17. ADDED COMMENTS FROM WPS REVIEW MEETING OF 6-29-93. PER DCR 2172 BY DCT 8/2/94 CHN'D CC 08-04-94 APP'D TLM 12-07-94
D
DCR 2172 COMP. SEE REV. C-1 FILED WPS 10-10-93
D-1
REVISED 2" CHEMICAL ADDITION LINE ON COMP. COOLING SURGE TANK. PER DCR 2728 BY DCT 2/28/95 CHN'D DOG 2/28/95 APP'D MLS 2/28/95
E
DCR 2738 COMP. SEE REV. D-1 FILED WPS 3/17/95
E-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
F
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
F-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
G
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
G-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
H
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
H-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
I
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
I-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
J
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
J-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
K
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
K-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
L
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D
L-1
FOR D161 ADDED VALVES CC-26018-1 & CC-26018-2. BY LHM 05-14-98 APP'D

- NOTES:**
- ELBOW FLOW METER.
 - TCV-130 SHOWN SOLID ON CHEMICAL & VOLUME CONTROL SYSTEM, XI-100-36.
 - TEMPORARY STRAINER WAS PLACED IN THE SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER WAS REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.
 - ALL PIPING IS P.S. & E. QUALITY ASSURANCE TYPE L.
 - QUALITY ASSURANCE CODES BY P.S. & E.
 - R-17 CONNECTION SHOWN ON DWG. XI-100-280.
 - MOTOR OPERATORS & CONTROL BY P.S. & F.
 - ◇ SIGNIFIES AN "ASME CODE CLASS L 2 OR 3 BOUNDARY".
 - MCC MEANS "NON-CODE CLASS".
 - INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 - FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 - ◇ PENETRATION IDENTIFICATION.
 - DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.



WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT - UNIT NO. 1
 Kewaunee, Wisconsin

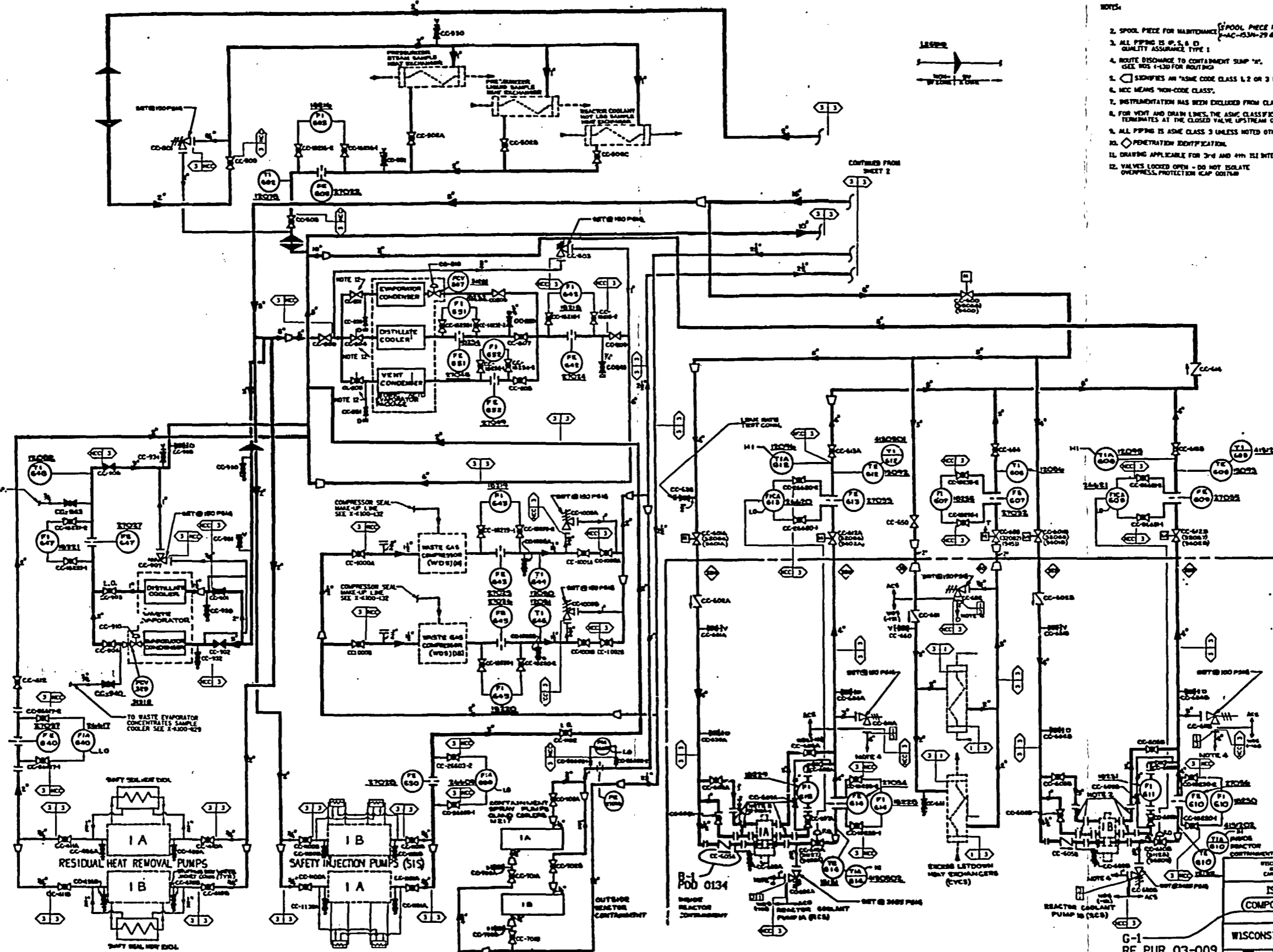
**FLOW DIAGRAM
 COMPONENT COOLING SYSTEM**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DATE	REV.
11-1-94	1

APPROVED
C. A. TOMES

CADD
 151-XX-100-19



- NOTES:
2. SPOOL PIECE FOR MAINTENANCE [SPOOL PIECE PIPING SPEC. -AC-153A-29 & 1-AC-153A-30]
 3. ALL PIPING IS 0, 5, & 10 QUALITY ASSURANCE TYPE 1
 4. ROUTE DISCHARGE TO CONTAINMENT SLUMP "A". (SEE WIS 1-130 FOR ROUTING)
 5. \square SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
 6. MCC MEANS "NON-CODE CLASS".
 7. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 8. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 9. ALL PIPING IS ASME CLASS 3 UNLESS NOTED OTHERWISE.
 10. \square PENETRATION IDENTIFICATION.
 11. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
 12. VALVES LOCKED OPEN - DO NOT ISOLATE OVERPRESS. PROTECTION CAP 60174B

REVISION	DESCRIPTION
0-1	REDRAFTED TO CADD PER ESA 22-177
	DATE: 05-09-83
	CHKD BY: 05-30-83
	APPROV. BY: 05-29-83
A-1	REVISION 02-177 COMPL. FILED W/PS 02-177
A-2	REVISED VALVES TO OPEN AT E-3. PER PDD 009
B-1	BY: 05-08-84
	CHKD BY: 05-09-84
	APPROV. BY: 05-09-84
B-2	PDD 009 COMPL. FILED W/PS 4-5-84
B-3	REVISED P&ID FROM CC-408 TO CC-408 AT 03-08-84. PER PDD 014
	DATE: 03-08-84
	CHKD BY: 03-08-84
	APPROV. BY: 03-08-84
C-1	PDD 034 COMPL. FILED W/PS 3/2/85
C-2	LAP 0-00639
C-3	REVISED NOTE 12. BY: 08-08-82
	CHKD BY: 08-08-82
	APPROV. BY: 08-08-82
D-1	LAP 0-00635
D-2	COMPL. FILED W/PS 08-27-82
D-3	FILED W/PS 08-27-82
E-1	CAP 00174B
E-2	EXCEED NOTE 12. BY: 10-25-82
	CHKD BY: 10-25-82
	APPROV. BY: 10-25-82
F-1	CAP 00174B
F-2	COMPL. FILED W/PS 03-11-83
F-3	PDD 03-018
F-4	ADDED MECH. SEAL. REAS. EXHA. BY: 04/16/83
	APPROV. JMS 04/21/83
G-1	PDD 03-018 COMPL. FILED W/PS 04/23/83
G-2	RE PUR 03-009
G-3	REVISED DRAWING TITLE. BY: 10-18-83
	APPROV. T.A. 02-29-83
H-1	RE PUR 03-009
H-2	COMPL. FILED W/PS 09-02-83

ISDX-100-20

WISCONSIN PUBLIC SERVICE CORPORATION
REGULATED NUCLEAR POWER PLANT
CALVERT CLIFFS, COUNTY, WISCONSIN

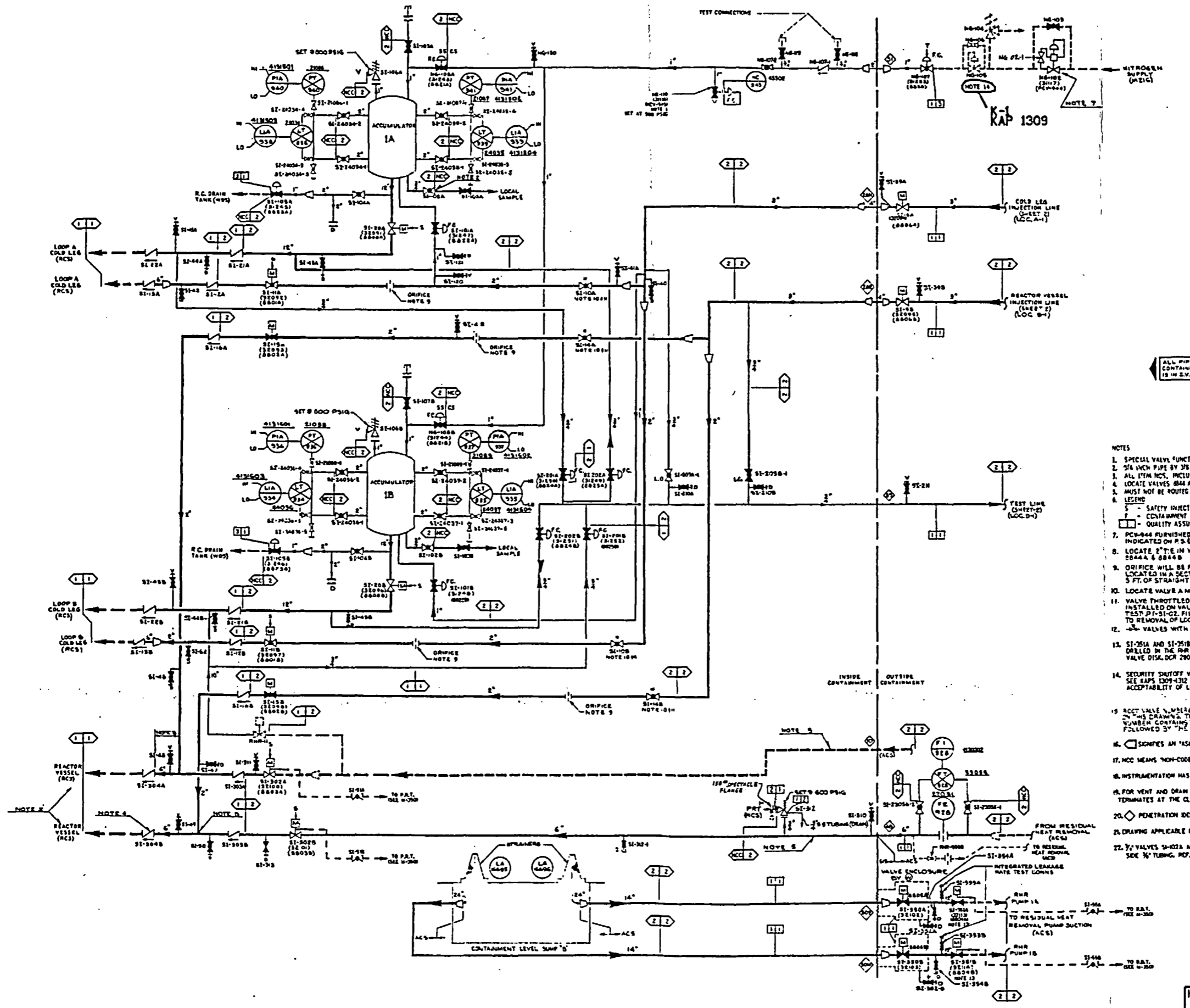
ISI FLOW DIAGRAM COMPONENT COOLING SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DATE: 11-24-77	BY: [Signature]	CHKD: [Signature]	APPROV: [Signature]
DATE: [Blank]	BY: [Blank]	CHKD: [Blank]	APPROV: [Blank]
DATE: [Blank]	BY: [Blank]	CHKD: [Blank]	APPROV: [Blank]
DATE: [Blank]	BY: [Blank]	CHKD: [Blank]	APPROV: [Blank]

HYBRID CADD

ISDX-100-20



ALL PIPING ON THIS DRAWING OUTSIDE CONTAINMENT EXCEPT HYDROGEN SUPPLY IS IN S.V. SCHEM.

REFERENCE DRAWINGS
 1. LISTED IN 82-001-10048
 2. LINE LIST 82-001-10048

NOTES

1. SPECIAL VALVE FUNCTIONS AS BOTH ISOLATION AND RELIEF VALVE.
2. 2 1/2 INCH PIPE BY 3/8 TUBE INSERT.
3. ALL ITEM NOS. INCLUDE PREFIX WPS5L.
4. LOCATE VALVES 844A & B NEAR REACTOR VESSEL NOZZLES.
5. MUST NOT BE ROUTED THROUGH REACTOR LOOP COMPARTMENTS.
6. LEGEND:
 S - SAFETY INJECTION ACTUATION SIGNAL
 Y - CONTAINMENT ISOLATION TRIP SIGNAL
 Q - QUALITY ASSURANCE CODES BY P.S. & I.
7. PCW-844 FURNISHED BY WESTINGHOUSE BUT INDICATED ON P.S. & I. DWG. NO. 44-216.
8. LOCATE 8" TIE IN WITHIN 25'-0" OF VALVES 844A & 844B.
9. ORIFICE WILL BE FIELD FABRICATED AND SHOULD BE LOCATED IN A SECTION OF STRAIGHT PIPE WITH APPROX. 3 FT. OF STRAIGHT PIPE DOWNSTREAM OF ORIFICE.
10. LOCATE VALVE A MINIMUM OF 10 FT. UPSTREAM OF ORIFICE.
11. VALVE THROTTLED TO EXCEED FLOW SPEC. LOCKING DEVICE INSTALLED ON VALVE STEM, CONSULT PRE-OPERATIONAL TESTS P1-51-02, P1B & PERFORM SAFETY REVIEW PRIOR TO REMOVAL OF LOCKING DEVICE.
12. VALVES WITH ASTERISK LOCKED OPEN.
13. SI-251A AND SI-251B HAVE A RELIEF HOLE DRILLED IN THE IN PUMP SIDE OF THE VALVE DISK, DCR 2904.
14. SECURITY SHUTOFF VALVE LOCKED OPEN. SEE KAPS 1309-432 FOR DETAIL ON ACCEPTABILITY OF LOCKING OPEN VALVES.
15. ROCKET VALVE NUMBER WILL NOT BE SHOWN IN THIS DRAWING. THE OPERATIONAL NUMBER CONTAINING THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT ID NUMBER.
16. SIGNED AS AN ASME CODE CLASS 2 OR 3 BOUNDARY.
17. MCC MEANS 'NON-CODE CLASS'.
18. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
19. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
20. PENETRATION IDENTIFICATION.
21. DRAWING APPLICABLE FOR 3RD AND 4TH TEST INTERVAL.
22. 7/8" VALVES SI-202A AND SI-202B DOWNSTREAM SIDE 3/8" TUBING. REF. NOTES 2 AND 16.

REVISIONS
 B) PDB 0053 COMP. SEE REV. 44. FLWDN WPS 09-02-93
 C) PDB 0004 COMP. SEE REV. 0-1. APPROX. CAT 1-4-93. FLWDN WPS 7-43-93
 C-1) REDRAFTED TO CAD PER ESR 02-27. DWG. LBL. 06-09-93. CHG. DPT. 08-30-93. APPROX. CAT 09-28-93
 D) ESR 02-177 COMP. SEE REV. C-1. FLWDN WPS 10-12-93
 D-1) REMOVED NOTES 13 AND 14. ADDED VALVES AND CONT. AT CD-OR 0-3 AND 0-4.
 PER PDB 0137. BY: DDC. ON: 12-79. CHG. DPT. 06-12-95. APPROX. CAT 06-12-95. APPROX. RHM 07-11-95
 D-2) ADDED NOTE 15. PER DCR 2904. BY: BCT. 6/25/95. CHG. DPT. 7/14/95. APPROX. RHM 7/13/95
 E) PDB 0137 COMP. SEE REV. 0-2. FLWDN WPS 7/18/95
 F) DCR 2904 COMP. SEE REV. 0-2. FLWDN WPS 7/23/95
 G) DCR 2904 REMOVED CHECK VALVES SI-202A & B & CLOSED VALVE SI-202C. BY: LBL. 3-23-97. APPROX. RHM 05-30-97
 H) DCR 2904 COMP. SEE REV. 1-1. FLWDN WPS 08-47-97
 C-1) PDB 0153 REMOVED FLOW INJECTION LANCES AT ORIF. CD-OR 0-3 & 4. BY: LBL. 1-11-97. APPROX. RHM 07-23-97
 H) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 07-23-97
 I) PDB 0153 REVISED ASME CODE REQUIREMENTS. L-4 & 5 & 6 ADDED. BY: LBL. 8-8-98. APPROX. RHM 8-24-98
 J) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 6-16-98
 K) PDB 0153 REVISED PIPE TAP-UP LOCATION AT CD-OR 0-3 & 4. INSTRUMENT LAMP LEVEL LOCATION. BY: LBL. 1-23-99. APPROX. RHM 2-3-99
 L) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 M) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 N) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 O) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 P) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 Q) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 R) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 S) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 T) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 U) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 V) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 W) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 X) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 Y) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99
 Z) PDB 0153 COMP. SEE REV. 0-1. FLWDN WPS 2-16-99

KAP 01-001639

WISCONSIN PUBLIC SERVICE CORPORATION
 KEWAUNEE NUCLEAR POWER PLANT
 CARLTON, KEWAUNEE COUNTY, WISCONSIN

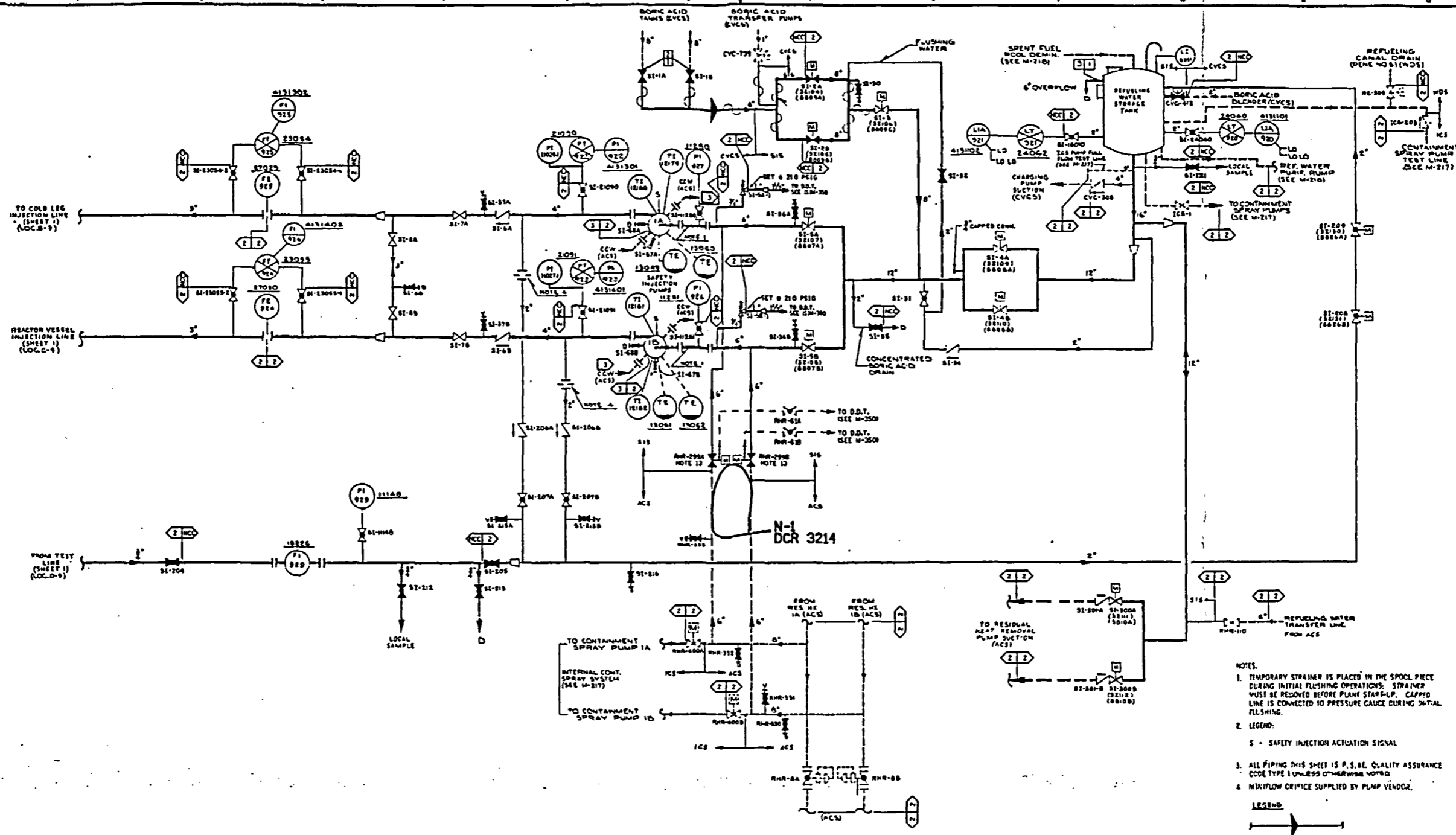
ISI FLOW DIAGRAM
 SAFETY INJECTION SYSTEM

DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 CENTER ST. WISCONSIN

NO.	REV.	DATE	BY
1	1	08-30-93	...
2	1	09-28-93	...
3	1	10-12-93	...
4	1	06-12-95	...
5	1	07-13-95	...
6	1	07-18-95	...
7	1	07-23-95	...
8	1	08-47-97	...
9	1	07-23-97	...
10	1	08-24-98	...
11	1	02-16-99	...
12	1	02-16-99	...
13	1	02-16-99	...
14	1	02-16-99	...
15	1	02-16-99	...
16	1	02-16-99	...
17	1	02-16-99	...
18	1	02-16-99	...
19	1	02-16-99	...
20	1	02-16-99	...
21	1	02-16-99	...
22	1	02-16-99	...

HYBRID
 CADD

APPROVED
 C.A. TONES
 15DX-100-28
 REV. M



- REVISION
- 1-1] DCR 2920 ADDED NOTE 13. BY: S.D. 9-23-98. APPROX. 10-25-98. INFO TRANSFERRED FROM FIELD BY NPS PER DCR 2920. BY: S.D. 11-11-98. APPROX. 11-10-98.
 - 2-1] DCR 2920 COMPL. SEE REV. 1-1. FILE: MDP33 11-17-98.
 - 3-1] DCR 2922 ADDED RELIEF VALVES BY: JPS 05-24-00. APPROX. 06-15-00.
 - 4-1] DCR 2922 COMPL. SEE REV. 1-1. FILE: MDP33 06-10-00.
 - 5-1] DCR 3204 REMOVED INTERLOCKS BY: JPS 02-09-00. APPROX. 02-23-01. FILE: MDP33 07-07-01.
 - 6-1] DCR 3214 COMPL. SEE REV. 1-1. FILE: MDP33 07-07-01.
 - 7-1] KAP 01-00639 REVISED NOTE 12. BY: SAJ 08-09-02. APPROX. 08-14-02. O.K. 01-001639 COMP. SEE REV. 1-1. FILE: MDP33 08-27-02.
 - 8-1] REVISED SI-1A & SI-3 TO CLOSED AND SI-4A & SI-10 TO OPEN PER DCR 2786 BY: BCT 5/1/95. CHD: DDC 5/1/95. APPROX. 5/3/95.
 - 9-1] DCR 2786 COMPL. SEE REV. 1-1. FILE: MDP33 5/1/95.
 - 10-1] ADDED CONT. AND VALVES RHR-61A & RHR-61B. PER P03 037 BY: DDC 06-13-95. CHD: DDC 06-13-95. APPROX. 7/8/95.
 - 11-1] P03 037 COMPL. SEE REV. 1-1. FILE: MDP33 7/8/95.
 - 12-1] DCR 2786-2/3 REMOVED AND REVISED CODE CLASS INDICATIONS. 13 TO NCC BY: LAM 08-01-96. APPROX. 12-18-96.
 - 13-1] DCR 2786-2 REMOVE SAL SIGNALS AT SI-2A & B. REMOVE S SIGNAL AT SI-3A. REMOVE I SIGNAL AT SI-4A & B. CHANGED VLS SI-5 TO OPEN BY: BCT 5/10/96. APPROX. 07-02-96.
 - 14-1] INFO TRANSFERRED FROM FIELD BY NPS PER DCR 2786-2 BY: LAM 02-06-96. APPROX. 02-02-97.
 - 15-1] DCR 2786-2 COMPL. SEE REV. 1-1. FILE: MDP33 02-29-97.
 - 16-1] DCR 2786-2/3 COMPL. SEE REV. 1-1. FILE: MDP33 02-29-97.
 - 17-1] DCR 2895 ADDED PRESSURE INDICATORS RHR-61A & RHR-61B. BY: S.D. 5-9-97. APPROX. 06-02-97.
 - 18-1] DCR 2895 COMPL. SEE REV. 1-1. FILE: MDP33 06-02-97.
 - 19-1] DCR 2786-3 CHANGED OA BOUNDARIES. BY: S.D. 11-11-97. APPROX. 11-18-97.
 - 20-1] DCR 2786-3 COMPL. SEE REV. 1-1. FILE: MDP33 2-10-98.

NOTES:

1. TEMPORARY STRAINER IS PLACED IN THE SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.
2. LEGEND:
 - S - SAFETY INJECTION ACTIVATION SIGNAL
3. ALL PIPING THIS SHEET IS P.S.B.E. QUALITY ASSURANCE CODE TYPE 1 UNLESS OTHERWISE NOTED.
4. MINIFLOW CRIFICE SUPPLIED BY PUMP VENDOR.

LEGEND

NON-CODE CLASS

SEE M268 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.

127 AND 128 NUMBERS WILL NOT BE SHOWN ON THE DRAWING. THE OPERATION AND MAINTENANCE CONTROLS THE SYSTEM IS SHOWN FOLLOWED BY THE INSTRUMENT NUMBER (E.G. SI-307).

1. SHOWS AN "ASME CODE CLASS L2 OR 3 BOUNDARY".
2. NCC MEANS NON-CODE CLASS.
3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
5. PENETRATION IDENTIFICATION.
6. DRAWING APPLICABLE FOR 3RD (AND 4TH) INTERVAL.
7. DCR 2920 RENUMBERED VALVES. RHR-300A BECAME RHR-299A & RHR-300B BECAME RHR-299B.

P-1
KAP 01-001639

WISCONSIN PUBLIC SERVICE CORPORATION
OCONEE NUCLEAR POWER PLANT
CARLTON, WISCONSIN COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
SAFETY INJECTION SYSTEM**

DEVELOPED BY
WISCONSIN PUBLIC SERVICE CORP.
OCONEE, WISCONSIN

DATE	BY	APP'D
11/10/98	SAJ	ACB
02/06/96	SAJ	ACB
07/07/01	SAJ	ACB
08/27/02	SAJ	ACB

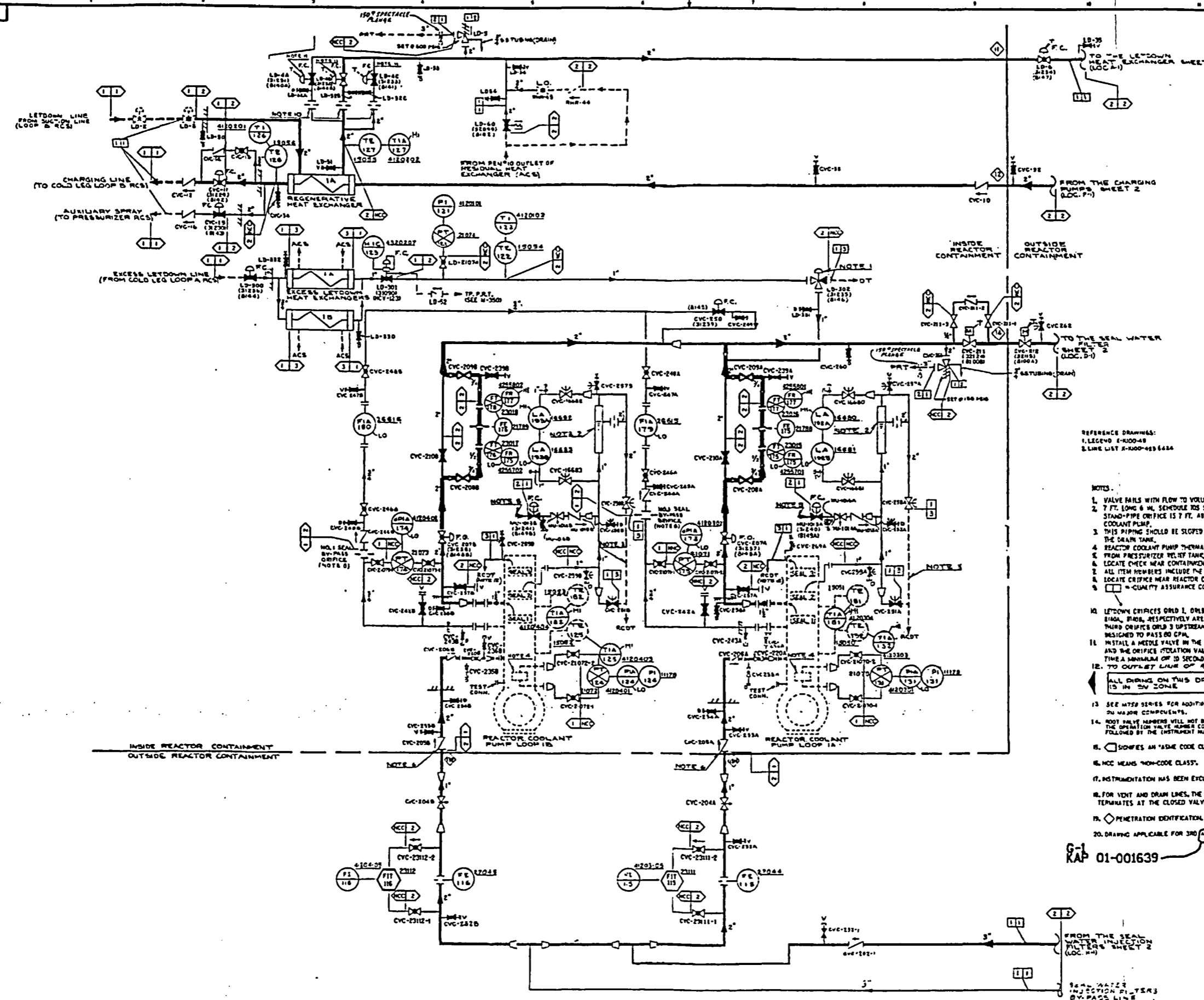
APPROVED
C.A. TONES

DATE
15DCX-100-29

REV.
Q

HYBRID
CADD

50-001-22151



REVISIONS
U-1 REDRAFTED TO CADD PER ESR 20-17 DOWNL. 08-09-93 C/D/E/B/T 0-1-93 APP'D CAT ID-12-93
A ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
B ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
C ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
D ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
E ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
F ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
G ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
H ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
I ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
J ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
K ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
L ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
M ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
N ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
O ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
P ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
Q ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
R ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
S ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
T ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
U ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
V ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
W ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
X ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
Y ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93
Z ESR 20-17 COMPL. SEE REV. B-4 FILED/09/30/93

REFERENCE DRAWINGS:
1. LEGEND E-K100-48
2. LINE LIST E-K100-48/48

- 1. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK.
 - 2. 7 FT. LONG 8 IN. SCHEDULE 80S STAND PIPE BOTH ENDS CAPPED. THE STAND PIPE ORIFICE IS 7 FT. ABOVE THE CONNECTION TO THE REACTOR COOLANT PUMP.
 - 3. THIS PIPING SHOULD BE SLOPED DOWN HILL THROUGHOUT THE RUN TO THE DRAIN TANK.
 - 4. REACTOR COOLANT PUMP THERMAL SAFETY.
 - 5. FROM PRESSURIZER RELIEF TANK, REACTOR MAKEUP WATERLINE.
 - 6. LOCATE CHECK WEAR CONTAINMENT PENETRATION.
 - 7. ALL ITEM NUMBERS INCLUDE THE PREFIX APPLICABLE TO THE EQUIPMENT.
 - 8. LOCATE CHECK WEAR REACTOR COOLANT PUMP.
 - 9. □ = QUANTITY ASSURANCE CODES BY P.S. & E.
10. LETDOWN ORIFICES ORIF. 1, ORIF. 2 UPSTREAM OF ISOLATION VALVES SHAW, SHAW, RESPECTIVELY ARE DESIGNED TO PASS 40 GPM AND THE THIRD ORIFICE ORIF. 3 UPSTREAM OF ISOLATION VALVE SHAW IS DESIGNED TO PASS 80 GPM.
11. INSTALL A NEEDLE VALVE IN THE AIR LINE BETWEEN THE SOLENOID VALVE AND THE ORIFICE ISOLATION VALVE OPERATOR, MAKING THE OPENING TIME A MINIMUM OF 10 SECONDS.
12. TO OUTLET LINE OF RCOT (E-K100-48).
13. SEE MTS SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
14. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATOR VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (E.G., S-110077).
15. □ SHOWS AN ASME CODE CLASS 1, 2 OR 3 BOUNDARY.
16. MCC MEANS NON-CODE CLASS.
17. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
18. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
19. ◇ PENETRATION IDENTIFICATION.
20. DRAWING APPLICABLE FOR 3RD AND 4TH (SI) INTERVAL.

G-RAP 01-001639

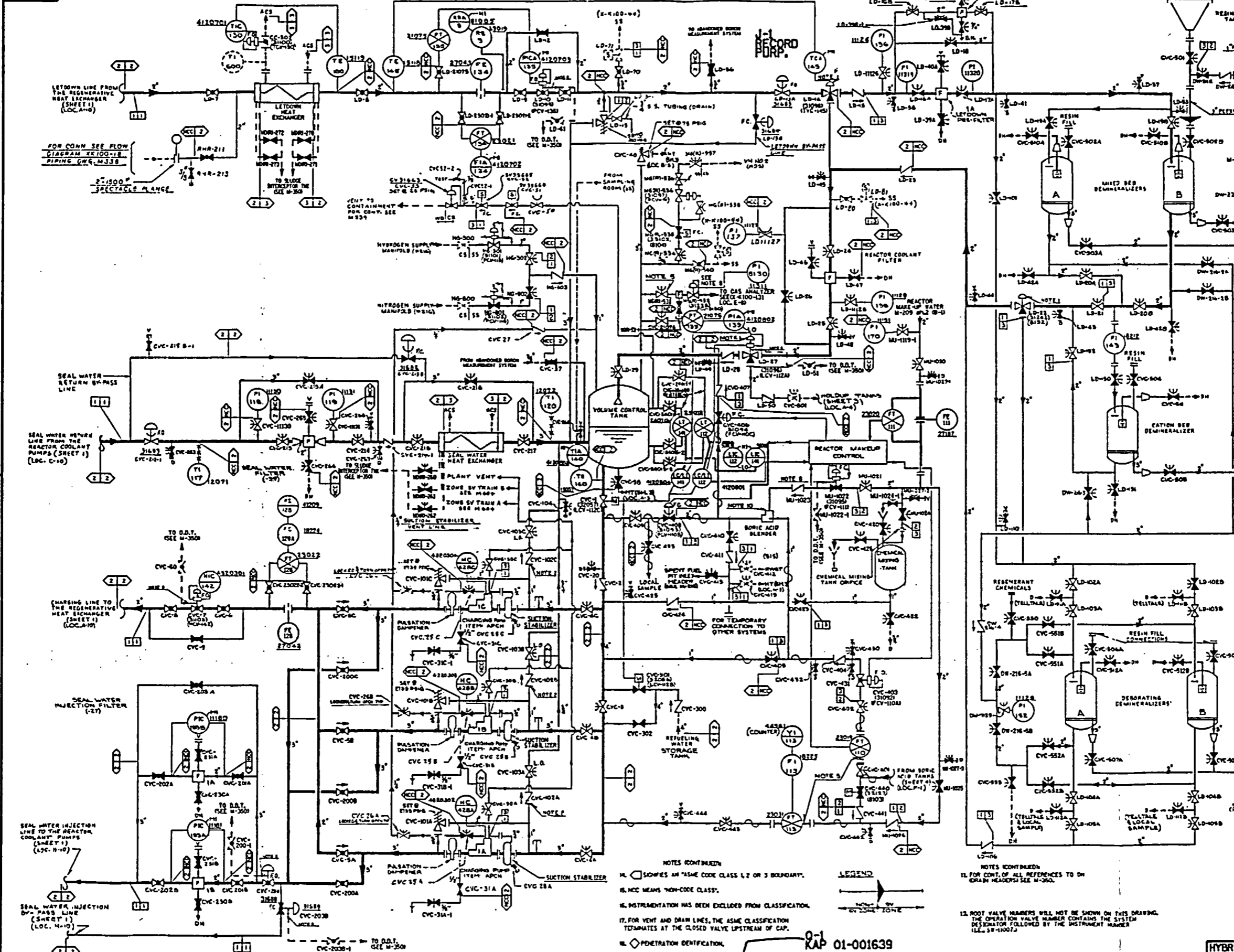
WISCONSIN PUBLIC SERVICE CORPORATION
LEWIS & CLARK NUCLEAR POWER PLANT
CAPLTON, KEOSAUQUO COUNTY, WISCONSIN

ISI FLOW DIAGRAM AUXILIARY COOLANT SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DATE	06-25-93	APP'D	
DWG. NO.		REV.	
APP'D		REV.	
DATE		REV.	

HYBRID CADD APPROVED C.A. TOMES DWG. NO. ISDX-100-35 REV. H



REVISION

1	DCR 4838
2	ADD FILTER DRUM
3	ADD FILTER DRUM
4	ADD FILTER DRUM
5	ADD FILTER DRUM
6	ADD FILTER DRUM
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100	ADD FILTER DRUM

NOTES:

1. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK.
2. SPECIAL SPRING LOADED CHECK VALVE.
3. ELECTROMAGNETIC - LOCATE METER IN VERTICAL PIPE RUN & DRAW FROM STUFFING BOX LEAKOFF.
4. 3/4" NOMINAL PIPE O.D. 3/4" TUBING INSERT.
5. ALL ITEM NUMBERS INCLUDE THE PIPE HUSKS.
6. INSTALL SOLENOID VALVES IN DIRECTION OF FLOW.
7. CONTROL VALVE MODERATES OPEN/CLOSE TO MAINTAIN DOWNSTREAM PRESSURE OF 5 PSI.

NOTES (CONTINUED):

8. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK.
9. SPECIAL SPRING LOADED CHECK VALVE.
10. ELECTROMAGNETIC - LOCATE METER IN VERTICAL PIPE RUN & DRAW FROM STUFFING BOX LEAKOFF.
11. 3/4" NOMINAL PIPE O.D. 3/4" TUBING INSERT.
12. ALL ITEM NUMBERS INCLUDE THE PIPE HUSKS.
13. INSTALL SOLENOID VALVES IN DIRECTION OF FLOW.
14. CONTROL VALVE MODERATES OPEN/CLOSE TO MAINTAIN DOWNSTREAM PRESSURE OF 5 PSI.

NOTES (CONTINUED):

15. SQUARE SYMBOL SHOWS AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
16. HCC MEANS "NON-CODE CLASS".
17. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
18. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
19. DIAMETER IDENTIFICATION.
20. DRAWING APPLICABLE FOR 300 AND 475 SI INTERVAL.

LEGEND

RA-01-001639

WISCONSIN PUBLIC SERVICE CORPORATION
STRAINS NUCLEAR POWER PLANT
CANTON, WAUKESHA COUNTY, WISCONSIN

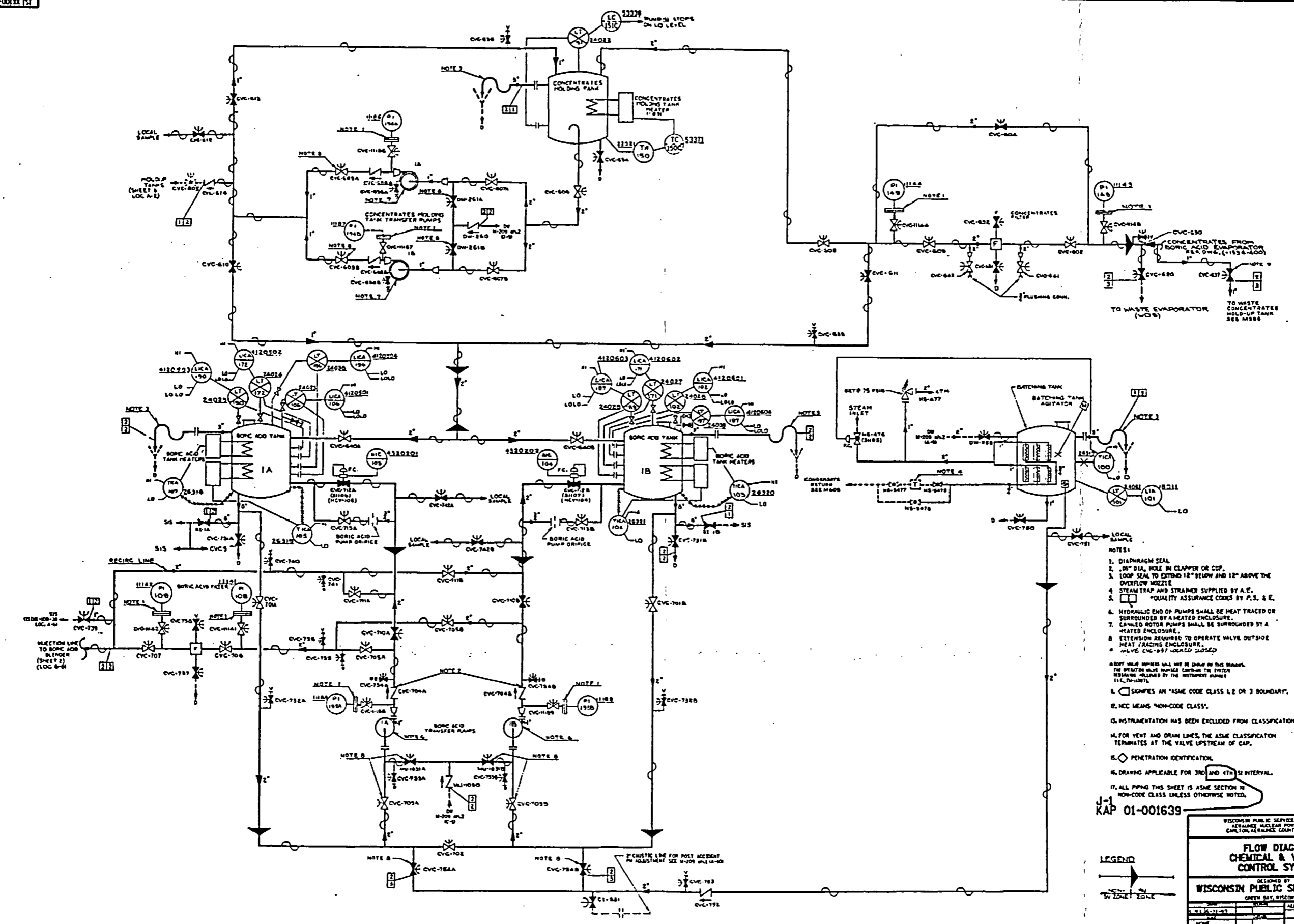
ISI FLOW DIAGRAM
CHEMICAL & VOLUME CONTROL SYS.

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

OPEN BAY, WISCONSIN

DATE	REV.
11-21-73	1
11-21-73	2
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11-21-73	4
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11-21-73	99
11-21-73	100

HYBRID CADD



REVISION

0-1 REDRAFTED TO CADD PER ESR 92-117 DWS LTR 06-09-93 CMT'D BPT 02-02-93 APPROV CAT 0-1-93

1 ESR 92-117 COMPL. SEE REV. 0-1 FILED W/PS 10-19-93

2 REVISED CODE CLASS BOUNDRIES PER ESR 92-117 BY DGE 8-6-93 CMT'D RLS 04-17-93 APPROV CAT 2-9-93

3 ESR 92-117 COMPL. SEE REV. 2-1 FILED W/PS 8-30-93

4 THE PUR 0254 CVC REVISED TO PERFECT CLASSIFICATION BOUNDARY BASIS DOCUMENT BY LAM 02-08-93 CMT'D RLS 12-08-93 APPROV CAT 2-08-93

5 THE PUR 0254 COMPL. SEE REV. 5-1 FILED W/PS 12-08-93

6 ADDED VALVES FOR BORIC ACID TANKS 1A AND 1B. PER P00 0113 BY DGE 04-18-94 CMT'D RLS 04-12-94 APPROV P00 04-18-94

7 P00 0113 COMPL. SEE REV. 7-1 FILED W/PS 09-02-94

8 P00 0113 WAS INC. LOC. A-4.5. BY DGE 6/2/95 APPROV P00 6/2/95

9 P00 0113 COMPL. SEE REV. 9-1 FILED W/PS 6/15/95

10 REMOVED CODE CLASS INDICATIONS. BY LAM 08-01-96 APPROV CAT 12-18-96

11 DCR 2786-1/3 COMPL. SEE REV. 11-1 FILED W/PS 01-21-97

12 DCR 2786 CLOSED VALVE 51-14 & 11. BY LAM 3-11-97 APPROV CAT 07-18-97

13 DCR 2786 COMPL. SEE REV. 13-1 FILED W/PS 04-29-97

14 DCR 2786-3 CHANGED GA BOUNDARIES TO NORMAL OPERATING POSITIONS OF CVC 504A, 5117A, & 708A & 718B PER DCR 2786-3. REMOVED INSTRUMENTATION ON PLANT THROUGHOUT DRAWING PER RECORD BY LAM 11-11-97

15 BY LAM 11-11-97 APPROV LAM 11-11-97

16 DCR 2786-3 COMPL. SEE REV. 16-1 FILED W/PS 2-18-98

17 P00 0113 REVISED VALVE CVC-774. BY LAM 4-3-98 APPROV LAM 4-3-98

18 P00 0113 COMPL. SEE REV. 18-1 FILED W/PS 6-23-98

19 P00 0113 REVISED VALVE CVC-774. BY LAM 08-13-97 APPROV LAM 08-13-97

20 P00 0113 COMPL. SEE REV. 20-1 FILED W/PS 08-27-98

- NOTES:
1. DIAPHRAGM SEAL
 2. 1/8" DIA. HOLE IN CLAPPER OR COP.
 3. LOOP SEAL TO EXTEND 12" BELOW AND 12" ABOVE THE OVERFLOW NOZZLE.
 4. STEAM TRAP AND STRAINER SUPPLIED BY A.E.
 5. *QUALITY ASSURANCE CODES BY P.S. & E.
 6. HYDRAULIC END OF PUMPS SHALL BE HEAT TRACED OR SURROUNDED BY A HEATED ENCLOSURE.
 7. CANNED ROTOR PUMPS SHALL BE SURROUNDED BY A HEATED ENCLOSURE.
 8. EXTENSION REQUIRED TO OPERATE VALVE OUTSIDE HEATED ENCLOSURE.
 9. VALVE CVC-787 KEPT CLOSED.
- NOTE 1: HOLE IN VALVE UPPER END MAY BE DRILL IN THE BRASS. THE BRASS VALVE HANDLE CONTAINS THE SYSTEM INSTRUMENTATION FOLLOWED BY THE INSTRUMENT PUMPS (11, 14-1187).
1. CIRCLES AN "ASME CODE CLASS L2 OR 3 BOUNDARY".
2. HCC MEANS "NON-CODE CLASS".
3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE VALVE UPSTREAM OF CAP.
5. DIAMOND IDENTIFICATION.
6. DRAWING APPLICABLE FOR 3RD AND 4TH SI INTERVAL.
7. ALL PIPING THIS SHEET IS ASME SECTION II NON-CODE CLASS UNLESS OTHERWISE NOTED.

J-1
KAP 01-001639

LEGEND

SW ZONE

WISCONSIN PUBLIC SERVICE CORPORATION
ATLANTIC NUCLEAR POWER PLANT
CANTON, WAUKESHA COUNTY, WISCONSIN

**FLOW DIAGRAM
CHEMICAL & VOLUME
CONTROL SYSTEM**

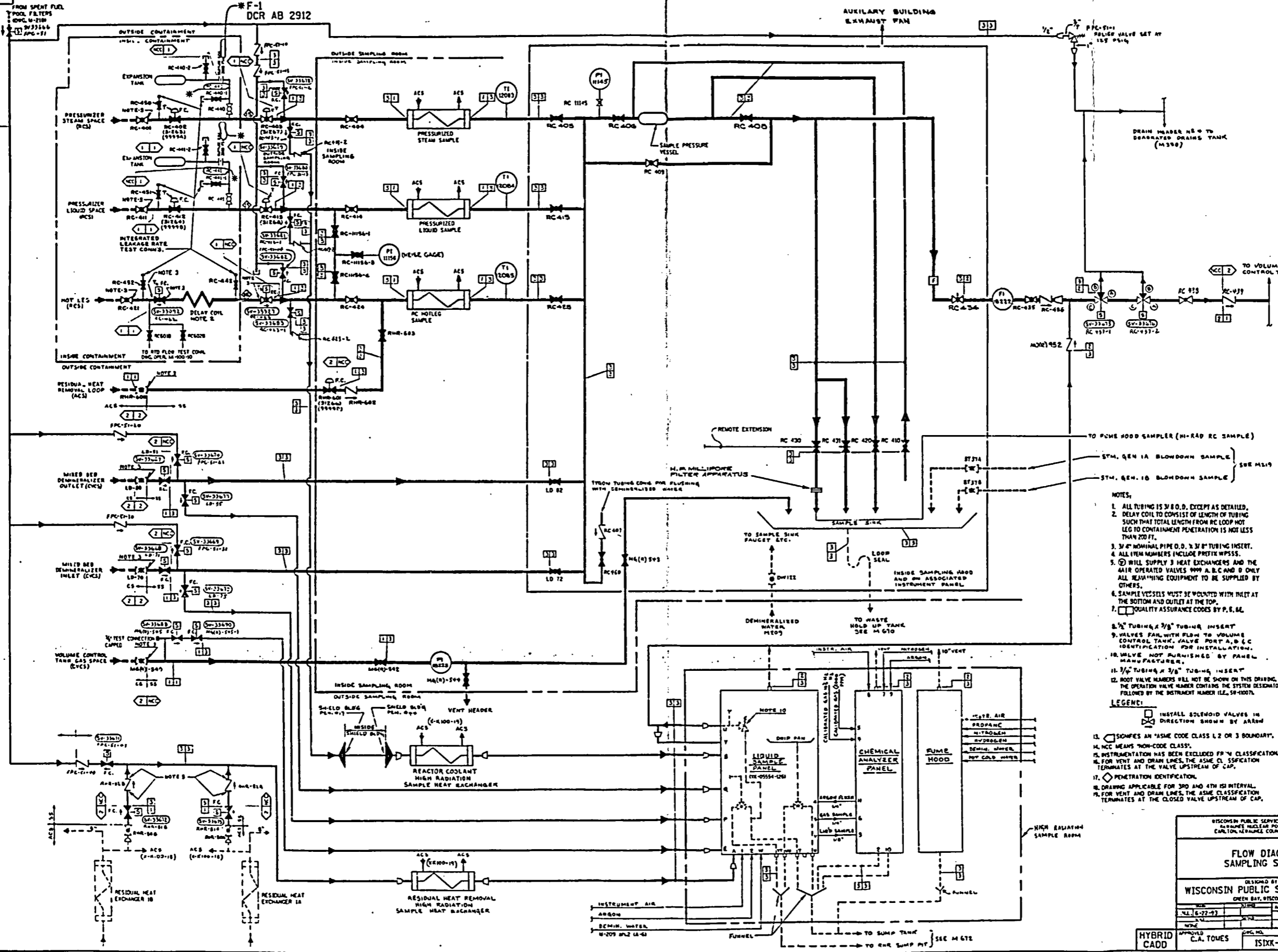
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DATE	BY	CHKD.	REV.
11/16/97	C.A. TOMES		
08/13/97			
08/13/97			
08/13/97			

APPROVED
C.A. TOMES
HYBRID CADD

FILE NO. ESI XX100-38

PP-001-XX151



REVISION

0-1 REDRAFTED TO CADD PER ESR 92-177

1-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

2-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

3-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

4-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

5-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

6-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

7-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

8-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

9-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

10-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

11-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

12-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

13-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

14-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

15-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

16-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

17-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

18-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

19-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

20-1 ESR 92-177 COMPL. SEE REV. 0-1 FOR CHANGES TO THIS DRAWING.

- NOTES:
1. ALL TUBING IS 3/8" O.D., EXCEPT AS DETAILED, SUCH THAT TOTAL LENGTH FROM RC LOOP HOT LEG TO CONTAINMENT PENETRATION IS NOT LESS THAN 200 FT.
 2. DELAY COIL TO CONSIST OF LENGTH OF TUBING SUCH THAT TOTAL LENGTH FROM RC LOOP HOT LEG TO CONTAINMENT PENETRATION IS NOT LESS THAN 200 FT.
 3. 3/4" NOMINAL PIPE O.D., 3/8" TUBING INSERT.
 4. ALL ITEM NUMBERS INCLUDE PREFIX WPSSS.
 5. (S) WILL SUPPLY 3 HEAT EXCHANGERS AND THE AIR OPERATED VALVES 9999 A, B, C AND D ONLY ALL REMAINING EQUIPMENT TO BE SUPPLIED BY OTHERS.
 6. SAMPLE VESSELS MUST BE MOUNTED WITH INLET AT THE BOTTOM AND OUTLET AT THE TOP.
 7. (Q) QUALITY ASSURANCE CODES BY P, R, S, G.
 8. 1/2" TUBING, 3/8" TUBING INSERT.
 9. VALVES FAIL WITH FLOW TO VOLUME CONTROL TANK, VALVE PORT A, B, C IDENTIFICATION FOR INSTALLATION.
 10. VALVE NOT FURNISHED BY PANEL.
 11. 3/4" TUBING, 3/8" TUBING INSERT.
 12. ROOT VALVE HEADERS WILL NOT BE SHOWN ON THIS DRAWING, THE OPERATION VALVE HEADER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (E.G., 10007).

- LEGEND:
- 1. INSTALL SOLENOID VALVES IN DIRECTION SHOWN BY ARROW.
 - 2. (S) SHOWS AN 'ASME CODE CLASS 1, 2 OR 3 BOUNDARY'.
 - 3. NCC MEANS 'NON-CODE CLASS'.
 - 4. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 - 5. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE VALVE UPSTREAM OF CAP.
 - 6. PENETRATION IDENTIFICATION.
 - 7. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
 - 8. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.

WISCONSIN PUBLIC SERVICE CORPORATION
 600 WISCONSIN STREET
 MADISON, WISCONSIN 53703

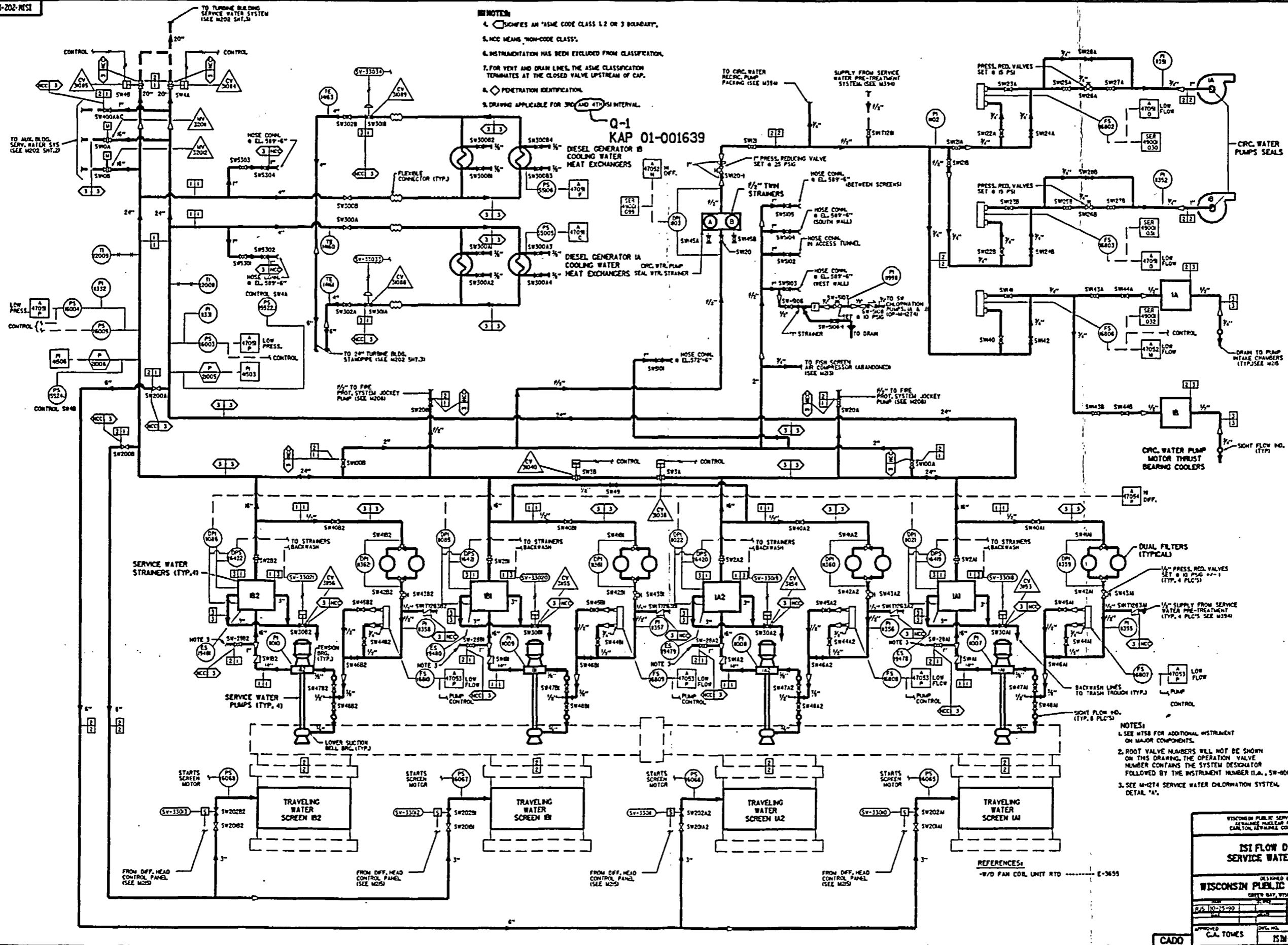
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

NO.	DATE	BY	CHKD.
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APPROVED
 C.A. TONES
 ISIXK-100-44

HYBRID CADD

I-202-NIS1



MINI-NOTES:

1. INDICATES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
2. **MCC** MEANS "NON-CODE CLASS".
3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
5. PENETRATION IDENTIFICATION.
6. DRAWING APPLICABLE FOR 300 AND 475 PSI INTERVAL.

**Q-1
KAP 01-001639**

REVISIONS:

1	FOR BUREAU OF REVISIONS
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100	FOR BUREAU OF REVISIONS

NOTES:

1. SEE WTSR FOR ADDITIONAL INSTRUMENT ON MAJOR COMPONENTS.
2. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.A., SW-ROOT).
3. SEE W-274 SERVICE WATER CHLORINATION SYSTEM, DETAIL "A".

WISCONSIN PUBLIC SERVICE CORPORATION
IS1 FLOW DIAGRAM
SERVICE WATER SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

DATE: 10-23-79

APPROVED: **C.A. TOMES** (C.A.O.)

SCALE: 1" = 10'

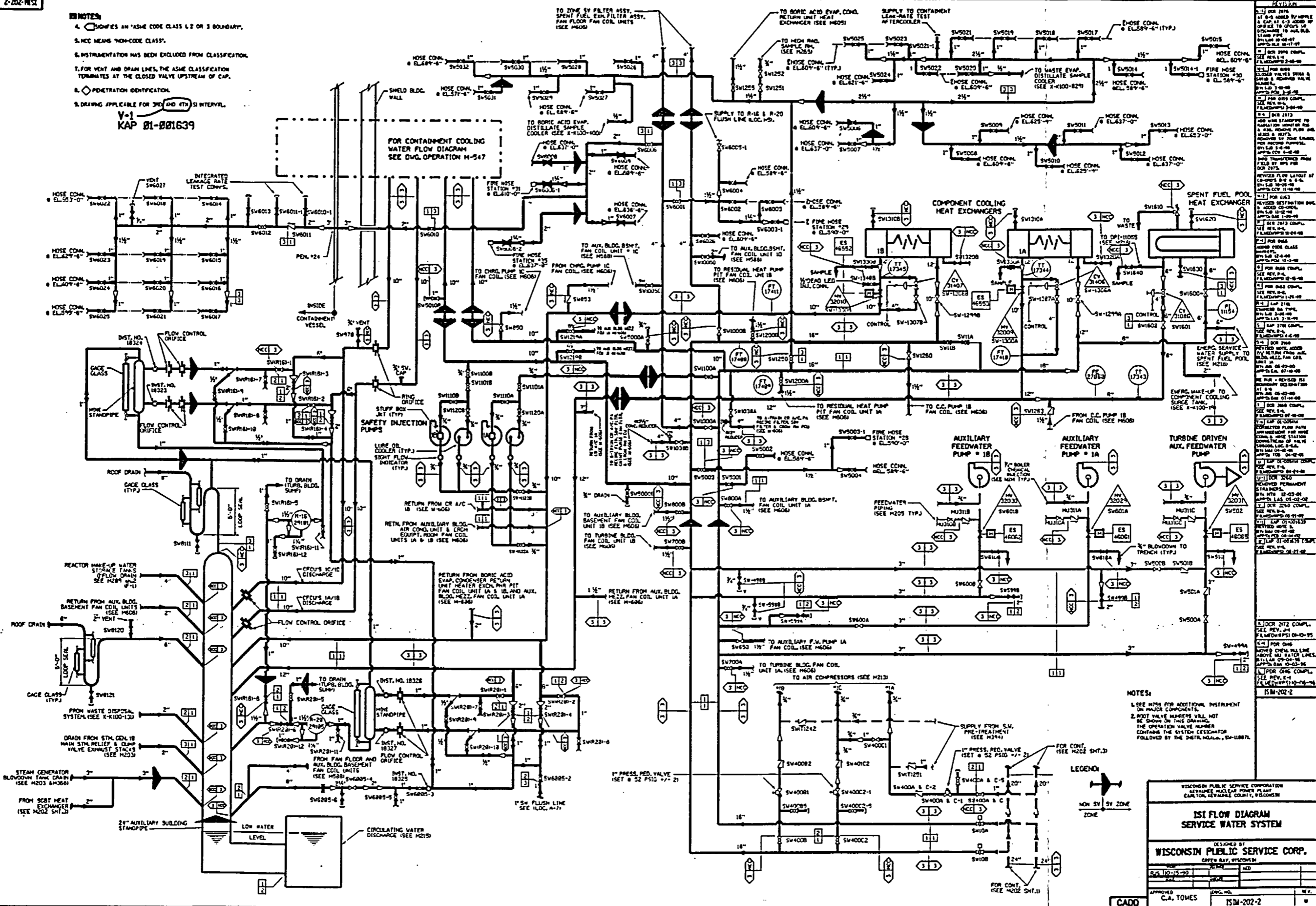
PROJECT NO.: ISM-202-1

REVISIONS:

NO.	DATE	DESCRIPTION

- NOTES:**
- 1. CIRCLES AN "ASME CODE CLASS 2 OR 3 BOUNDARY."
 - 2. HCC MEANS "NON-CODE CLASS."
 - 3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 - 4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 - 5. PIPING IDENTIFICATION.
 - 6. DRAWING APPLICABLE FOR 300 (00) (TH) (SI) INTERVAL.

V-1
KAP 01-001639

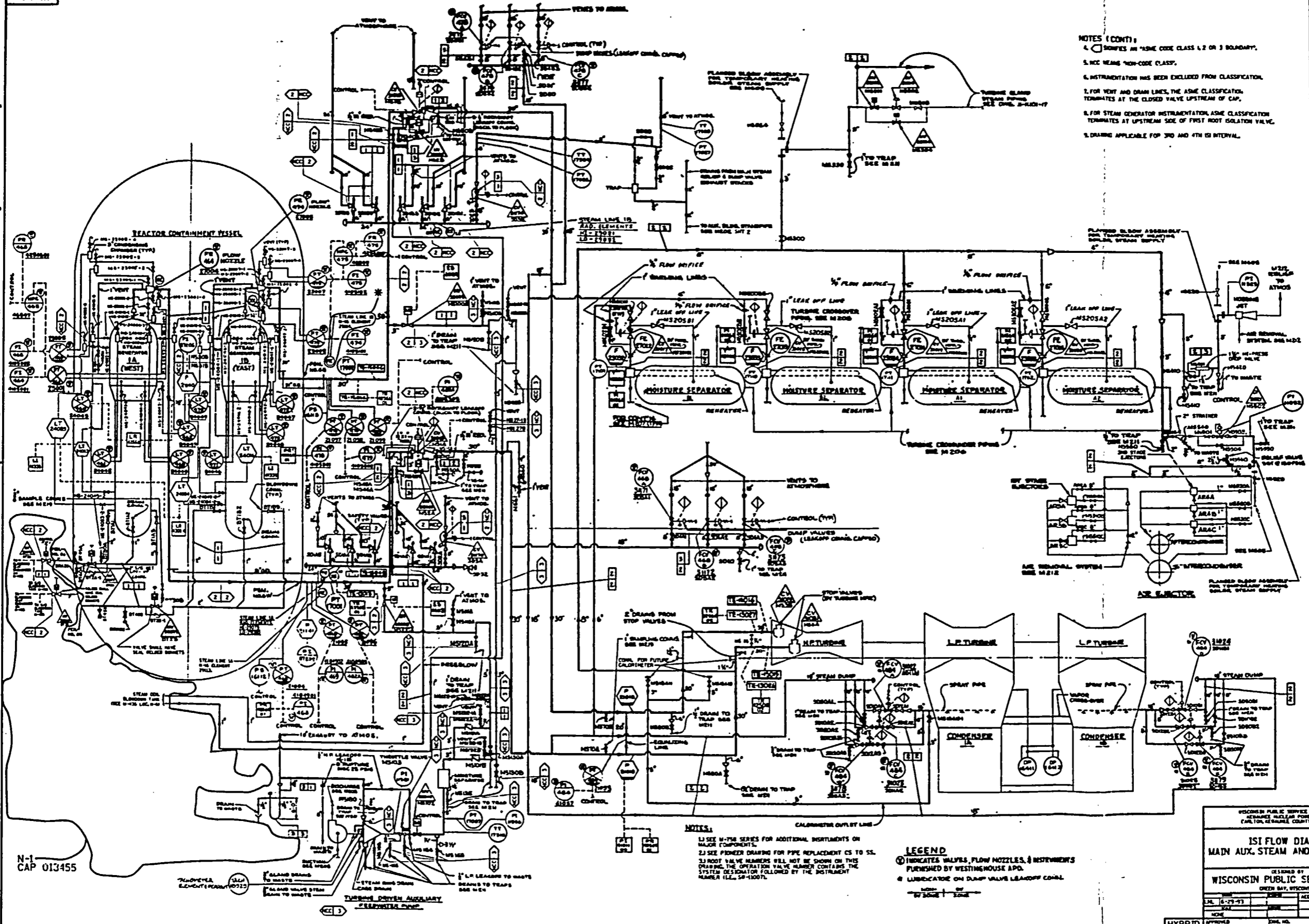


- NOTES:**
- 1. SEE H202 FOR ADDITIONAL INSTRUMENTATION ON MAJOR COMPONENTS.
 - 2. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTR. NO., SV-10007L.

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DATE	REV.
10-25-70	1
11-10-70	2
12-15-70	3
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11-15-86	99
01-20-87	100

APPROVED: C.A. TOMES
DATE: 10-25-70
SCALE: AS SHOWN
SHEET NO.: 15M-202-2



NOTES (CONT):

4. \square INDICATES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY."
5. MCC MEANS "NON-CODE CLASS."
6. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
7. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
8. FOR STEAM GENERATOR INSTRUMENTATION, ASME CLASSIFICATION TERMINATES AT UPSTREAM SIDE OF FIRST ROOT ISOLATION VALVE.
9. DRAWING APPLICABLE FOR 3RD AND 4TH ISM INTERVAL.

REVISION

1	REVISED STEAM GEN. INSTRUMENTATION
2	REVISED STEAM GEN. INSTRUMENTATION
3	REVISED STEAM GEN. INSTRUMENTATION
4	REVISED STEAM GEN. INSTRUMENTATION
5	REVISED STEAM GEN. INSTRUMENTATION
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98	REVISED STEAM GEN. INSTRUMENTATION
99	REVISED STEAM GEN. INSTRUMENTATION
100	REVISED STEAM GEN. INSTRUMENTATION

N-1
CAP 013455

NOTES:

- 1) SEE N-750 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
- 2) SEE PIONEER DRAWING FOR PIPE REPLACEMENT CS TO SS.
- 3) ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATOR VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.E., 50-1007).

LEGEND

- \square INDICATES VALVES, FLOW NOZZLES, & INSTRUMENTS FURNISHED BY WESTINGHOUSE APO.
- \square INDICATE ON DUMP VALVE LEAKOFF COIL.

WISCONSIN PUBLIC SERVICE CORPORATION
STEARNS NUCLEAR POWER PLANT
CAL. 100, WISCONSIN COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
MAIN AUX. STEAM AND STEAM DUMP**

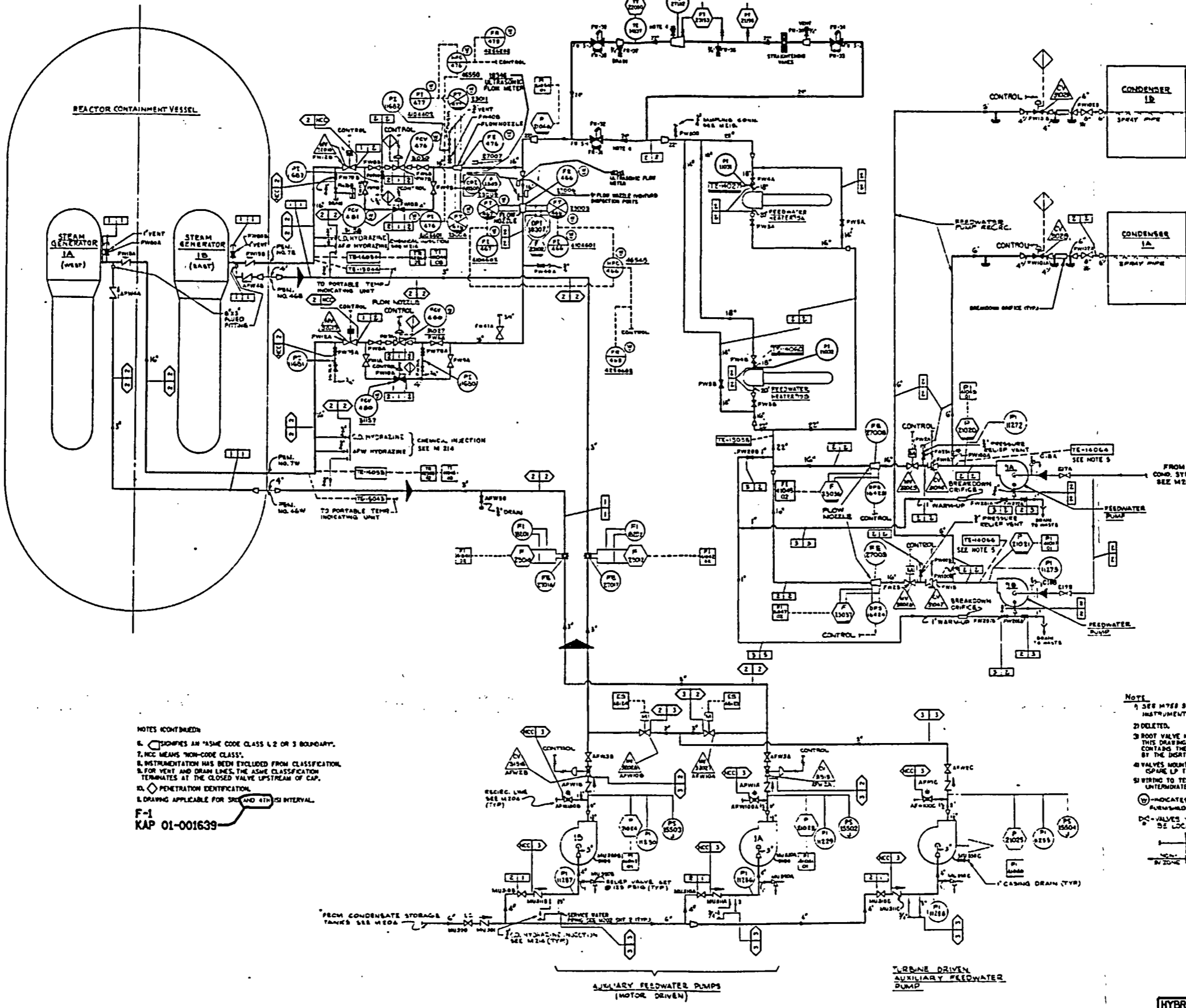
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

GREEN BAY, WISCONSIN

DATE	REV	BY	APP
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11-16-77	3	AD	
11-16-77	4	AD	
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11-16-77	100	AD	

HYBRID
CADD

APPROVED
C.A. TOMES
DATE
11-16-77
REV.
15M-203
P



NOTES CONTINUED:
 6. SHOWS AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
 7. MCC MEANS "NON-CODE CLASS".
 8. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 9. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 10. PENETRATION IDENTIFICATION.
 11. DRAWING APPLICABLE FOR 300 AND 470 ISI INTERVAL.
 F-1
 KAP 01-001639

NOTE:
 1. SEE M788 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
 2. DELETED.
 3. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE DEPARTMENT NUMBER (I.E., 50-11007).
 4. VALVES MOUNT TO FLOW TAP SET 3. (SPARE LP TAP)
 5. WIRING TO TEMPERATURE ELEMENT UNTERMINATED PER DCR 1751.
 6. INDICATES VALVES, FLOW ASSEMBLY INSTRUMENTS ASSEMBLED BY WESTINGHOUSE ADD.
 7. VALVES WITH ASTERISK BE LOCKED OPEN.
 W/ZONE
 W/ZONE

REVISION
 DRAWN FIRST ISSUE
 DATE: 6-26-84
 0-1 REDRAFTED TO CADD PER ESR 92-177
 OWN LBL 06-09-83
 CHN DPT 08-30-83
 APP'D CAT 09-28-83
 A. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 B. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 C. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 D. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 E. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 F. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 G. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 H. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 I. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 J. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 K. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 L. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 M. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 N. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 O. ESR 92-177 COMPL. SEE REV. 0-1
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 P. ESR 92-177 COMPL. SEE REV. 0-1
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 V. ESR 92-177 COMPL. SEE REV. 0-1
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 W. ESR 92-177 COMPL. SEE REV. 0-1
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 X. ESR 92-177 COMPL. SEE REV. 0-1
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 Y. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83
 Z. ESR 92-177 COMPL. SEE REV. 0-1
 FILED W/ 10-12-83

WISCONSIN PUBLIC SERVICE CORPORATION
 STANBACH NUCLEAR POWER PLANT
 CARLTON, KENOSHA COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
 FEEDWATER SYSTEM**

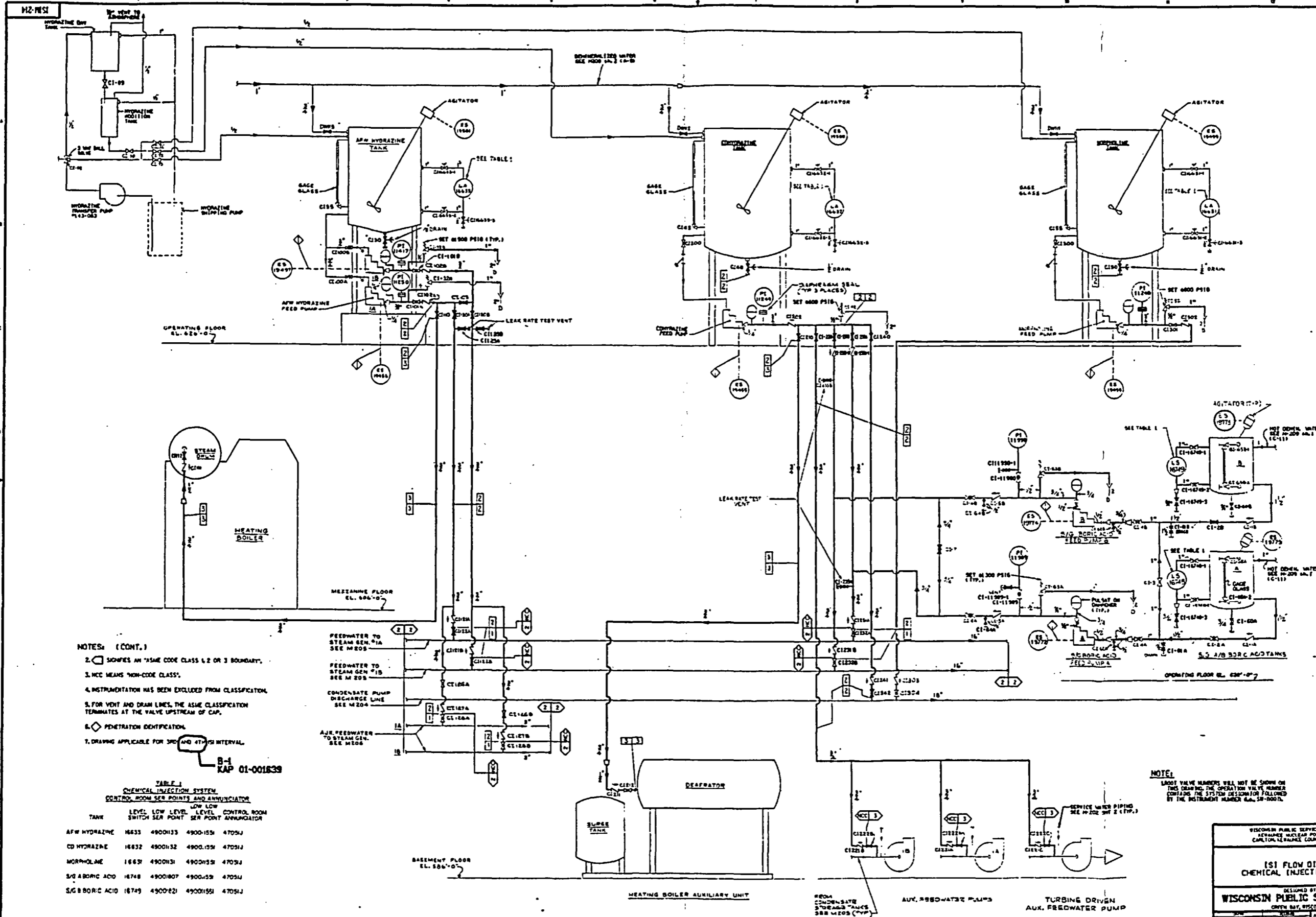
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

OPEN BAY, WISCONSIN

DATE	BY	APP'D
01-001639	JAN	AED
REV.		
001		

APPROVED
C.A. TOMES DPL. NO.
ISIM205

HYBRID CADD



REVISION
 FILED F-101 ISSUE
 PER ESR 10-11
 APPROVAL 10-11-93
 FILED 10-11-93
 0-11 FOR 01-04
 MOVED WATER PIPING
 AT AFW FEEDWATER
 PUMP
 BY LAM 09-04-96
 APPROV DAK 10-03-96
 FILE REV. 0-4
 FILED 10-03-96
 0-11 FOR 01-04 COMPL.
 FILE REV. 0-4
 FILED 10-03-96
 0-11 FOR 01-04
 ADDED SHEET NO. 78
 FOR M-200 & CO-001
 BY LAM 10-29-98
 APPROV DAK 11-02-98
 FILE REV. 0-4
 FILED 11-02-98
 0-11 FOR 01-04 COMPL.
 FILE REV. 0-4
 FILED 11-02-98
 0-11 FOR 01-04
 ADDED SHEET NO. 79
 FOR M-200 & CO-001
 BY LAM 10-29-98
 APPROV DAK 11-02-98
 FILE REV. 0-4
 FILED 11-02-98
 0-11 FOR 01-04 COMPL.
 FILE REV. 0-4
 FILED 11-02-98

- NOTES: (CONT.)
2. SHOWS AN "ASME CODE CLASS 2 OR 3 BOUNDARY".
 3. MCC MEANS "NON-CODE CLASS".
 4. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 5. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE VALVE UPSTREAM OF THE CAP.
 6. PENETRATION IDENTIFICATION.
 7. DRAWING APPLICABLE FOR 3RD AND 4TH 12H INTERVAL.

B-1
KAP 01-001639

TABLE 1
CHEMICAL INJECTION SYSTEM
CONTROL ROOM SET POINTS AND ANNUNCIATOR

TANK	LEVEL LOW SWITCH	LEVEL LOW POINT	LEVEL LOW ANNUNCIATOR	CONTROL ROOM SET POINT
AFW HYDRAZINE	16633	4900H33	4900L55H	4705H
CD HYDRAZINE	16632	4900H32	4900L55H	4705H
MORPHOLINE	16631	4900H31	4900L55H	4705H
S/G B BORIC ACID	16748	4900H07	4900L55H	4705H
S/G B BORIC ACID	16749	4900H21	4900L55H	4705H

NOTE:
 TAG NO. VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATION FOLLOWED BY THE INSTRUMENT NUMBER (E.G., M-200).

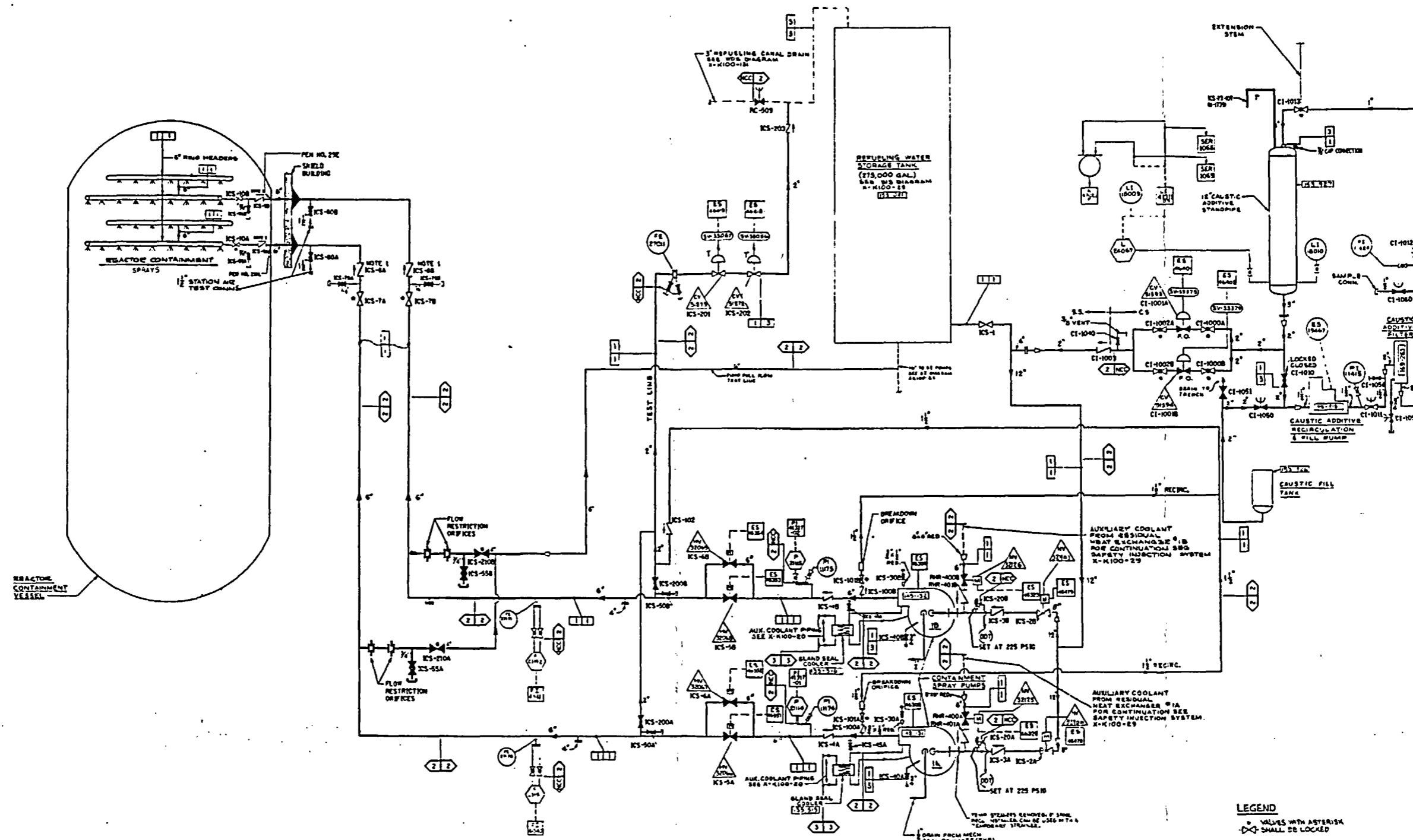
WISCONSIN PUBLIC SERVICE CORPORATION
 STEVENS WISCONSIN NUCLEAR POWER PLANT
 CAMLTON, VERMONT COUNTY, WISCONSIN

ISI FLOW DIAGRAM
 CHEMICAL INJECTION SYSTEM

DESIGNED BY
 WISCONSIN PUBLIC SERVICE CORP.
 CHRYN RAY, ENGINEER

DATE	BY	CHKD
1/4/6-28-92	WCS	ADJ
REV	BY	CHKD

HYBRID CADD
 APPROVED: C.A. TONES
 DATE: 12/14/92
 DRAWING NO.: ISM-214
 REV.: C



REVISION

C-1 FOR 0004 COMPL. SEE REV. 04 APPD. CAT 7-4-93 FILED W/PS 1-02-93

C-1 REDRAFTED TO CADD PER ESR 52-77 DWS LNE 06-08-93 CHD DPT 07-03 APPD. CAT 10-20-93

D-1 ESR 52-77 COMPL. SEE REV. C-1 FILED W/PS 10-24-93

D-1 ADDER FLOW RESTRICTION ORIFICES AND VALVE KCS-454 AND KCS-558. PER DCR 2379 BY DCR 05-11-94 CHD DPT 05-11-94 APPD. CAT 05-23-94

E-1 DCR 2379 COMPL. SEE REV. D-1 FILED W/PS 06-16-94

F-1 LAF 435 REVISED DDT & TEXT FOR RELIEF VALVE KCS-704 & L. BY L.S.D. 4-3-97 APPD. CAT 04-10-97

G-1 LAF 436 COMPL. SEE REV. E-1 FILED W/PS 04-29-97

H-1 DCR 2404 REMOVED FLOW RESTRICTION ORIFICES AND VALVE KCS-704 & L. BY L.S.D. 04-09-98 APPD. CAT 04-27-98

I-1 DCR 2404 COMPL. SEE REV. H-1 FILED W/PS 06-27-00

J-1 LAF 436 COMPL. REVISED NOTE & SYMBOL FOR 10" CAP. BY L.S.D. 08-14-02 APPD. PS 08-14-02

K-1 LAF 436 COMPL. SEE REV. J-1 FILED W/PS 08-27-02

ISDM-211

N-217

LEGEND

○ VALVES WITH ASTERISK SHALL BE LOCKED

⊘ INDICATES NORMALLY CLOSED

→ NONP BY SV ZONE 1 ZONE

- NOTES:
- CHECK VALVES SUPPLIED WITH MANUAL OPERATOR.
 - ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (E.G. 50-10007).
 - INDICATES AN "ASME CODE CLASS 2 OR 3 BOUNDARY".
 - NCC MEANS "NON-CODE CLASS".
 - INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION FOR VENT AND DRAIN LINES. THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 - ◇ PENETRATION IDENTIFICATION.
 - DRAWING APPLICABLE FOR 3RD AND 4TH SI INTERVAL.

G-1
KAP 01-001639

HYBRID CADD

APPROVED C.A. TOMES

DATE 08-14-02

REV. H

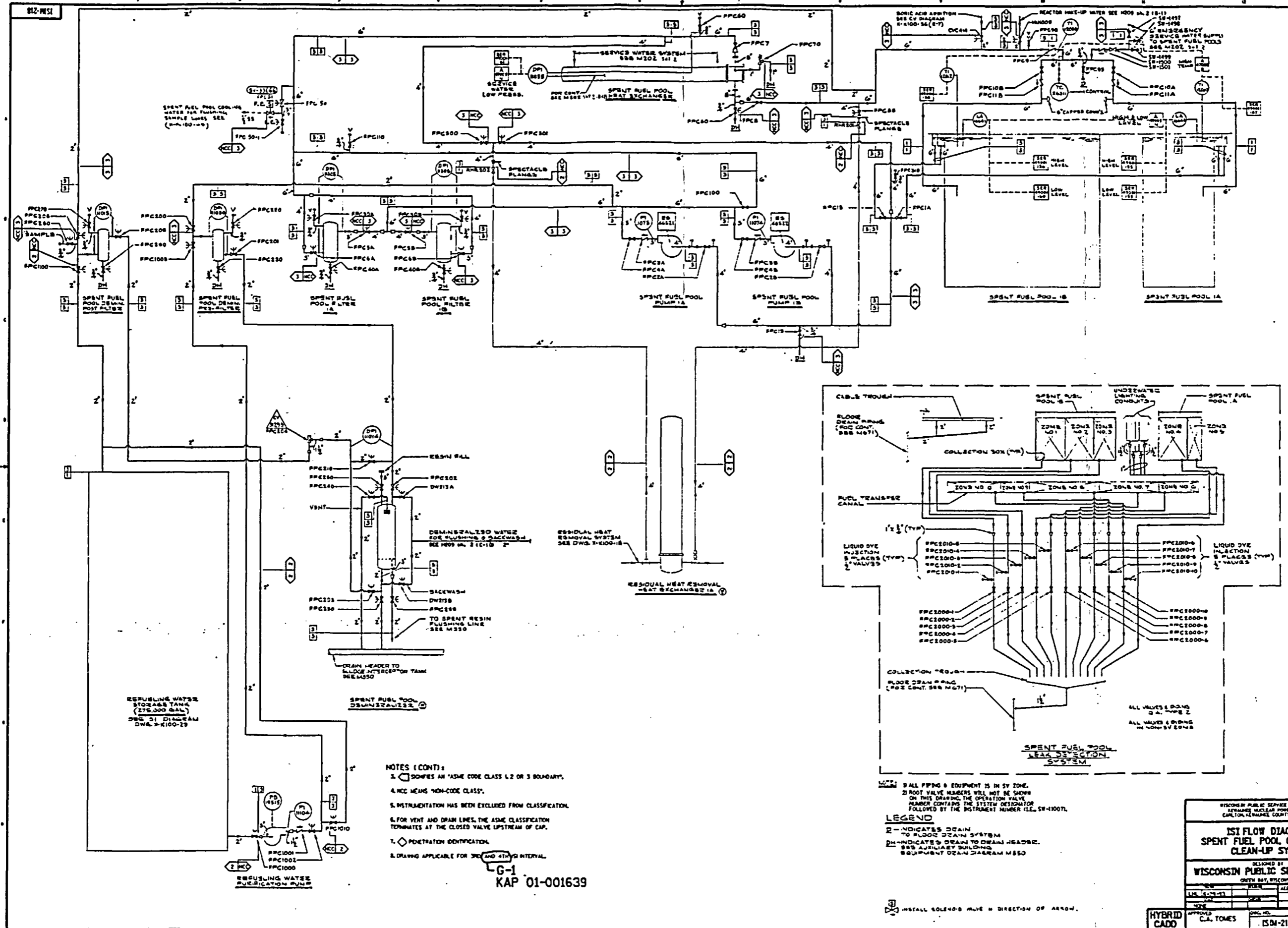
WISCONSIN PUBLIC SERVICE CORPORATION
Kewaunee Nuclear Power Plant
CARLTON, WISCONSIN, U.S.A.

**FLOW DIAGRAM
INTERNAL CONTAINMENT
SPRAY SYSTEM**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
ORTHO BAY, WISCONSIN

NO.	DATE	BY	CHKD.
1	08-14-02	C.A. TOMES	
2			
3			

ISDM-217



REVISIONS

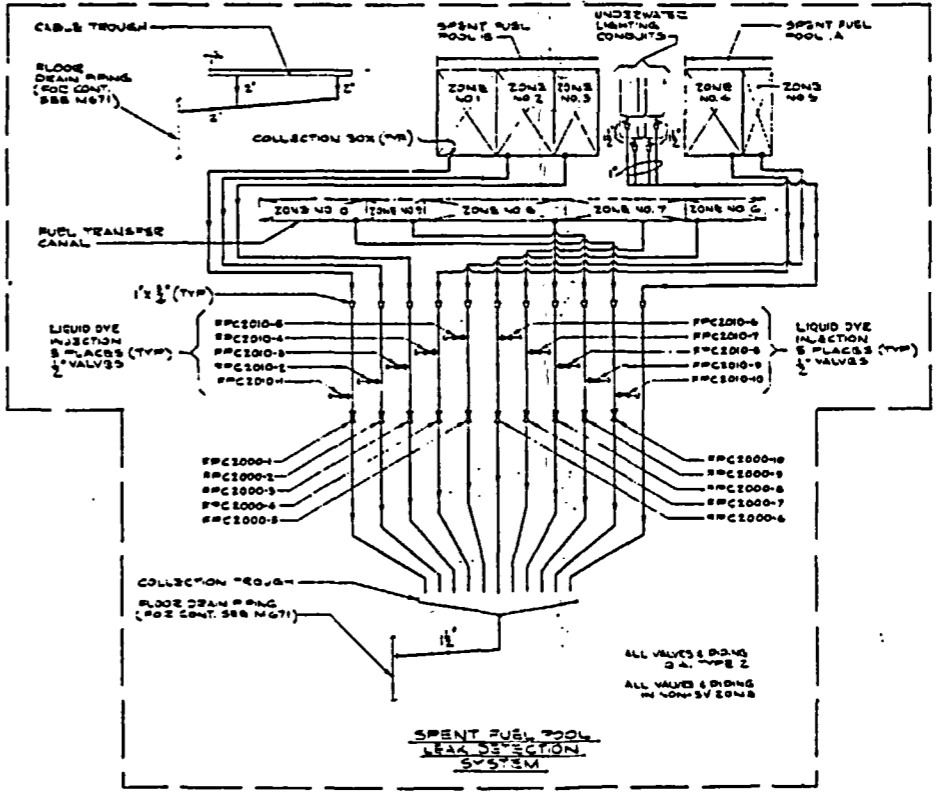
A	DCR 2457 COMP. SEE REV. 0-2 APPD BRC 7-23-90 FLWD (WPS) 7-3-90
B	FOR 0004 COMP. SEE REV. 0-4 APPD BRC 7-4-93 FLWD (WPS) 7-13-93
B-1	REDRAFTED TO CAD PER ESR 52-477 DWS L&S 6-29-93 CROD BPT 08-30-93 APPLD CAT 09-29-93
C	FOR 02-07 COMP. SEE REV. 0-4 FLWD (WPS) 10-12-93
C-1	FOR 05-00 REVISOR 50-000 PLAN 50-000 & 70-000 FLWD 1-2-94 APPD BRC 02-09-94
D	FOR 06-00 COMP. SEE REV. 0-4 FLWD (WPS) 02-18-94
E	FOR 07-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
F	FOR 08-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
G	FOR 09-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
H	FOR 10-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
I	FOR 11-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
J	FOR 12-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
K	FOR 13-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
L	FOR 14-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
M	FOR 15-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
N	FOR 16-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
O	FOR 17-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
P	FOR 18-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
Q	FOR 19-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
R	FOR 20-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
S	FOR 21-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
T	FOR 22-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
U	FOR 23-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
V	FOR 24-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
W	FOR 25-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
X	FOR 26-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
Y	FOR 27-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94
Z	FOR 28-00 COMP. SEE REV. 0-4 FLWD (WPS) 03-18-94

REBUSING WATER STORAGE TANK (275,000 GAL.)
SHEET DIAGRAM DWS 7-100-13

SPENT FUEL POOL DEMINERALIZER

- NOTES (CONT):**
1. INDICATES AN 'ASME CODE CLASS 1, 2 OR 3 BOUNDARY'.
 2. MEANS 'NON-CODE CLASS'.
 3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 5. PENETRATION IDENTIFICATION.
 6. DRAWING APPLICABLE FOR 3RD AND 4TH ST. MATERIAL.

G-1
KAP 01-001639



ALL PFC'S EQUIPMENT IS IN SV ZONE.
IF ROOT VALVE HEADERS WILL NOT BE SHOWN ON THIS DRAWING, THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (E.G. SV-1007L).

LEGEND

- INDICATES DRAIN TO FLOOR DRAIN SYSTEM
- INDICATES DRAIN TO DRAIN HEADER, SEE AUXILIARY BUILDING EQUIPMENT DRAIN DIAGRAM M550

INSTALL SOLENOID VALVE IN DIRECTION OF ARROW.

IS/4-218

WISCONSIN PUBLIC SERVICE CORPORATION
REGULATED NUCLEAR POWER PLANT
CANTON, WISCONSIN COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
SPENT FUEL POOL COOLING AND
CLEAN-UP SYSTEM**

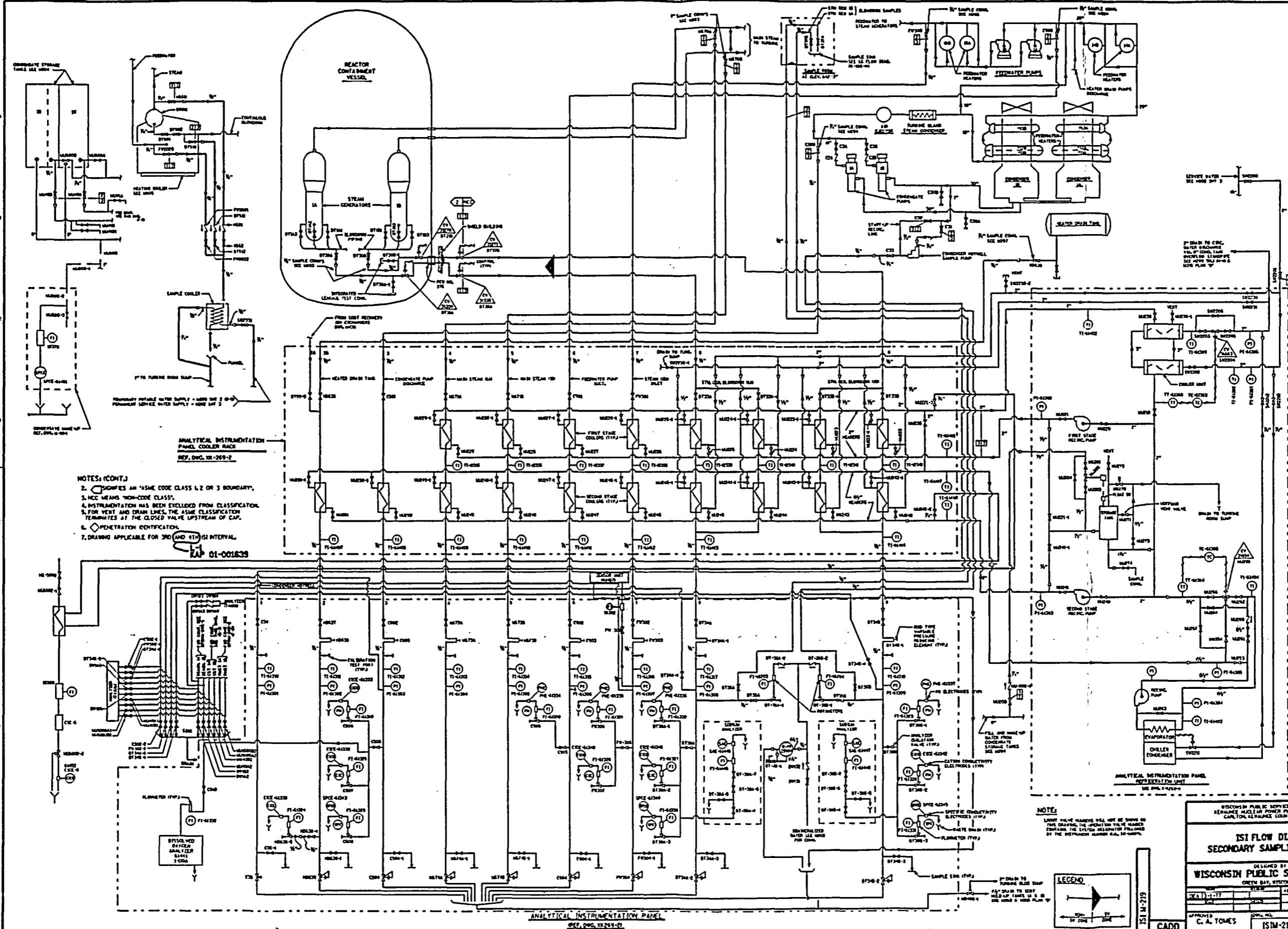
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.

ORIGIN: BAY, WISCONSIN

DATE	REV.
11/14/93	1
11/14/93	2
11/14/93	3
11/14/93	4
11/14/93	5
11/14/93	6
11/14/93	7
11/14/93	8
11/14/93	9
11/14/93	10

APPROVED
C.A. TONES
DATE: 11/14/93
REV: 10

HYBRID CADD

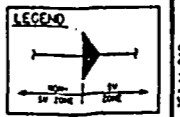


NOTES: (CONT.)
 2. CLASSIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY."
 3. MCC MEANS "NON-CODE CLASS."
 4. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 5. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 6. DIAMETER IDENTIFICATION.
 7. DRAWING APPLICABLE FOR 3RD AND 4TH INTERVAL.

ANALYTICAL INSTRUMENTATION PANEL COOLER RACK
 REF. DWG. XI-269-2

ANALYTICAL INSTRUMENTATION PANEL
 REF. DWG. XI-269-2

NOTE:
 LEAK VALVE NAMEPLATES WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NAMEPLATES CONTAINING THE SYSTEM IDENTIFICATION FOLLOWED BY THE INSTRUMENT NUMBER SHALL BE SHOWN.



REVISION

1	11/15/68	ISSUED FOR CONSTRUCTION
2	12/10/68	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
3	01/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
4	02/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
5	03/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
6	04/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
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11	09/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
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14	12/15/69	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
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98	12/15/76	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
99	01/15/77	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP
100	02/15/77	REVISED TO SHOW CHANGES TO THE CONDENSATE STORAGE TANK AND FEEDWATER PUMP

SECTION APPROVALS

DESIGNED BY	
DRAWN BY	
CHECKED BY	
APPROVED BY	
DATE	
SCALE	
PROJECT NO.	
DRAWING NO.	
REVISION NO.	
REVISION DATE	
REVISION DESCRIPTION	

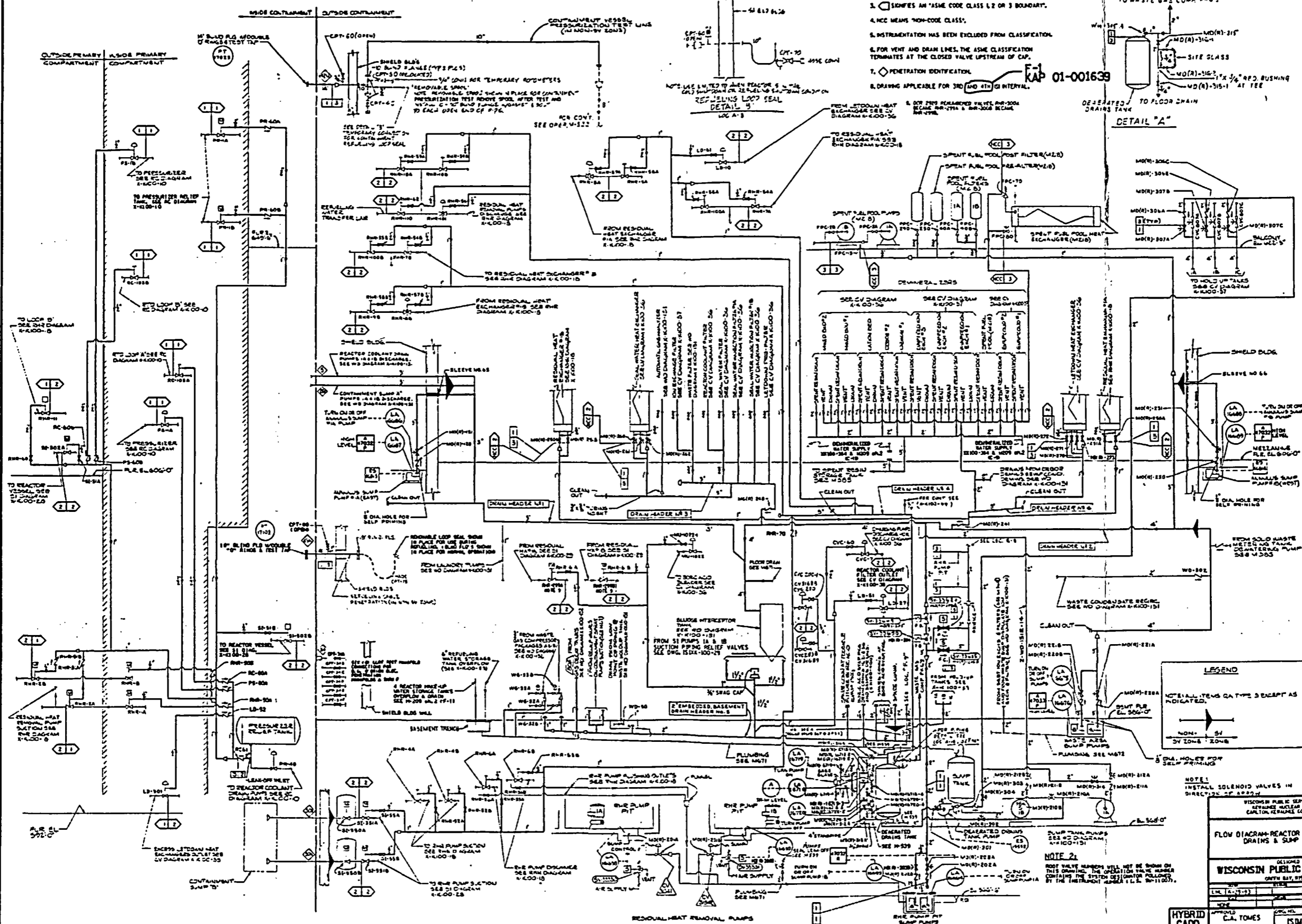
WISCONSIN PUBLIC SERVICE CORPORATION
 REGULATE NUCLEAR POWER PLANT - UNIT NO. 1
 CAPLON, CALUMET COUNTY, WISCONSIN

**ISI FLOW DIAGRAM
 SECONDARY SAMPLING SYSTEMS**

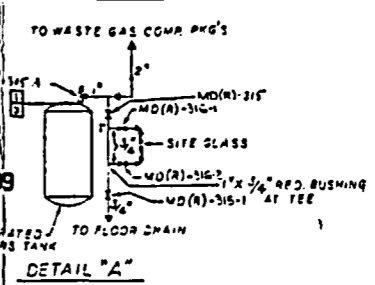
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 CREW BAY, WISCONSIN

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APPROVED
 C. A. TOMES
 ISM-219

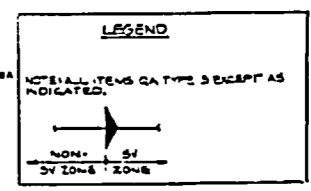


- NOTES (CONT.):**
1. \bigcirc SHOWS AN ASME CODE CLASS 1, 2 OR 3 BOUNDARY.
 2. NCC MEANS "NON-CODE CLASS".
 3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 5. \diamond PENETRATION IDENTIFICATION.
 6. DRAWING APPLICABLE FOR 3RD AND 4TH G INTERVAL.



REVISION

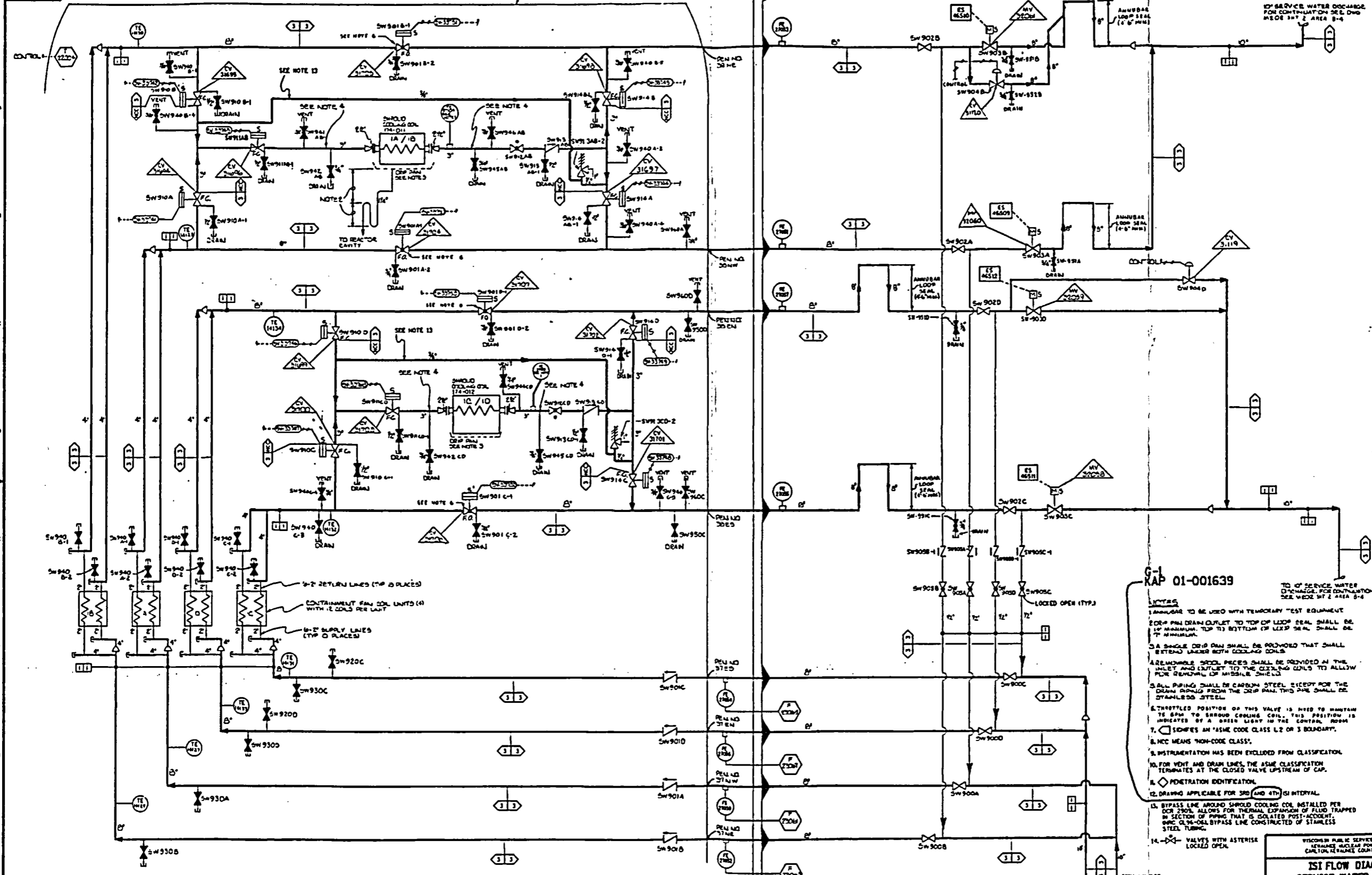
1	FILED FIRST ISSUE
2	REV. FOR 00-000
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DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

APPROVED
C.A. TOMES
ISDM-350

HYBRID
CADD



REVISIONS

FILED FIRST ISSUE BY ESR 92-171 APPROX CAT 09-28-93 FILED IN 155-151-1

0-1] ADDED REFERENCE AND REVISED INSTR. NO. PER DCR 2394 BY DCR 04-19-94 CMT BY 04-19-94 APPROX CAT 04-02-94

A-1] DCR 2394 COMPL. SEE REV. 0-1 FILED IN 155-151-1

A-1] VALVES SW-903A,B,C,D HERE A.C. PER POC 0122 BY DCR 11/27/94 CMT BY 11/27/94 APPROX PCM 11-23-94

B-1] REMOVED OUTLET SER. WATER FLOW SENSORS AND TRANSMITTERS. PER DCR 2371 BY DCR 07/20/95 CMT BY 07/20/95 APPROX ELM 07-17-95

C-1] DCR 1278 COMPL. SEE REV. A-1 FILED IN 155-151-1

C-1] DCR 2309 RELOCATED SHIELD COOLING COIL RELIEF VALVE AND INSTALLED BYPASS LINE. ADDED NOTE 13. BY DCR 07-08-97 APPROX ELM 07-23-97

D-1] DCR 2309 COMPL. SEE REV. C-1 FILED IN 155-151-1

D-1] DCR 2305 SPECIFIED GLOBE VALVES. REVISED FLOW APPROVAL & ADDED CHECK VALVES. RELOCATED ASME CODE FROM LOC. A-9 TO LOC. F-4. BY DCR 07-29-97 APPROX ELM 08-08-97

E-1] DCR 2305 COMPL. SEE REV. D-1 FILED IN 155-151-1

E-1] DCR 2376 AT A-9 DELETED FLOW ORIFICE AT E-9 DELETED FLOW ORIFICE & VALVE SW970 BY DCR 10-08-97 APPROX ELM 10-17-97

F-1] DCR 2376 COMPL. SEE REV. E-1 FILED IN 155-151-1

F-1] DCR 2305 EDITED REV. D-1 REVISED GLOBE VALVE SYMBOLS

G-1] KAP 01-001639 REVISED NOTE 12. BY SHJ 08-07-02 APPROX PER 08-14-02

H-1] KAP 01-001639 PER REV. 0-1 BY SHJ 07-12-99 APPROX BLD 7-14-99

I-1] DCR 2305 COMPL. SEE REV. F-1 FILED IN 155-151-1

J-1] KAP 01-001639 REVISED NOTE 12. BY SHJ 08-07-02 APPROX PER 08-14-02

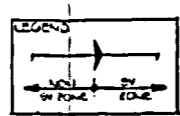
K-1] KAP 01-001639 PER REV. 0-1 BY SHJ 07-12-99 APPROX BLD 7-14-99

L-1] DCR 2305 COMPL. SEE REV. J-1 FILED IN 155-151-1

G-1 KAP 01-001639

- TO OF SERVICE WATER DISCHARGE FOR CONTAINMENT SEE WOOD SH 2 AREA 8-4
1. UNUSUAL TO BE USED WITH TEMPORARY TEST EQUIPMENT
 2. DCR PAN DRAIN OUTLET TO TOP OF LOOP SEAL SHALL BE 1" MINIMUM. TOP TO BOTTOM OF LOOP SEAL SHALL BE 7" MINIMUM.
 3. A SINGLE DRIP PAN SHALL BE PROVIDED THAT SHALL EXTEND UNDER BOTH COOLING COILS.
 4. REMOVABLE DRIP PANS SHALL BE PROVIDED AT THE INLET AND OUTLET TO THE COOLING COILS TO ALLOW FOR REMOVAL OF MISSILE SHIELD.
 5. ALL PIPING SHALL BE CARBON STEEL EXCEPT FOR THE DRAIN PIPING FROM THE DRIP PAN. THIS PIPE SHALL BE STAINLESS STEEL.
 6. THROTTLED POSITION OF THIS VALVE IS INTENDED TO MAINTAIN 15 GPM TO SERVO COOLING COIL. THIS POSITION IS INDICATED BY A RED LIGHT IN THE CONTROL ROOM.
 7. \square DENOTES AN "ASME CODE CLASS L2 OR 3 BOUNDARY".
 8. MCC MEANS "NON-CODE CLASS".
 9. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 10. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 11. \diamond PENETRATION IDENTIFICATION.
 12. DRAWING APPLICABLE FOR 3RD AND 4TH SI INTERVAL.
 13. BYPASS LINE AROUND SHIELD COOLING COIL INSTALLED PER DCR 2305 ALLOWS FOR THERMAL EXPANSION OF FLUID TRAPPED IN SECTION OF PIPING THAT IS ISOLATED POST-ACCIDENT. SHIELD COIL BYPASS LINE CONSTRUCTED OF STAINLESS STEEL.
 14. \ast VALVES WITH ASTERISK LOCKED OPEN.

REFERENCE:
 1/2" FAN COIL UNIT OF CU VELOCITY, TEMPERATURE TRANSDUCERS..... E-3658



WISCONSIN PUBLIC SERVICE CORPORATION
 WISCONSIN NUCLEAR POWER PLANT
 CALTON, WAUKESHA COUNTY, WISCONSIN

**IST FLOW DIAGRAM
 SERVICE WATER SYSTEM
 CONTAINMENT COOLING**

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
 GREEN BAY, WISCONSIN

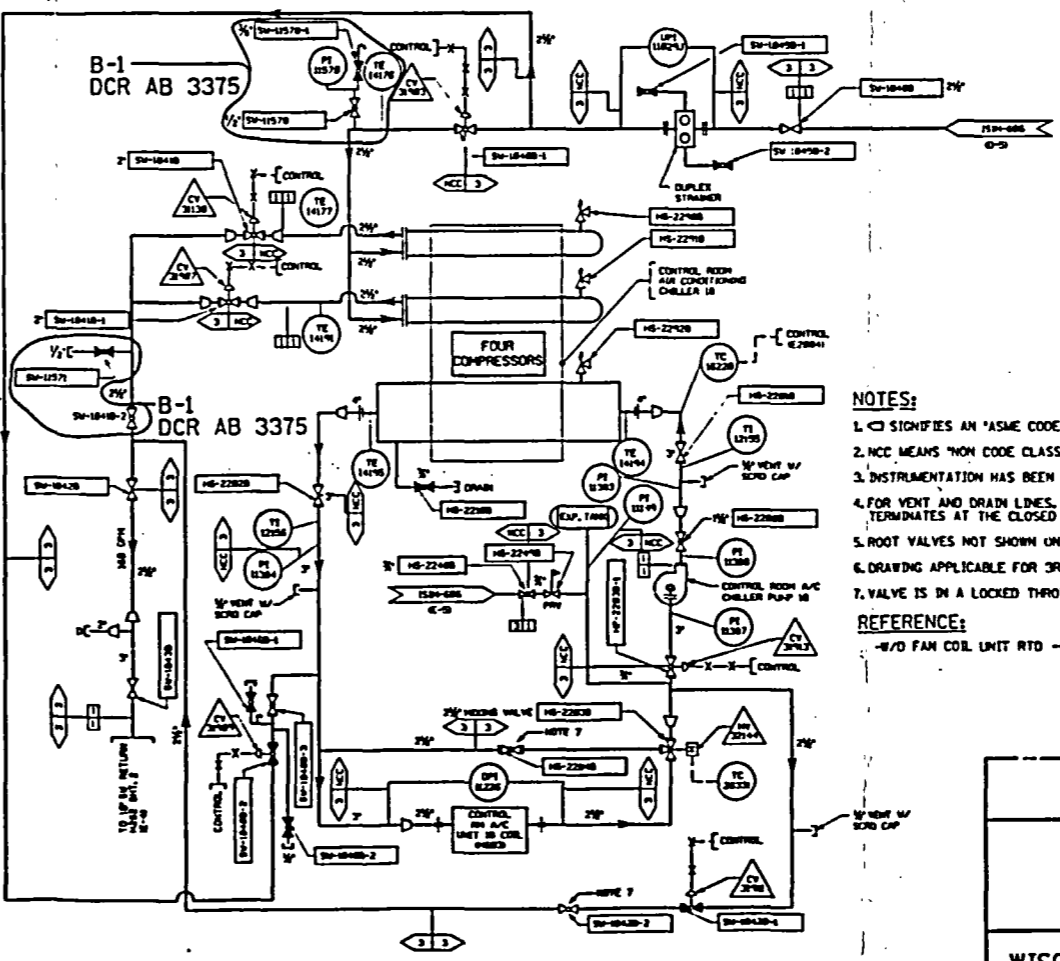
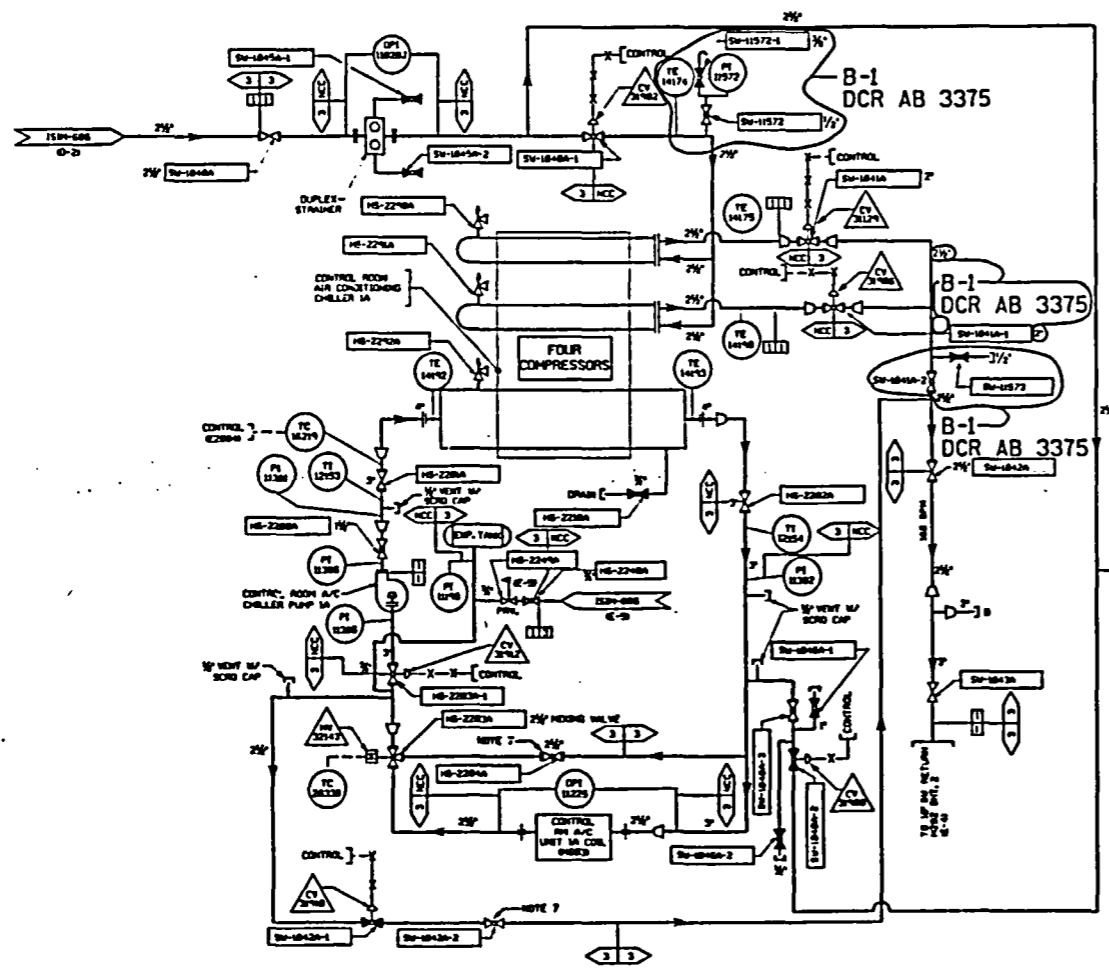
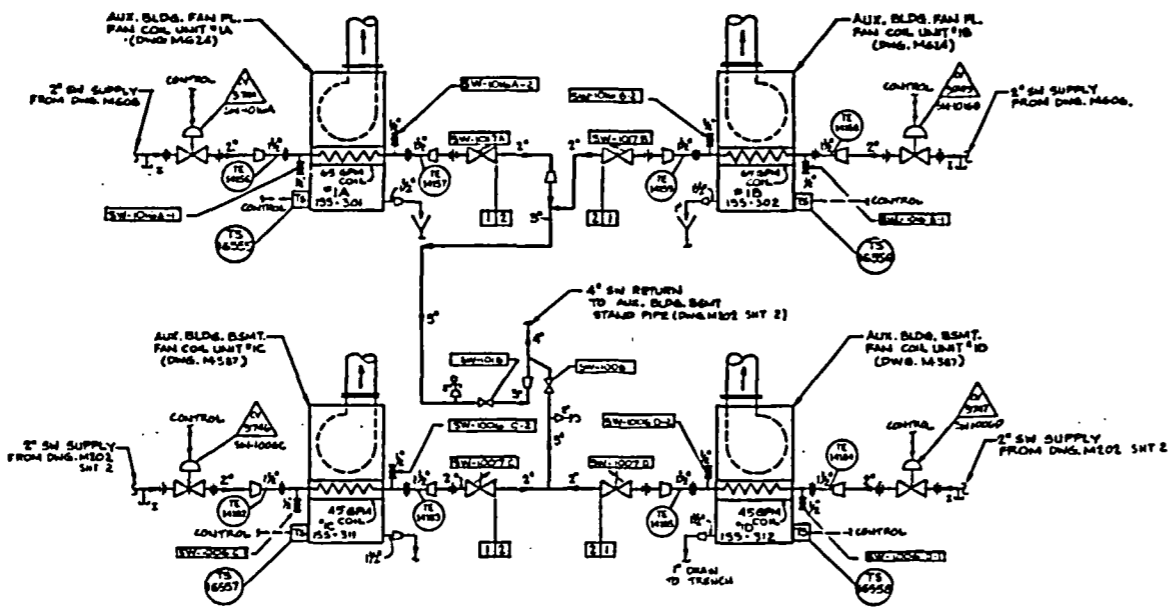
DATE	BY	APP'D
11/13/93	SHJ	ADD
DATE	BY	APP'D
DATE	BY	APP'D

HYBRID CADD

APPROVED
 C.A. TOMES

DATE
 11/13/93

REV.
 H



- NOTES:**
1. □ SIGNIFIES AN 'ASME CODE CLASS 1, 2 OR 3 BOUNDARY'.
 2. NCC MEANS 'NON CODE CLASS'.
 3. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
 4. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
 5. ROOT VALVES NOT SHOWN ON THIS DRAWING.
 6. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
 7. VALVE IS IN A LOCKED THROTTLED POSITION.
- REFERENCE:**
- W/O FAN COIL UNIT RTD ----- E-3655

REVISION	
FILED FIRST ISSUE PER DCR 3046 APP'D LAS 05-15-02 FILED W/PSI 06-18-02	
0-1 KAP 01-001639 REVISED PER KAP 01-001639, BY/CAJ 08-06-03, APP'D FEB 08-14-02	
1 KAP 01-001639 COMPL. SEE REV. 0-1, FILED W/PSI 08-27-02	
A-1 KAP 01-001639 REMOVE VALVE SHOWN FOR FUTURE MODIFICATION. BY/ NTH 11-08-02, APP'D FEB 11-15-02	
B KAP 01-001639 COMPLETE. SEE REVISION A-1, FILED W/PSI 11-19-02	
B-1 DCR AB 3375 ADDED VALVES SW-1041A-2, SW-1041B-2, SW-11572, SW-11572-L, SW-11570, SW-11570-L, SW-11573 AND SW-11571. REMOVED PI 11571 AND PI 11572. BY/ NTH 04-10-03, APP'D LAS 04/17/03	
C DCR AB 3375 COMPL. SEE REVISION B-1, FILED W/PSI 04/29/03	

ISIM-588

ACC-25
ACA-17

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

ISI FLOW DIAGRAM
AIR COND. COOLING WATER PIPING

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

HYBRID CADD	DWG. NO. ISIM-588	REV. C
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Appendix B

Calibration Blocks

Calibration blocks for the Fourth 10-Year Inservice Inspection (ISI) Interval will be the same as those utilized during the Second and Third Inspection Interval. The attached Calibration Block table (page B-2) provides a summary of these calibration blocks. Certifications for these calibration blocks is on file at the Kewaunee Nuclear Power Plant.

The calibration blocks used during the Second Inspection Interval were reviewed by Westinghouse Electric Corporation to verify that they satisfied the requirements of the 1980 Edition up to and including Winter 1981 Addenda of ASME Boiler and Pressure Vessel Code, Sections V and XI. Calibration blocks that deviated from the intent of the 1980 Edition up to and including Winter 1981 Addenda of ASME Boiler and Pressure Vessel Code, Sections V and XI were replaced. New calibration blocks, when required for the Third Inspection Interval, were manufactured to meet the requirements of the 1989 Edition of ASME Boiler and Pressure Vessel Code, Sections V and XI. New calibration blocks, when required for the Fourth Inspection Interval, will be manufactured to meet the requirements of the 1998 Edition 2000 Addenda of ASME Boiler and Pressure Vessel Code, Section V and XI.

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-1	2.375"T x 7.9375"L x 8.125"W	B2836	A351 Grade CF8A	---
WPS-3	28" - 0.858"T	802E03230	A516 Grade 70 Carbon Steel	28" - 0.858"T Piping
WPS-4	24" SCH 80 1.219"T	N13070	A106 Grade B Carbon Steel	24" SCH 80 Main Steam Piping
WPS-5	14" SCH 140 1.250"T	2637-4-2	A376 TP316 Stainless Steel	14" SCH 140 Pressurizer Surge Nozzle
WPS-6	16" SCH 140 1.438"T	N92392	A106 Grade B Carbon Steel	16" SCH 140 Feedwater Piping
WPS-7	12" SCH 160 1.312"T	2872-8	A376 TP316 Stainless Steel	12" SCH 160 Accumulator Discharge Piping
WPS-8	12" SCH 40 .406"T	2808-4-1-2	A312 TP304 Stainless Steel	12" SCH 40 RHR Piping
WPS-9	10" SCH 40S .365"T	1971-12-1-2	A312 TP304 Stainless Steel	10" SCH 40S RHR Piping
WPS-10	10" SCH 140 1.00"T	D61232	A312 TP304 Stainless Steel	10" SCH 140 RHR Return and Pressurizer Surge Piping: Charging Pump Pulsation Dampener and Seal Water Injection Filter
WPS-11	8" SCH 140 .812"T	2876-1-1	A376 TP316 Stainless Steel	8" SCH 140 RHR Piping
WPS-12	8" SCH 40S .322"T	M0937	A312 TP316 Stainless Steel	8" SCH 40S RHR and SIS Piping
WPS-13	8" SCH 80 .500"T	139624	A106 Grade B Carbon Steel	8" SCH 80 Main Steam Piping
WPS-14	8" SCH 100 .594"T	64078	A106 Grade B Carbon Steel	8" SCH 100 Feedwater Piping

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-15	6" SCH 40 .280"T	M9959	A312 TP304 Stainless Steel	6" SCH 40S RHR, SIS and Containment Spray Piping
WPS-16	6" SCH 80 .432"T	240393	A106 Grade B Carbon Steel	6" SCH 80 Main Steam Piping
WPS-17	6" SCH 160 .719"T	2631-4-2	A376 TP316 Stainless Steel	6" SCH 160 SIS, Plocap, Pressurizer Safety Piping, Pressurizer Safety Nozzles and Pressurizer Relief Nozzle
WPS-18	4" SCH 160 .531"T	M9290	A376 TP316 Stainless Steel	4" SCH 160 SIS, Pressurizer Spray Nozzle and Control Rod Drive Mechanisms
WPS-19	4" SCH 120 .438"T	M6108	A376 TP316 Stainless Steel	4" SCH 120 Piping
WPS-20	3" SCH 160 .438"T	453853	A376 TP316 Stainless Steel	3" SCH 160 RTD, Pressurizer Relief and Pressurizer Spray Piping
WPS-21	2" SCH 160 .344"T	08754	A312 TP304 Stainless Steel	2" SCH 160 RTD, SIS, Drain, Seal Injection, Charging, Letdown and Auxiliary Spray Piping
WPS-22	1.5" SCH 160 .281"T	87623	A312 TP316H Stainless Steel	1.5" SCH 160 Seal Injection Piping
WPS-23	5"T x 18"L x 5"W	C0123-2	SA533 Grade B Class 1 Carbon Steel	Pressurizer and Steam Generator Channel Head to Tube Sheet
WPS-24	.312"T x 9"L x 2.5"W	F80085	SA240 TP304 Stainless Steel	Volume Control Tank

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-25	14" SCH 40S .375"T	F70623	A358 Class 2 TP304 Stainless Steel	Letdown Heat Exchanger
WPS-26	1.5"T x 13"L x 2.5"W	B6272	SA516 Grade 70 Carbon Steel	Pressurizer Skirt, 31" Main Steam Piping and 30" Main Steam Tee
WPS-27	9.5" - .875"T	155512	A351 CF8	Regenerative Heat Exchanger
WPS-29	7"T x 5.75" Diameter Stud Segment	P3199	SA540 001-7	---
WPS-30	.5"T x 9"L x 2.5"W	F80085	SA240 TP304 Stainless Steel	Residual Heat Exchanger
WPS-31	10" SCH 120 .843"T	6-448	A312 TP304 Stainless Steel	10" SCH 120 Piping
WPS-32	16" SCH 100 1.031"T	89A410	A106 Grade B Carbon Steel	16" SCH 100 Feedwater Piping
WPS-33	16" SCH 120 1.219"T	42794	SA333 Grade 6 Carbon Steel	16" SCH 120 Piping
WPS-34	14" SCH 60 .594"T	N33188	SA106 Grade B Carbon Steel	14" SCH 60 Piping
WPS-35	6"T x 20"L x 6"W	125J596VAL	SA508 Class 2 Carbon Steel	Reactor Vessel Closure Head and Reactor Vessel Ligaments (Manual)
WPS-36	3.5"T x 18.25"L x 6"W	C5128	SA533 Class 1 Carbon Steel	Steam Generator Secondary Side: Steam Generator Main Steam Nozzle Inside Radius Corner

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-37	30" - 1.10"T	3G5682	SA515 Grade 70 Class 1 Carbon Steel	30" Main Steam Piping
WPS-38	16" SCH 60 .656"T	94558	A106 Grade B Carbon Steel	16" SCH 60 Feedwater Piping
WPS-39	32" - 2.3"T	125J596VAL	SA508 Class 2 Carbon Steel	32" - 2.3" T Main Steam Nozzles
WPS-40	5.75" Dia. x 56.625"L	15045	SA540 Grade B24 Carbon Steel	Reactor Vessel Closure Head Studs
WPS-41	4.50" Dia. x 30.50"L	3P4028	SA540-68A Grade B24-Carbon Steel	Reactor Coolant Pump Main Flange Bolts
WPS-42	16" Feedwater Nozzle Forging	Q2Q149NQT Q2Q150NQT	SA508 Class 2A Carbon Steel	Steam Generator Feedwater Nozzle Inner Radius
WPS-RV-1	16"T&L x 31"L&T x 8.625"W	22231/39088	SA508 Class 3 Carbon Steel	Reactor Vessel Flange to Vessel from Seal Surface and Reactor Vessel Nozzle to Shell from Nozzle Bore
WPS-RV-2 (Modified 02/14/95)	9"T x 32"L x 6"W	125J596VAL	SA508 Class 2 Carbon Steel	Reactor Vessel Flange to Vessel (I.D.), Reactor Vessel Integrally Welded Attachments and Reactor Vessel Nozzle to Shell from Vessel Shell

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-RV-3	7"T x 28"L x 6"W	125J596VAL	SA508 Class 2 Carbon Steel	Reactor Vessel Nozzle Inside Radius Section, Reactor Vessel Upper Shell and Reactor Vessel Intermediate Shell
WPS-RV-4	5"T x 18"L x 6"W	125J596VAL	SA508 Class 2 Carbon Steel	Reactor Vessel Flange Ligaments, Reactor Vessel Lower Head and Reactor Vessel Ring to Disc.
WPS-SIS-01 (Lost by WNSD 08/10/94)	6"T x 15"L x 4"W	125J596VAL	SA508 Class 2 Carbon Steel	Reactor Vessel SIS Nozzle to Shell and Reactor Vessel SIS Nozzle Inside Radius Section
WPS-RV-Safe-3 (Modified 02/14/95)	2.5"T x 12.5"L x 4"W	4952/P53627	SA508 Class 2 Carbon Steel/SA182 TP316 Stainless Steel	Reactor Vessel Nozzle to Safe-Ends and Bore Portion of Nozzle Inner Radius
WPS-43 (Modified 02/14/95)	3.02"T x 12.0"L x 12.0"W	C1488	A351 Grade CF8M	Reactor Coolant Circumferential Piping: Reactor Vessel Nozzle to Safe-ends
WPS-44	3.18"T x 12.0"L x 12.0"W	5160C-1	SA351 Grade CF8A	Reactor Coolant Longitudinal Piping Seams
WPS-45	19.25"H x 11.65"L x 5.72" W	280593	SA216-92 Grade WCC Carbon Steel	4" Pressurizer Spray Nozzle Inside Radius Section

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-46	8.375"H x 11.125"L x 7.68"W	280593	SA216-92 Grade WCC Carbon Steel	14" Pressurizer Surge, 6" Pressurizer Safety and 6" Pressurizer Relief Nozzle Inside Radius Section
WPS-47	15.9375"OD x 10.125" ID x 2.9"T	502979	A182 F316 Stainless Steel	Reactor Coolant Pipe 12" Branch Connection Nozzle
WPS-48	14.125" OD x 8.75" ID x 2.69"T	502979	A182 F316 Stainless Steel	Reactor Coolant Pipe 10" Branch Connection Nozzle
WPS-49	11.5625" OD x 7.0"ID x 2.34"T	502979	A182 F316 Stainless Steel	Reactor Coolant Pipe 8" Branch Connection Nozzle
WPS-50	9.1875" OD x 5.25" ID x 2.0" T	502979	A182 F316 Stainless Steel	Reactor Coolant Pipe 6" Branch Connection Nozzle
WPS-51	6" SCH 80S	51069	A312 TP304 Stainless Steel	6" SCH 80S Containment Spray Piping
WPS-52	1.5"T x 9.0"L x 2.0"W	803N6600	A516 Grade 70 Carbon Steel	Reactor Building Containment Vessel
WPS-53	3.15"T x 13.82"L x 7.59"W	86616/3	SA533 Class 2 Type B Carbon Steel	Replacement Steam Generator Secondary Side

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-54	5.0"T x 18.50"L x 7.51"W	513150-000	SA508 Class 3A Carbon Steel	Replacement Steam Generator Channel Head To Tubesheet
WPS-55	3.27"T x 15.74"H x 19.68"W	513150-000/IH738	SA508 Class 3A/ SA336 Grade 316LN	Replacement Steam Generator Primary Side Nozzle Inside Radius Section
WPS-56	16" 0.900"T	L42225	A106 Grade B Carbon Steel	Replacement Steam Generator Feedwater Nozzle To Pipe
WPS-57	3.28"T x 5.669"H x 19.68"W	513150-000/IH738	SA508 Class 3A/ SA336 Grade 316LN	Replacement Steam Generator Primary Nozzle To Safe End
WPS-58	19" - 1.380"T	310WNH7	SA508 Class 3A Carbon Steel	Steam Generator Feedwater Nozzle To Nozzle
WPS-59	3" SCH 160 0.438"T		A106 Grade B Carbon Steel	3" SCH 160 Auxiliary Feedwater Piping
WPS-60	3" SCH 80 0.300"T		A106 Grade B Carbon Steel	3" SCH 80 Auxiliary Feedwater Piping
WPS-61	4" SCH 80 0.337"T		SA333 Carbon Steel	4" SCH 80 Auxiliary Feedwater Piping
WPS-62	12" SCH 40S 0.375"T		A358 TP304 Stainless Steel	12" SCH 40S Containment Spray Piping
WPS-63	2" - 3000 lb Coupling	EDN	SA182 SF304 Stainless Steel	Accumulator Tank 1A and 1B - 2", 1" and ¾" Coupling

Appendix B

Calibration Blocks

KEWAUNEE NUCLEAR POWER PLANT				
CALIBRATION BLOCKS				
IDENTITY	SIZE/SCHEDULE	IDENTITY OR HEAT NUMBER	MATERIAL	COMPONENT/SYSTEM
WPS-64	2" – 3000 lb Coupling	EDN	SA182 SF304 Stainless Steel	Accumulator Tank 1A and 1B - 2", 1" and ¾" Coupling
WPS-65	16" SCH 10S 0.250"T		A358 Cl.1 TP304 Stainless Steel	16" SCH 10S Safety Injection Piping
WPS-66	12 SCH 10S 0.180"T		A312 TP304 Stainless Steel	12" SCH 10S Safety Injection Piping
WPS-SIS-01-R1	6"T x 13"L x 4"W	123J414	A508 Class 2 Carbon Steel	Reactor Vessel SIS Nozzle to Shell and Reactor Vessel SIS Nozzle Inside Radius Section

Appendix C

Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
1995	RTD-W73S	ISIM-1461	EVALUATED
1995	RTD-W75S	ISIM-1461	EVALUATED
1995	RSI-H14	ISIM-982	EVALUATED
1995	RSI-H88	ISIM-937-1	EVALUATED
1995	MSRH-H1	ISIM-968	EVALUATED
1995	FDW-H82	M-877-2	REPAIRED
1995	FDW-H84	M-877-2	REPAIRED
1995	FDW-H85	M-877-2	REPAIRED
1995	FDW-H88	M-877-2	REPAIRED
1995	FDW-H91	M-877-2	REPAIRED
1995	FDW-H172	M-877-2	REPAIRED
1995	FDW-H174	M-877-2	REPAIRED
1995	FDW-H100	ISIM-866	REPAIRED
1995	FDW-H102	ISIM-866	REPAIRED
1995	FDW-H97	ISIM-865	REPAIRED
1995	SW-H235	ISIM-900	REPAIRED
1995	RSW-H10	ISIM-869	REPAIRED
1995	SW-H142A	ISIM-924-2	REPAIRED
1995	RRHR-H17	ISIM-938-1	REPAIRED
1995	AC-H67	ISIM-913	REPAIRED
1995	SI-H17A	ISIM-934-2	REPAIRED
1995	RSI-H103	ISIM-939 SH1	REPAIRED
1995	RC-H11	ISIM-940-1	REPAIRED
1995	RRHR-H2	ISIM-957-1SH1	REPAIRED
1995	SI-13B	ISIM-936	REPAIRED
1995	FW-W28	ISIM-970	EVALUATED

Appendix C

Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
1995	FW-W56	ISIM-971	EVALUATED
1996	SI-13A	ISIMM-982	EVALUATED
1996	FE-458	ISIM-1460	REPAIRED
1996	RC-103A	ISIM-1460	REPAIRED
1996	SG-W10	M-1206	EVALUATED
1996	FW-W29	ISIM-970	EVALUATED
1996	FW-W57	ISIM-971	EVALUATED
1996	SI-1A	ISIM-992-2	REPAIRED
1996	SI-1B	ISIM-992-2	EVALUATED
1996	P-MWB	M-1200	REPAIRED
1998	FDW-H56	ISIM-891-2	REPAIRED
1998	ASSW-1B1-S4	M-1220	EVALUATED
1998	PR-1A	ISIM-940-1	EVALUATED
1998	PR-1B	ISIM-940-1	EVALUATED
1998	SG-1A-22A	M-1201	REPAIRED
1998	SG-1A-22B	M-1201	REPAIRED
1998	SG-1A-22C	M-1201	REPAIRED
1998	CVC-11	ISIM-1473	EVALUATED
1998	FDW-H66	M-877-1	REPAIRED
1998	FDW-H67	M-877-1	REPAIRED
1998	LD-2	ISIM-1474	REPAIRED
1998	LD-3	ISIM-1474	REPAIRED
1998	LD-4B	M-1360	REPAIRED
1998	FW-W29	ISIM-970	EVALUATED
1998	FW-W57	ISIM-971	EVALAUTED

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Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
1998	RTD-H1	ISIM-1460	REPAIRED
1998	RSW-H14	ISIM-885-1	REPAIRED
1998	SI-H42	ISIM-934-1	REPAIRED
1998	SW-H144	ISIM-926	REPAIRED
1998	SI-H18	ISIM-934	REPAIRED
1998	SW-3A	ISIM-893	EVALUATED
1998	SW-4A	ISIM-893	EVALUATED
1998	SWSH-H11	ISIM-893	REPAIRED
1998	SWSH-H18	ISIM-893	REPAIRED
1998	FDW-H116	ISIM-970	REPAIRED
1998	MS-W19BC	ISIM-984-2SH3	REPAIRED
2000	ASSW-1B1-S4	M-1220	EVALUATED
2000	PR-1A	ISIM-940-1	REPAIRED
2000	PR-1B	IISM-940-1	REPAIRED
2000	ARG-S1	M-1208	REPAIRED
2000	LD-3	ISIM-1474	EVALUATED
2000	RHR-2B	ISIM-957-1SH1	EVALUATED
2000	SI-303A	ISIM-938-2SH1	REPAIRED
2000	CVC-11	ISIM-1473	REPAIRED
2000	SI-13B	ISIM-936	EVALUATED
2000	SI-304B	ISIM-939SH1	REPAIRED
2000	RV-CD35	M-1197	EVALUATED
2000	FW-W29	ISIM-970	EVALUATED
2000	FW-W57	ISIM-971	EVALUATED
2001	SG-IR16	M-1206	REPAIRED
2001	FW-W27BC	ISIM-970	REAPIRED

Appendix C

Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
2001	FW-W55BC	ISIM-971	REPAIRED
2001	SG-W2	M-1206	EVALUATED
2001	SG-W10	M-1206	EVALUATED
2001	FDW-H55	ISIM-891-2	EVALUATED
2001	FDW-H58	ISIM-891-2	REPAIRED
2001	ASSW-1B1-S4	M-1220	EVALUATED
2001	RC-H9	ISIM-940-2	REPAIRED
2001	RSI-H80	ISIM-936	REPAIRED
2001	RSI-H5A	ISIM-936	EVALUATED
2001	PR-1B	ISIM-940-1	EVALUATED
2001	SI-W6S	ISIM-982	REPAIRED
2001	RHR-1A	ISIM-957-1SH1	EVALUATED
2001	RHR-1B	ISIM-957-1SH1	EVALUATED
2001	RHR-2B	ISIM-957-1SH1	EVALUATED
2001	RCVC-H48	ISIM-874-3	REPAIRED
2001	RCVC-H49	ISIM-874-3	REPAIRED
2001	RCVC-H222	ISIM-1474	EVALUATED
2001	RC-H30	ISIM-874-2	EVALUATED
2001	P-MWB	M-1200	REPAIRED
2001	RSI-H44	ISIM-939SH1	EVALUATED
2001	AHEL-1A-S2	M-1221	REPAIRED
2001	RCP-1A-SLB	M-1205	EVALUATED
2001	RSW-H12	ISIM-867	EVALUATED
2001	RSI-H70	ISIM-937-2SH1	REPAIRED
2001	RSI-H73	ISIM-937-2SH1	REPAIRED
2001	RSI-H74	ISIM-937-2SH1	REPAIRED

Appendix C

Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
2001	RSW-H62	ISIM-889-1	REPAIRED
2001	SI-304B	ISIM-939SH1	REPAIRED
2001	FDW-H170	ISIM-971	REPAIRED
2001	FDW-H39	ISIM-891-1	REPAIRED
2001	FDW-H41	ISIM-891-1	EVALUATED
2001	FDW-H43	ISIM-891-1	REPAIRED
2001	FDW-H44	ISIM-891-1	REPAIRED
2001	MSRH-H2	ISIM-969	EVALUATED
2001	RHR-H24	ISIM-960-1	REPAIRED
2001	AC-H77	ISIM-890	EVALUATED
2001	RHR-H18	ISIM-960-1	REPAIRED
2001	SW-H414	ISIM-922	EVALUATED
2001	SW-H153	ISIM-901	EVALUATED
2001	SW-H150	ISIM-901	EVALUATED
2001	SW-H531	ISIM-893	EVALUATED
2001	SW-H129	ISIM-926	REPAIRED
2001	LD-3	ISIM-1474	REPAIRED
2001	SI-13B	ISIM-936	REPAIRED
2001	RV-CD35	M-1197	EVALUATED
2003	SG-1B-CLMWB	M-1201	REPAIRED
2003	ASSW-1B1-S4	M-1220	EVALUATED
2003	AHCCI-1A-S3	M-1222	REPAIRED
2003	RV-CD35	M-1197	EVALUATED
2003	RV-CD37	M-1197	EVALUATED
2003	RC-H23	ISIM-874-2	REPAIRED

Appendix C

Summary of Third Inspection Interval Examinations That Exceeded the Acceptance Criteria of Section XI

YEAR	COMPONENT IDENTIFICATION NUMBER	DRAWING NUMBER	RESOLUTION
2003	CVC-15	ISIM-874-3	REPAIRED
2003	SW-H153	ISIM-901	EVALUATED
2003	RSI-H7	ISIM-936	EVALUATED
2003	RSI-H7A	ISIM-936	EVALUATED
2003	RSI-H7B	ISIM-936	EVALUATED
2003	SI-21B	ISIM-938-1	EVALUATED
2003	SI-303B	ISIM-939 SH1	REPAIRED
2003	PR-F1	ISIM-940-2	REPAIRED
2003	RHR-1A	ISIM-957-1SH1	REPAIRED/EVALUATED
2003	RHR-1B	ISIM-957-1SH1	REPAIRED
2003	RHR-2B	ISIM-957-1SH1	REPAIRED
2003	RHR-H18	ISIM-960-1	EVALUATED
2003	RHR-H24	ISIM-960-1	EVALUATED
2003	RTD-H7	ISIM-1461	REPAIRED
2003	RTD-H9	ISIM-1461	EVALUATED
2003	RTD-H12	ISIM-1461	REPAIRED
2003	RTD-W70S	ISIM-1461	REPAIRED
2003	FE-459	ISIM-1461	REPAIRED
2003	CVC-F2	ISIM-1471	REPAIRED

Appendix D

Component Supports/Hangers and Welded Attachments That Are Identified on More Than One ISI Isometric Drawing

The following is a listing of those component supports/hangers that are required to be examined during the Fourth Inspection Interval and provide support for more than one component. These supports/hangers, therefore, appear on more than one ISI isometric drawing.

HANGER IDENTIFICATION	CORRESPONDING DRAWINGS
RSW-H3	ISIM-868 ISIM-869 ISIM-889-1 ISIM-889-2
RSW-H9	ISIM-869 ISIM-889-1

The following is a listing of those component supports/hangers that are required to be examined during the Fourth Inspection Interval and provide support for only one component. However, these supports/hangers are different from other supports in that they appear on more than one ISI isometric drawing.

HANGER IDENTIFICATION	CORRESPONDING DRAWINGS
RSW-H2	ISIM-868 ISIM-889-1
RSW-H10	ISIM-869 ISIM-888-1
RSW-H39	ISIM-888-1 ISIM-889-1
AC-H76	ISIM-881-1 ISIM-890
AC-H16	ISIM-881-1 ISIM-913
RSW-H36	ISIM-888-2 ISIM-889-1
RSW-H63	ISIM-889-1 ISIM-889-2
SW-H9	ISIM-893 ISIM-900

Appendix D

Component Supports/Hangers and Welded Attachments That Are Identified on More Than One ISI Isometric Drawing

HANGER IDENTIFICATION	CORRESPONDING DRAWINGS
SW-H8	ISIM-893 ISIM-901
SW-H10	ISIM-900 ISIM-901
SW-H87	ISIM-900 ISIM-924-1
SW-H147	ISIM-901 ISIM-926
AC-H20	ISIM-914 ISIM-915
SW-H134	ISIM-922 ISIM-924-1
SW-H143	ISIM-924-2 ISIM-926
FDW-H169	ISIM-970 ISIM-991SH1
FDW-H170	ISIM-971 ISIM-972-1SH1

The following is a listing of those component supports/hangers that are required to be examined during the Fourth Inspection Interval, appear on more than one ISI isometric drawing, and have welded attachments on more than one line that is being supported by the support/hanger.

HANGER IDENTIFICATION	CORRESPONDING DRAWINGS
RSW-H3	ISIM-868 ISIM-869 ISIM-889-1 ISIM-889-2

Appendix D

Component Supports/Hangers and Welded Attachments That Are Identified on More Than One ISI Isometric Drawing

The following is a listing of those component supports/hangers that are required to be examined during the Fourth Inspection Interval, that appear on more than one drawing, and have welded attachments identified on more than one ISI isometric drawing, but the integrally welded attachment is attached to only one component.

HANGER IDENTIFICATION	CORRESPONDING DRAWINGS
RSW-H9	ISIM-869 ISIM-889-1
RSW-H39	ISIM-888-1 ISIM-889-1
AC-H16	ISIM-881-1 ISIM-913
RSW-H36	ISIM-888-2 ISIM-889-1
RSW-H63	ISIM-889-1 ISIM-889-2
SW-H9	ISIM-893 ISIM-900
SW-H8	ISIM-893 ISIM-901
SW-H10	ISIM-900 ISIM-901
SW-H87	ISIM-900 ISIM-924-1
AC-H20	ISIM-914 ISIM-915
SW-H134	ISIM-922 ISIM-924-1
SW-H143	ISIM-924-2 ISIM-926
FDW-H169	ISIM-970 ISIM-991SH1
FDW-H170	ISIM-971 ISIM-972-1SH1

Appendix E

List of Non Exempt Snubbers Within Code Class Boundary

SNUBBER ID	DRAWING NO.	CODE CLASS
RC-H29A	ISIM-874-2	1
RCVC-H35	ISIM-874-3	1
AC-H68	ISIM-914	3
SW-H401	ISIM-924-1	3
SI-H35	ISIM-934-2	2
RSI-H2	ISIM-936	2
RSI-H2A	ISIM-936	2
RSI-H38	ISIM-936	2
RSI-H78	ISIM-936	2
RSI-H101	ISIM-936	2
RSI-H102	ISIM-936	2
RSI-H99	ISIM-937-1	2
RSI-H98	ISIM-937-2SH1	2
RRHR-H18	ISIM-938-1	1
RRHR-H14	ISIM-938-2SH1	2
RRHR-H15	ISIM-938-2SH1	2
RSI-H59	ISIM-939SH1	2
RSI-H61	ISIM-939SH1	2
RSI-H63	ISIM-939SH1	1
RSI-H67	ISIM-939SH1	1
CS-H39	ISIM-951	2
ICS-H7	ISIM-952	2
ICS-H8	ISIM-952	2
ICS-H9	ISIM-952	2
CS-H33A	ISIM-953	2
ICS-H10	ISIM-954	2
ICS-H11	ISIM-954	2
ICS-H12	ISIM-954	2
RHR-H38A	ISIM-958-1-1	2

Appendix E

List of Non Exempt Snubbers Within Code Class Boundary

SNUBBER ID	DRAWING NO.	CODE CLASS
RHR-H41A	ISIM-958-1-1	2
RHR-H35A	ISIM-959-1-1	2
RHR-H36A	ISIM-959-2	2
RHR-H12A	ISIM-961-2	2
RHR-H12B	ISIM-961-2	2
RHR-H16A	ISIM-961-2	2
RHR-H10H	ISIM-962-2SH1	2
RHR-H49	ISIM-962-2SH1	2
RSI-H83	ISIM-982	2
RSI-H100	ISIM-982	2
RTD-H2	ISIM-1460	1
RTD-H6	ISIM-1460	1
RTD-H11	ISIM-1461	1
RTD-H8	ISIM-1461	1
RCVC-H36	ISIM-1471	1
RCVC-H34	ISIM-1473	1
RCVC-H33A	ISIM-1473	1
RCVC-H33B	ISIM-1473	1
RCVC-H32	ISIM-1474	1
RCVC-H245	ISIM-1476	1
SG-AH-1	M-1206	2
SG-AH-2	M-1206	2

Appendix F

Augmented Examination Programs

Augmented examinations are those examinations that are performed above and beyond the requirements of ASME Boiler and Pressure Vessel Code Section XI, examinations that are governed by Kewaunee Nuclear Power Plant Technical Specifications or required to be performed to ASME/ANSI OM Standard Part 4 as referenced in ASME Boiler and Pressure Vessel Code Section XI. Below is a summary of those examinations performed by the Kewaunee Nuclear Power Plant that are not specifically addressed by Section XI, or the examinations that will be performed in addition to the requirements of the Code on a routine basis during the Fourth Inspection Interval.

1. Program Summary

Augmented examinations performed at the Kewaunee Nuclear Power Plant on a continuous or ongoing basis are as follows.

- a. IE Bulletins, NRC Order's and NRC Bulletins
 - i. IE Bulletin 79-13, "Cracking in Feedwater System Piping." Reference WPSC letter dated July 26, 1979, from E. R. Mathews (WPSC) to J. G. Keppler (NRC).
 - ii. IE Bulletin 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWR Plants." Reference WPSC letter dated August 29, 1979, from E. R. Mathews (WPSC) to J. G. Keppler (NRC).
 - iii. IE Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems." Reference WPSC letter, NRC-89-113, dated August 31, 1989.
 - iv. Nuclear Regulatory Commission Interim Head Inspection Requirements NRC Order EA-03-009
 - v. Nuclear Regulatory Commission NRC Bulletin 2003-02: Leakage From Reactor Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity
- b. Generic Letters
 - i. Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Coolant Boundary Components in PWR Plants." Reference WPSC letter, NRC-88-077, dated July 3, 1989.
- c. Updated Safety Analysis Report
 - i. Section 4.2.2, Reactor Coolant Pump Flywheels

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Augmented Examination Programs

- d. Plant Technical Specifications
 - i. TS 4.14, Snubber Surveillance Testing
 - ii. TS 4.2.a.2, Pump and Valve Testing
 - iii. TS 4.2.b, Steam Generator Tubes
- e. Kewaunee Nuclear Power Plant Engineering Programs Inservice Inspection
 - i. Alloy 600 and SA182 Weld Program

2. Program Implementation

Only certain augmented programs are included in this long-term plan. Those programs and their requirements are stated below. For information regarding other programs, contact the Plant Manager at the Kewaunee Nuclear Power Plant.

- a. IE Bulletin 79-13, "Cracking in Feedwater System Piping"

This bulletin and its supplements reported that a significant number of PWR plants have experienced cracking of the steam generator feedwater nozzle-to-pipe weldment. Although a feedwater line break is an analyzed accident, the identified degradation of these joints in the absence of a routine inservice inspection requirement of these feedwater nozzle-to-piping welds is the basis for IE Bulletin 79-13. In 1979, the Kewaunee Nuclear Power Plant discovered shallow cracks in the feedwater nozzle-to-pipe weldments for both steam generators. Inspection and repair details are documented in WPSC letter dated July 26, 1979, from E. R. Mathews (WPSC) to J. G. Keppler (NRC). Following this incident, WPSC has inspected these areas on a routine basis. During the Steam Generator Replacement in 2001 Kewaunee Nuclear Power Plant replaced the weldments in the feedwater nozzle to pipe. In the Fourth Inspection Interval, Kewaunee will radiograph or ultrasonically examine these areas each period when practicable (i.e., when refueling outage schedule permits, to coincide with maintenance activities, etc.).

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Augmented Examination Programs

b. IE Bulletin 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWR Plants"

This bulletin summarizes incidents where pipe cracking has occurred in stainless steel piping systems at PWR plants. In 1980, the KNPP conducted examinations in accordance with the requirements of the bulletin. No incidents of cracking were discovered as a result of these inspections. In order for stainless steel pipe systems to be susceptible to stress corrosion cracking, three factors must co-exist simultaneously: aggressive environment, tensile stress, and susceptible material. The presence of these three ingredients does not necessarily preclude stress corrosion cracking. Their presence only indicates susceptibility. The degrees to which any one of these factors must be present for stress corrosion cracking to occur depends on its magnitude and relationship with the other two factors. Specific information regarding each of these factors with respect to stress corrosion cracking of austenitic stainless steel is well defined in numerous documents within the metals and nuclear industries. Parameters that can influence stress corrosion cracking are summarized below.

Environment

- i. Either a surface imperfection or corrodant (B, Cl⁻ and F⁻) is necessary to create a site for stress corrosion cracking to occur.
- ii. The rate of stress corrosion cracking is proportional to the exponent of negative inverse temperature $e^{-\frac{1}{T}}$, and
- iii. High oxygen content.

Susceptible Material

Excess carbon, improper heat treatment, or poor welding techniques can cause the formation of metal carbides at grain boundaries and lower the chromium content there below 12 percent.

A minimum of 12 percent chrome is required for passivity in moist air. This condition is known as sensitization.

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Augmented Examination Programs

Tensile Stress

The final factor of concern is the direction and magnitude of stress. The occurrence of stress corrosion cracking requires a tensile stress at the surface. Fabrication of the piping systems by welding results in some level of tensile stress.

These parameters have been reviewed for the stagnant borated water systems at the Kewaunee Nuclear Power Plant. This review and the historical performance of the weldments to date signify that these systems will not experience stress corrosion cracking. Good performance of the weldments can be attributed to the following:

- Routine testing to control and maintain water chemistry in accordance with current standards
- Utilization of qualified welding procedures and thin diameter pipe resulting in low residual stress
- Relatively low operating temperature
- Radiography of butt welds during fabrication resulting in defect-free welds

Since no areas of concern were noted in this review and because no evidence of cracking has been observed to date, no augmented volumetric or surface examinations have been scheduled during the Fourth Inspection Interval. However, some volumetric and/or surface examinations may be performed in systems which contain stagnant borated water as required by Tables IWB-2500-1 and IWC-2500-1 of ASME Boiler and Pressure Code, Section XI. All of the stagnant borated water systems identified in the bulletin are routinely examined by visual inspection during scheduled pressure tests required by Section XI.

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Augmented Examination Programs

- c. IE Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems"

Supplement 3 to the bulletin notified KNPP that there was a possibility for temperature stratification and oscillation to occur in the horizontal sections of the Loop A and B hot leg RHR inlet piping. One of the required actions was to inspect welds potentially affected (two on A loop, one on B loop) via ultrasonics using 0°, 45°, and 60° beam transducers. These inspections were completed and found no recordable indications. KNPP committed to inspecting one of the three welds each ISI period (three years) during the second inspection interval. Upon completion of the Second Inspection Interval, this inspection frequency was to then be re-evaluated. Due to the fact that no planer indications were discovered during any of the inspections performed during the Second and Third Inspection Interval and because no leakage has occurred at valves RHR-1A or RHR-1B, no additional examinations are scheduled for the Fourth Inspection Interval. In the future, should RCS valve leakage due to a packing leak or degradation of a valve seat occur, ISI techniques will be used to verify that degradation is not occurring.

- d. Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Coolant Boundary Components in PWR Plants"

Generic Letter 88-05 summarizes domestic PWR plant experiences where boric acid leakage has had the potential to degrade carbon steel Reactor Coolant System pressure boundary components. The NRC staff noted that boric acid leakage potentially affecting the integrity of the reactor coolant pressure boundary should be procedurally controlled to ensure continued compliance with the licensing basis. KNPP does not administer one all encompassing formal program for the control and correction of boric acid leakage. However, key elements identified in the generic letter are adequately implemented through existing surveillance, operating, and maintenance procedures, and provide assurance of compliance as required by the referenced generic letter. In letter, K-88-205 from the NRC to KNPP in response to KNPP Letter NRC-88-77, the NRC noted that KNPP should maintain in auditable form, records of the program and results obtained from implementation of the program. To this end, KNPP identified 39 valves, 4 flanges, 3 Conoseal Bolting Assemblies, 5 Manways, Reactor Vessel Closure Head, Reactor Vessel Bottom Head and 72 Reactor Coolant Pump Bolts with carbon and low alloy steel where leaks that are smaller than the allowable Technical Specification limit could cause degradation of the primary pressure boundary by boric acid corrosion:

SI-13A	SI-22B	FE-458	SI-4A	RHR-2B	PR-3B	LD-2
SI-13B	SI-303A	FE-459	SI-4B	RHR-11	PS-1A	LD-3
SI-21A	SI-303B	SI-2A	RHR-1A	RC-103A	PS-1B	LD-4A
SI-21B	SI-304A	SI-2B	RHR-1B	RC-103B	CVC-11	LD-4B

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SI-22A	SI-304B	SI-3	RHR-2A	PR-3A	CVC-15	LD-4C
PR-1A	PR-1B	PR-2A	PR-2B	PR-F1	PR-F2	RV-CD-34
RV-CD35	RV-CD37	RC-402	RC-412			

Reactor Vessel Closure Head - 40 Control Rod Drive Mechanisms and 1 – 3/4" Head Vent Line.

Reactor Vessel Bottom Head - 36 Bottom Mounted Instrumentation (BMI's)

Steam Generator Manway Bolting: SG-1A-HLMWB, SG-1A-CLMWB, SG-1B-HLMWB and SG-1B-CLMWB: 16 Studs, 16 Nuts and 32 Washers each Manway.

Pressurizer Manway Bolting P-MWB (P-B1 thru P-B16)

Reactor Coolant Pump Main Flange Bolting: RCP-B1 through RCP-B48

Reactor Coolant Pump No.1 Seal Housing Bolting: RCP-B49 through RCP-B72

Note: Reactor Vessel Closure Head Studs, Nuts and Washers (48 each) are not included in the Generic Letter 88-05 Program due to cleaning and/or neolubing performed each 18 month Refueling Outage by Reactor Engineering Personnel.

During the Fourth Inspection Interval, pressure retaining components of these valves, flanges, manways, Reactor Vessel Closure Head, Reactor Vessel Bottom Head and Reactor Coolant Pumps will receive a VT-3 visual examination each period (3 1/3 Years). The results of these examinations shall be documented in the ISI reports and reported in the Inservice Inspection Summary Report following the outage in which the examinations were conducted.

e. Updated Safety Analysis Report, Section 4.2.2, Reactor Coolant Pump Flywheels

Section 4.2.2 reports that the reactor coolant pump flywheels are designed in part to preclude missile production by the pump flywheels. The design included a fracture mechanics evaluation of the reactor coolant pump flywheel. The evaluation considered the following assumptions:

- i Maximum tangential stress at an assumed over speed of 125%.
- ii A crack through the thickness of the flywheel at the bore.
- iii Four hundred (400) cycles of startup operation in forty years.

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Augmented Examination Programs

Using critical stress intensity factors and crack growth data attained on flywheel material, the critical crack size for failure was shown to be greater than 17 inches radially and the crack growth rate was 0.030 inch to 0.060 inch per 1000 cycles. Periodic ultrasonic examinations will provide continued assurance that the flywheels are structurally sound. The ultrasonic examination procedure utilized for these periodic examinations must be capable of detecting at least ½-inch deep cracks from the ends of the flywheel. Flywheels on both reactor coolant pumps will be ultrasonically examined during the Fourth Inspection Interval. Examinations will be performed concurrent with scheduled maintenance.

f. Plant Technical Specification, TS 4.14, Snubber Testing

All safety-related hydraulic shock suppressors are visually examined and tested in accordance with the requirements of TS 4.14. Refer to TS 4.14 for details regarding this program.

g. Plant Technical Specification, TS 4.2.b, Steam Generator Tubes

Examination of steam generator tubing is governed by TS 4.2.b. Refer to TS 4.2.b for details regarding this program.

h. Nuclear Regulatory Commission Interim Head Inspection Requirements – NRC Order EA-03-0009

NRC Order EA-03-009 summarizes requirements for performing Reactor Vessel Closure Head Inspections as follows:

Interim Head Inspection Requirements – NRC Order EA-03-009

<p>HIGH EDY > 12</p> <p>Each Outage A and (B, C, or D).</p>	<p>MODERATE EDY ≥ 8 & ≤ 12</p> <p>Each Outage either A or (B, C, or D)</p> <p>But, over the course of 2 outages, A must be performed once as well as (B, C, or D) once.</p>	<p>LOW EDY < 8</p> <p>Over the first 3 outages after the order was issued, KNPP must perform A once and either (B, C, or D) once.</p> <p>After the above requirements are met, A must be done once every 3 outages and either (B, C, or D) once every 4 outages.</p>
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Augmented Examination Programs

- A = Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle).
- B = Ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone.
- C = Eddy Current testing of the wetted surface of each J-Groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld.
- D = Dye Penetrant testing of the wetted surface of each J-Groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld.
- EDY = Total Effective Degradation Years, normalized to a reference temperature of 600F. The calculated value of EDY shall determine the susceptibility category and the appropriate inspection for the RPV head during each refueling outage.

- i. Nuclear Regulatory Commission NRC Bulletin 2003-02: Leakage From Reactor Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity.

NRC Bulletin 2003-02 summarizes domestic PWR plant experiences where boric acid leakage has had the potential to degrade Reactor Pressure Vessel Lower Heads for in-core nuclear instrumentation. During the Fourth Inspection Interval, the 36 Bottom Mounted Instrumentation (BMI's) at the Kewaunee Nuclear Power Plant will receive a 100% Bare Metal VT-3 visual examination each Refueling Outage. The results of these inspections shall be documented in the Annual ISI reports and reported in the Inservice Inspection Summary Report following the outage in which the examinations were conducted.

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Augmented Examination Programs

j. Kewaunee Nuclear Power Plant Alloy 600 and SA182 Weld Program.

The following components/welds at the Kewaunee Nuclear Power Plant contain Alloy 600 or SA182 material in the Reactor Coolant Pressure Boundary:

<u>IDENTITY</u>	<u>LOCATION</u>	<u>MATERIAL</u>
1. 40 Control Rod Drive Mechanisms (Penetration No. 1,2,3,4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18,19,20,21,22,23, 22,23,24,25,26,27,28,29,30,31, 32, 33,34,35,37,38,39,40 and 41) and 1- 3/4" Head Vent Line	Reactor Vessel Closure Head	Alloy 600
2. RV-P1 through RV-P36	Reactor Vessel Bottom Head "Bottom Mounted Instrumentation's (BMI's)"	Alloy 600
3. SI-W54DM	Reactor Vessel 4" Nozzle Safe End	Alloy 600 with Nozzle End of SA182
4. SI-W112DM	Reactor Vessel 4" Nozzle Safe End	Alloy 600 with Nozzle End of SA182
5. RC-W76DM	Steam Generator A 29" ID Nozzle Safe End	Alloy 600 with Alloy 690 Cladding
6. RC-W77DM	Steam Generator A 31" ID Nozzle Safe End	Alloy 600 with Alloy 690 Cladding
7. RC-W78DM	Steam Generator B 29" ID Nozzle Safe End	Alloy 600 with Alloy 690 Cladding
8. RC-W79DM	Steam Generator B 31" ID Nozzle Safe End	Alloy 600 with Alloy 690 Cladding
9. PR-W1DM	Pressurizer Relief 6" Nozzle Safe End	SA182
10. PR-W16DM	Pressurizer Safety 6" Nozzle Safe End	SA182

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Augmented Examination Programs

	<u>IDENTITY</u>	<u>LOCATION</u>	<u>MATERIAL</u>
10.	PR-W16DM	Pressurizer Safety 6" Nozzle Safe End	SA182
11.	PR-W26DM	Pressurizer Safety 6" Nozzle Safe End	SA182
12.	PS-W61DM	Pressurizer Spray 4" Nozzle Safe End	SA182
13.	RC-W67DM	Pressurizer Surge 14" Nozzle Safe End	SA182

During the Fourth Inspection Interval, the following pressure retaining component welds will receive a 100% Bare Metal VT-3 Examination each Refueling Outage.

1. Reactor Vessel Closure Head 40 - Control Rod Drive Mechanism's and 1- 3/4" Head Vent Line
2. Reactor Vessel Bottom Head "Bottom Mounted Instrumentation's (BMI's)" - RV-P1 through RV-P36

The results of these examinations shall be documented in the ISI reports and reported in the Inservice Inspection Summary Report following the outage in which the examinations were conducted.

During the Fourth Inspection Interval, the following pressure retaining welds will receive a Liquid Penetrant and Ultrasonic Examination following Insulation Removal and a VT-2 Examination with the Insulation in place as required by and at the frequency stated in ASME Boiler and Pressure Vessel Code Section XI 1998 Edition 2000 Addenda.

1. SI-W54DM
2. SI-W112DM
3. RC-W76DM
4. RC-W77DM
5. RC-W78DM
6. RC-W79DM
7. PR-W1DM
8. PR-W16DM
9. PR-W26DM
10. PS-W61DM
11. RC-W67DM

The results of these examinations shall be documented in the ISI reports and reported in the Inservice Inspection Summary Report following the outage in which the examinations were conducted.

Appendix G

Acronyms

AC	Auxiliary Coolant
AFW	Auxiliary Feedwater
ANII	Authorized Nuclear Inservice Inspector
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transients Without Scram
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CHG	Charging
CRDH	Control Rod Drive Housing
CRDM	Control Rod Drive Mechanism
CVC	Chemical & Volume Control
ECCS	Emergency Core Cooling System
ECD	Engineering Control Directive
ECP	Engineering Control Procedure
EOI	End of Interval
FSAR	Final Safety Analysis Report
FW	Feedwater
HX	Heat Exchanger
ICS	Internal Containment Spray
IRS	Inside Radius Section
ISI	Inservice Inspection
IWA	Integrally Welded Attachment
KNPP	Kewaunee Nuclear Power Plant
LD	Letdown
LOCA	Loss of Coolant Accident
MS	Main Steam
MSIV	Main Steam Isolation Valves
NDE	Non-Destructive Examination
NPS	Nominal Pipe Size

Appendix G

Acronyms

NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation (Office of)
NUREG	Nuclear Regulatory Commission Report
PORC	Plant Operations Review Committee
PR	Pressurizer Relief
PRA	Probabilistic Risk Assessment
PS	Pressurizer Spray
PWR	Pressurized Water Reactor
PZR	Pressurizer
QA	Quality Assurance
RC	Reactor Coolant
RCP	Reactor Coolant Pump
RCPB	Reactor Coolant Pressure Boundary
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RTD	Reactor Temperature Detection
RV	Reactor Vessel
RWST	Refueling Water Storage Tank
SFP	Spent Fuel Pool
SG	Steam Generator
SI	Safety Injection
SRP	Standard Review Plan
SW	Service Water System
SWSH	Service Water Screen House
VCT	Volume Control Tank
<u>W</u>	Westinghouse
WCAP	Westinghouse Commercial Atomic Power
WD	Waste Disposal
WPSC	Wisconsin Public Service Corporation

Appendix H

Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
RC-7	RC-W9	1976	WPS-104	ISIM-1703	B9.11
RCC-A-11	RC-W19	1976	WPS-104	ISIM-1703	B9.11
RCC-A-12	RC-W20	1976	WPS-104	ISIM-1703	B9.11
2-SI-23	SI-W61	1976	WPS-132	ISIM-938-1	B9.11
1-W2	SI-W63	1976	WPS-132	ISIM-938-1	B9.11
5-RC-206-AF	SI-W74	1976	WPS-131	ISIM-938-1	B9.11
9-W3	SI-W71	1976	WPS-131	ISIM-938-1	B9.11
2-RC-845-B	RHR-W1	1976	WPS-115	ISIM-957-1SH1	B9.11
3-W1	RHR-W2	1976	WPS-115	ISIM-957-1SH1	B9.11
4-W2	RHR-W3	1976	WPS-115	ISIM-957-1SH1	B9.11
5-W3	RHR-W4	1976	WPS-115	ISIM-957-1SH1	B9.11
6-SJ-5	SI-W49	1976	WPS-120	ISIM-939SH1	B9.11
4-W2	SI-W105	1976	WPS-121	ISIM-938-2SH1	B9.11
4-W2	PR-W30	1976	WPS-118	ISIM-940-2	B9.11
3-W2	PR-W19	1976	WPS-118	ISIM-940-2	B9.11
4-W3	PR-W20	1976	WPS-118	ISIM-940-2	B9.11
3-RC-40	SI-W52	1976	WPS-120	ISIM-939SH1	B9.11
3-RTD-1-JA	RTD-W31	1976	WPS-123	ISIM-1460	B9.21
2-RTD-201-BJ	RTD-W84	1976	WPS-137	ISIM-1461	B9.21
2-RC-32I	PS-W1	1976	WPS-122	ISIM-874-2	B9.21
3-W1	PS-W2	1976	WPS-122	ISIM-874-2	B9.21
2-RC-45K	PS-W30	1976	WPS-122	ISIM-874-1	B9.21
3-W2	PS-W31	1976	WPS-122	ISIM-874-1	B9.21
4-W3	PS-W32	1976	WPS-122	ISIM-874-1	B9.21
3-SW-2	PR-W4	1976	WPS-119	ISIM-940-1	B9.21
24-SW-1	RTD-W106B	1976	WPS-140	ISIM-1461	B9.21
23-RTD-205-BJ	RTD-78B	1976	WPS-141	ISIM-1461	B9.21
1-SW8 Loop A4	RC-W23BC	1976	WPS-114	ISIM-1703	B9.31
1-CVC-3891	CVC-W58S	1976	WPS-129	ISIM-1471	B9.40

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
2-CVC-3889	CVC-W57S	1976	WPS-129	ISIM-1471	B9.40
3-CVC-3888	CVC-W56S	1976	WPS-129	ISIM-1471	B9.40
5-CVC-3886	CVC-W55S	1976	WPS-129	ISIM-1471	B9.40
1-SW8	RC-W14BC	1976	WPS-126	ISIM-1703	B9.32
2-SI-302	SI-W10S	1976	WPS-125	ISIM-982	B9.40
1-RTD-60	RTD-W1S	1976	WPS-124	ISIM-1460	B9.40
2-RTD-61	RTD-W2S	1976	WPS-124	ISIM-1460	B9.40
1-SW5	RC-W21BC	1976	WPS-128	ISIM-1703	B9.32
2-RTD-85	RTD-W32S	1976	WPS-128	ISIM-1460	B9.40
1-SW	CVC-W152S	1976	WPS-147	ISIM-1476	B9.40
2-CVC-3518MY	CVC-W151S	1976	WPS-147	ISIM-1476	B9.40
3-CVC-3134MY	CVC-W150S	1976	WPS-147	ISIM-1476	B9.40
4-CVC-3538MY	CVC-W149S	1976	WPS-147	ISIM-1476	B9.40
2-SIS-576-CH	SI-W86S	1976	WPS-144	ISIM-936	B9.40
1-RTD-273-BJ	RTD-W58S	1976	WPS-141	ISIM-1461	B9.40
2-RTD-271-BJ	RTD-W57S	1976	WPS-141	ISIM-1461	B9.40
1-SW8	RC-W52BC	1976	WPS-140	ISIM-1704	B9.32
2-RTD-87-SB	RTD-W85S	1976	WPS-140	ISIM-1461	B9.40
1-RC-538-ZE	LD-W4S	1976	WPS-145	ISIM-1474	B9.40
1-SW8	RC-W44BC	1976	WPS-142	ISIM-1704	B9.32
1-7A-461-T	RC-W51BC	1976	WPS-138	ISIM-1704	B9.32
2-RC-574-SB	CVC-W96S	1976	WPS-138	ISIM-1473	B9.40
3-RC-575-1	CVC-W95S	1976	WPS-138	ISIM-1473	B9.40
4-RC-576-1	CVC-W94S	1976	WPS-138	ISIM-1473	B9.40
5-RC-577-1	CVC-W93S	1976	WPS-138	ISIM-1473	B9.40 ⁽¹⁾
6-RC-578-1	CVC-W92S	1976	WPS-138	ISIM-1473	B9.40 ⁽¹⁾
7-RC-579-1	CVC-W91S	1976	WPS-138	ISIM-1473	B9.40 ⁽¹⁾

⁽¹⁾ Configuration on WPS-138 does not match ISIM-1473.

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
1-CVC-6271-G2	NOT ASSIGNED	1976	WPS-146	-	N/A
2-CVC-6272-G2	NOT ASSIGNED	1976	WPS-146	-	N/A
3-CVC-6274-G2	NOT ASSIGNED	1976	WPS-146	-	N/A
1-SI-568	SI-W104BC	1976	WPS-127	ISIM-938-2SH1	B9.32
2-SI-741	SI-W103S	1976	WPS-127	ISIM-937-2SH1	B9.40
1-SI-500-SB	SI-W42BC	1976	WPS-143	ISIM-939SH1	B9.32
1-SW7	RC-W43BC	1976	WPS-137	ISIM-1704	B9.32
7	RC-W39	1978	WPS-1-4200	ISIM-1704	B9.11
7	SI-W116	1978	WPS-1-4101	ISIM-935	B9.11
9	SI-W113	1978	WPS-1-4101	ISIM-935	B9.11
3B	RC-W65	1978	WPS-1-4500	ISIM-892	B9.11
8	RHR-W31	1978	WPS-1-4203	ISIM-957-1SH1	B9.11
9	RHR-W32	1978	WPS-1-4203	ISIM-957-1SH1	B9.11
11	RHR-W34	1978	WPS-1-4203	ISIM-957-1SH1	B9.11
12	RHR-W35	1978	WPS-1-4203	ISIM-957-1SH1	B9.11
22	SI-W19	1978	WPS-1-4105	ISIM-939SH1	B9.11
24	SI-W17	1978	WPS-1-4105	ISIM-939SH1	B9.11
2	RC-W27	1978	WPS-1-4104	ISIM-1703	B9.11
3	RC-W28	1978	WPS-1-4103	ISIM-982	B9.11
5	SI-W110	1978	WPS-1-4206	ISIM-938-2SH1	B9.11
5	RTD-W29	1978	WPS-1-4106	ISIM-1460	B9.21
4	RTD-W82	1978	WPS-1-4207	ISIM-1461	B9.21
11	PS-W11	1978	WPS-1-4504	ISIM-874-2	B9.21
12	PS-W12	1978	WPS-1-4504	ISIM-874-2	B9.21
11	PS-W39	1978	WPS-1-4505	ISIM-874-1	B9.21
12	PS-W40	1978	WPS-1-4505	ISIM-874-1	B9.21
17	PS-W45	1978	WPS-1-4505	ISIM-874-1	B9.21
1 (BC)	RC-W4BC	1978	WPS-1-4104	ISIM-1703	B9.31
1 (BC)	RC-W44BC	1978	WPS-1-4215	ISIM-1704	B9.32

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
24	CVC-W35S	1978	WPS-1-4112	ISIM-1471	B9.40
25	CVC-W34S	1978	WPS-1-4112	ISIM-1471	B9.40
34A	CVC-W24S	1978	WPS-1-4113	ISIM-1471	B9.40
35	CVC-W23S	1978	WPS-1-4113	ISIM-1471	B9.40
5	WD-W4S	1978	WPS-1-4111	ISIM-1369-2	B9.40
6	WD-W5S	1978	WPS-1-4111	ISIM-1369-2	B9.40
4	SI-W7S	1978	WPS-1-4109	ISIM-982	B9.40
14	RTD-W13S	1978	WPS-1-4107	ISIM-1460	B9.40
15	RTD-W14S	1978	WPS-1-4107	ISIM-1460	B9.40
16	RTD-W15S	1978	WPS-1-4107	ISIM-1460	B9.40
6	RTD-W36S	1978	WPS-1-4108	ISIM-1460	B9.40
7	RTD-W37S	1978	WPS-1-4108	ISIM-1460	B9.40
17	CVC-W136S	1978	WPS-1-4216	ISIM-1476	B9.40
18	CVC-W135S	1978	WPS-1-4216	ISIM-1476	B9.40
19	CVC-W134S	1978	WPS-1-4216	ISIM-1476	B9.40
40	CVC-W112S	1978	WPS-1-4216	ISIM-1476	B9.40
41	CVC-W111S	1978	WPS-1-4216	ISIM-1476	B9.40
4	SI-W84S	1978	WPS-1-4212	ISIM-936	B9.40
10	RTD-W65S	1978	WPS-1-4209	ISIM-1461	B9.40
11	RTD-W66S	1978	WPS-1-4209	ISIM-1461	B9.40
18	RTD-W100S	1978	WPS-1-4208	ISIM-1461	B9.40
19	RTD-W101S	1978	WPS-1-4208	ISIM-1461	B9.40
78	NOT ASSIGNED	1978	WPS-1-4211	-	N/A
79	NOT ASSIGNED	1978	WPS-1-4211	-	N/A
80	NOT ASSIGNED	1978	WPS-1-4211	-	N/A
5	SI-W100S	1978	WPS-1-4214	ISIM-937-2SH1	B9.40
4	SI-W39S	1978	WPS-1-4110	ISIM-937-1	B9.40
3	RC-W28	1979	WPS-1-4103	ISIM-982	B9.11
2	RC-W59	1979	WPS-1-4205	ISIM-1704	B9.11

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
7	PR-W7	1979	WPS-1-4503	ISIM-940-1	B9.21
1 (BW)	SI-W87B	1979	WPS-1-4212	ISIM-936	B9.21
10	LD-W13S	1979	WPS-1-4213	ISIM-1474	B9.40
23	CVC-W75S	1979	WPS-1-4210	ISIM-1473	B9.40
24	CVC-W74S	1979	WPS-1-4210	ISIM-1473	B9.40
25	CVC-W73S	1979	WPS-1-4210	ISIM-1473	B9.40
26	CVC-W72S	1979	WPS-1-4210	ISIM-1473	B9.40
7	CVC-W156S	1979	WPS-1-4506	ISIM-874-3	B9.40
8	CVC-W157S	1979	WPS-1-4506	ISIM-874-3	B9.40
8	RC-W42	1981	WPS-1-4200	ISIM-1704	B9.11
9	RC-W45	1981	WPS-1-4200	ISIM-1704	B9.11
12	SI-W66	1981	WPS-1-4201	ISIM-938-1	B9.11
13	SI-W65	1981	WPS-1-4201	ISIM-938-1	B9.11
8	SI-W56	1981	WPS-1-4202	ISIM-938-1	B9.11
9	SI-W55	1981	WPS-1-4202	ISIM-938-1	B9.11
9	RHR-W8	1981	WPS-1-4102	ISIM-957-1SH1	B9.11
10	RHR-W9	1981	WPS-1-4102	ISIM-957-1SH1	B9.11
19	RHR-W42	1981	WPS-1-4203	ISIM-957-1SH1	B9.11
21	RHR-W44	1981	WPS-1-4203	ISIM-957-1SH2	B9.11
18	SI-W23	1981	WPS-1-4105	ISIM-939SH1	B9.11
19	SI-W22	1981	WPS-1-4105	ISIM-939SH1	B9.11
21	SI-W20	1981	WPS-1-4105	ISIM-939SH1	B9.11
2	RC-W60	1981	WPS-1-4204	ISIM-936	B9.11
6	RTD-W80	1981	WPS-1-4207	ISIM-1461	B9.21
8	RTD-W107	1981	WPS-1-4207	ISIM-1461	B9.21
25	PS-W24	1981	WPS-1-4504	ISIM-874-2	B9.21
26	PS-W25	1981	WPS-1-4504	ISIM-874-2	B9.21
30	PS-W47	1981	WPS-1-4504	ISIM-874-1	B9.21
32	PS-W49	1981	WPS-1-4504	ISIM-874-1	B9.21

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
33	PS-W50	1981	WPS-1-4504	ISIM-874-1	B9.21
1 (BW)	RTD-W25B	1981	WPS-1-4107	ISIM-1460	B9.21
1 (BC)	RC-W33BC	1981	WPS-1-4500	ISIM-1704	B9.31
1 (BC)	RC-W32BC	1981	WPS-1-4205	ISIM-1704	B9.31
15	CVC-W44S	1981	WPS-1-4112	ISIM-1471	B9.40
17	CVC-W42S	1981	WPS-1-4112	ISIM-1471	B9.40
19	CVC-W40S	1981	WPS-1-4112	ISIM-1471	B9.40
21	CVC-W4S	1981	WPS-1-4113	ISIM-1471	B9.40
22	CVC-W3S	1981	WPS-1-4113	ISIM-1471	B9.40
12	WD-W11S	1981	WPS-1-4111	ISIM-1369-2	B9.40
8	SI-W4S	1981	WPS-1-4109	ISIM-982	B9.40
4	RTD-W22S	1981	WPS-1-4107	ISIM-1460	B9.40
5	RTD-W21S	1981	WPS-1-4107	ISIM-1460	B9.40
19	RTD-W49S	1981	WPS-1-4108	ISIM-1460	B9.40
20	RTD-W50S	1981	WPS-1-4108	ISIM-1460	B9.40
20	CVC-W133S	1981	WPS-1-4215	ISIM-1476	B9.40
21	CVC-W132S	1981	WPS-1-4215	ISIM-1476	B9.40
22	CVC-W131S	1981	WPS-1-4215	ISIM-1476	B9.40
23	CVC-W130S	1981	WPS-1-4215	ISIM-1476	B9.40
9	SI-W77S	1981	WPS-1-4212	ISIM-936	B9.40
10	SI-W79S	1981	WPS-1-4212	ISIM-936	B9.40
11	SI-W78S	1981	WPS-1-4212	ISIM-936	B9.40
22	RTD-W77S	1981	WPS-1-4209	ISIM-1461	B9.40
11	RTD-W96S	1981	WPS-1-4208	ISIM-1461	B9.40
12	RTD-W95S	1981	WPS-1-4208	ISIM-1461	B9.40
4	LD-W7S	1981	WPS-1-4213	ISIM-1474	B9.40
5	WD-W17S	1981	WPS-1-4211	ISIM-1474	B9.40
11	CVC-W87S	1981	WPS-1-4210	ISIM-1473	B9.40
12	CVC-W86S	1981	WPS-1-4210	ISIM-1473	B9.40

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
17	CVC-W81S	1981	WPS-1-4210	ISIM-1473	B9.40
18	CVC-W80S	1981	WPS-1-4210	ISIM-1473	B9.40
7	SI-W36S	1981	WPS-1-4110	ISIM-937-1	B9.40
8	SI-W35S	1981	WPS-1-4110	ISIM-937-1	B9.40
19	CVC-W171S	1981	WPS-1-4506	ISIM-874-3	B9.40
11	SI-W94S	1981	WPS-1-4214	ISIM-937-2SH1	B9.40
6	RC-W8	1985	WPS-1-4100	ISIM-1703	B9.11
7	RC-W9	1985	WPS-1-4100	ISIM-1703	B9.11
10	RC-W18	1985	WPS-1-4100	ISIM-1703	B9.11
8	SI-W117	1985	WPS-1-4101	ISIM-935	B9.11
10	SI-W115	1985	WPS-1-4101	ISIM-935	B9.11
5	SI-W73	1985	WPS-1-4201	ISIM-938-1	B9.11
6	SI-W72	1985	WPS-1-4201	ISIM-938-1	B9.11
10	SI-W68	1985	WPS-1-4201	ISIM-938-1	B9.11
2	RC-W62	1985	WPS-1-4500	ISIM-892	B9.11
3	RC-W63	1985	WPS-1-4500	ISIM-892	B9.11
6	RC-W66	1985	WPS-1-4500	ISIM-892	B9.11
23	RHR-W22	1985	WPS-1-4102	ISIM-957-1SH1	B9.11
15	RHR-W38	1985	WPS-1-4203	ISIM-957-1SH1	B9.11
18	RHR-W41	1985	WPS-1-4203	ISIM-957-1SH1	B9.11
7	SI-W48	1985	WPS-1-4105	ISIM-939SH1	B9.11
10	SI-W45	1985	WPS-1-4105	ISIM-939SH1	B9.11
3	RC-W61	1985	WPS-1-4204	ISIM-936	B9.11
4	SI-W88	1985	WPS-1-4204	ISIM-936	B9.11
10	SI-W89	1985	WPS-1-4206	ISIM-938-2SH1	B9.11
5	PR-W20	1985	WPS-1-4501	ISIM-940-2	B9.11
2	SI-W53	1985	WPS-1-4105	ISIM-939SH1	B9.11
17	RC-W11L	1985	WPS-1-4100	ISIM-1703	B9.12 (2)
18	RC-W10L	1985	WPS-1-4100	ISIM-1703	B9.12 (2)

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
19	RC-W17L	1985	WPS-1-4100	ISIM-1703	B9.12 (2)
20	RC-W16L	1985	WPS-1-4100	ISIM-1703	B9.12 (2)
1 (BC)	RC-W3BC	1985	WPS-1-4102	ISIM-1703	B9.31
1 (BC)	RC-W13BC	1985	WPS-1-4102	ISIM-1703	B9.32
3	SI-W9S	1985	WPS-1-4109	ISIM-982	B9.40
10	SI-W3S	1985	WPS-1-4109	ISIM-982	B9.40
10	CVC-W49S	1985	WPS-1-4112	ISIM-1471	B9.40
13	CVC-W46S	1985	WPS-1-4112	ISIM-1471	B9.40
18	CVC-W41S	1985	WPS-1-4112	ISIM-1471	B9.40
16	CVC-W9S	1985	WPS-1-4113	ISIM-1471	B9.40
19	CVC-W16S	1985	WPS-1-4113	ISIM-1471	B9.40
22	CVC-W76S	1985	WPS-1-4210	ISIM-1473	B9.40
27	CVC-W71S	1985	WPS-1-4210	ISIM-1473	B9.40
28	CVC-W70S	1985	WPS-1-4210	ISIM-1473	B9.40
31	CVC-W67S	1985	WPS-1-4210	ISIM-1473	B9.40
32	CVC-W66S	1985	WPS-1-4210	ISIM-1473	B9.40
4	SI-W84S	1985	WPS-1-4212	ISIM-936	B9.40
5	SI-W83S	1985	WPS-1-4212	ISIM-936	B9.40
45	CVC-W108S	1985	WPS-1-4215	ISIM-1476	B9.40
48	CVC-W105S	1985	WPS-1-4215	ISIM-1476	B9.40
51	CVC-W102S	1985	WPS-1-4215	ISIM-1476	B9.40
56	CVC-W97S	1985	WPS-1-4215	ISIM-1476	B9.40
2	CVC-W154S	1985	WPS-1-4506	ISIM-874-3	B9.40
2	SI-W86S	1986	WPS-1-4212	ISIM-936	B9.40
3	SI-W85S	1986	WPS-1-4212	ISIM-936	B9.40
6	SI-W82S	1986	WPS-1-4212	ISIM-936	B9.40
7	SI-W81S	1986	WPS-1-4212	ISIM-936	B9.40
1 (BW)	RTD-W106B	1987	WPS-1-4208	ISIM-1461	B9.21
2	RTD-W24S	1987	WPS-1-4107	ISIM-1460	B9.40

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
4	RTD-W22S	1987	WPS-1-4107	ISIM-1460	B9.40
10	RTD-W16S	1987	WPS-1-4107	ISIM-1460	B9.40
8	RTD-W38S	1987	WPS-1-4108	ISIM-1460	B9.40
9	RTD-W39S	1987	WPS-1-4108	ISIM-1460	B9.40
2	SI-W10S	1987	WPS-1-4109	ISIM-982	B9.40
4	SI-W8S	1987	WPS-1-4109	ISIM-982	B9.40
5	SI-W7S	1987	WPS-1-4109	ISIM-982	B9.40
7	SI-W5S	1987	WPS-1-4109	ISIM-982	B9.40
8	SI-W4S	1987	WPS-1-4109	ISIM-982	B9.40
9	RTD-W98S	1987	WPS-1-4208	ISIM-1461	B9.40
10	RTD-W97S	1987	WPS-1-4208	ISIM-1461	B9.40
14	RTD-W93S	1987	WPS-1-4208	ISIM-1461	B9.40
15	RTD-W92S	1987	WPS-1-4208	ISIM-1461	B9.40
2	SI-W86S	1987	WPS-1-4212	ISIM-936	B9.40
3	SI-W85S	1987	WPS-1-4212	ISIM-936	B9.40
4	SI-W60	1988	WPS-1-4202	ISIM-938-1	B9.11
6	SI-W58	1988	WPS-1-4202	ISIM-938-1	B9.11
7	SI-W57	1988	WPS-1-4202	ISIM-938-1	B9.11
9	SI-W55	1988	WPS-1-4202	ISIM-938-1	B9.11
26	SI-W15	1988	WPS-1-4105	ISIM-939SH1	B9.11
6	SI-W107	1988	WPS-1-4206	ISIM-938-2SH1	B9.11
7	SI-W106	1988	WPS-1-4206	ISIM-938-2SH1	B9.11
9	PR-W25	1988	WPS-1-4501	ISIM-940-2	B9.11
3	SI-W110	1988	WPS-1-4206	ISIM-938-2SH1	B9.11
4	SI-W109	1988	WPS-1-4206	ISIM-938-2SH1	B9.11
4	PR-W5	1988	WPS-1-4503	ISIM-940-1	B9.21
9	37096-1 (PR-W10)	1988	WPS-1-4503	ISIM-940-1	B9.21
10	37096-2 (PR-W9)	1988	WPS-1-4503	ISIM-940-1	B9.21
11	PR-W11	1988	WPS-1-4503	ISIM-940-1	B9.21

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
22	PS-W21	1988	WPS-1-4504	ISIM-874-2	B9.21
24	PS-W23	1988	WPS-I-4504	ISIM-874-2	B9.21
27	PS-W26	1988	WPS-1-4504	ISIM-874-2	B9.21
2	SI-W41S	1988	WPS-1-4110	ISIM-937-1	B9.40
6	SI-W37S	1988	WPS-1-4110	ISIM-937-1	B9.40
10	CVC-W15S	1988	WPS-1-4113	ISIM-1471	B9.40
13	CVC-W12S	1988	WPS-1-4113	ISIM-1471	B9.40
36	CVC-W62S	1988	WPS-1-4210	ISIM-1473	B9.40
37	CVC-W61S	1988	WPS-1-4210	ISIM-1473	B9.40
38	CVC-W60S	1988	WPS-1-4210	ISIM-1473	B9.40
39	CVC-W59S	1988	WPS-1-4210	ISIM-1473	B9.40
4	LD-W3S	1988	WPS-1-4211	ISIM-1474	B9.40
6	SI-W99S	1988	WPS-1-4214	ISIM-937-2SH1	B9.40
8	SI-W97S	1988	WPS-1-4214	ISIM-937-2SH1	B9.40
31	CVC-W122S	1988	WPS-1-4215	ISIM-1476	B9.40
34	CVC-W119S	1988	WPS-1-4215	ISIM-1476	B9.40
37	CVC-W116S	1988	WPS-1-4215	ISIM-1476	B9.40
40	CVC-W113S	1988	WPS-1-4215	ISIM-1476	B9.40
46	CVC-W107S	1988	WPS-1-4215	ISIM-1476	B9.40
10	CVC-W162S	1988	WPS-1-4506	ISIM-874-3	B9.40
-	RTD-W66S	1989	WPS-1-4209	ISIM-1461	B9.40
-	RTD-W67S	1989	WPS-1-4209	ISIM-1461	B9.40
3	RC-W35	1990	WPS-1-4200	ISIM-1704	B9.11
6	RC-W66	1990	WPS-1-4500	ISIM-892	B9.11
3	SI-W122	1990	WPS-1-4101	ISIM-935	B9.11
4	SI-W121	1990	WPS-1-4101	ISIM-935	B9.11
2	SI-W76	1990	WPS-1-4201	ISIM-938-1	B9.11
14	SI-W64	1990	WPS-1-4201	ISIM-938-1	B9.11
10	RHR-W9	1990	WPS-1-4102	ISIM-957-1SH1	B9.11

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
9	RHR-W8	1990	WPS-1-4102	ISIM-957-1SH1	B9.11
2	RHR-W25	1990	WPS-1-4203	ISIM-957-1SH1	B9.11
9	RHR-W32	1990	WPS-1-4203	ISIM-957-1SH1	B9.11
4	SI-W12	1990	WPS-1-4103	ISIM-982	B9.11
3	RTD-W30	1990	WPS-1-4106	ISIM-1460	B9.21
4	RTD-W29	1990	WPS-1-4106	ISIM-1460	B9.21
5	RTD-W28	1990	WPS-1-4106	ISIM-1460	B9.21
4	PS-W32	1990	WPS-1-4505	ISIM-874-1	B9.21
8	PS-W36	1990	WPS-1-4505	ISIM-874-1	B9.21
9	PS-W37	1990	WPS-1-4505	ISIM-874-1	B9.21
1BC	RC-W33BC	1990	WPS-1-4500	ISIM-1704	B9.31
1BC	RC-W34BC	1990	WPS-1-4203	ISIM-1704	B9.31
1BC	RC-W22BC	1990	WPS-1-4103	ISIM-1703	B9.31
14	RTD-W12S	1990	WPS-1-4107	ISIM-1460	B9.40
16	RTD-W10S	1990	WPS-1-4107	ISIM-1460	B9.40
17	RTD-W9S	1990	WPS-1-4107	ISIM-1460	B9.40
13	RTD-W43S	1990	WPS-1-4108	ISIM-1460	B9.40
16	RTD-W46S	1990	WPS-1-4108	ISIM-1460	B9.40
5	SI-W83S	1990	WPS-1-4212	ISIM-936	B9.40
4	WD-W3S	1990	WPS-1-4111	ISIM-1369-2	B9.40
8	RTD-W99S	1990	WPS-1-4208	ISIM-1461	B9.40
19	RTD-W88S	1990	WPS-1-4208	ISIM-1461	B9.40
19	RTD-W74S	1990	WPS-1-4209	ISIM-1461	B9.40
35	CVC-W63S	1990	WPS-1-4210	ISIM-1473	B9.40
6	RC-W38	1992	WPS-1-4200	ISIM-1704	B9.11
11	RC-W49	1992	WPS-1-4200	ISIM-1704	B9.11
12	RC-W55	1992	WPS-1-4200	ISIM-1704	B9.11
15	RHR-W14	1992	WPS-1-4102	ISIM-957-1SH1	B9.11
17	RHR-W16	1992	WPS-1-4102	ISIM-957-1SH1	B9.11

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Category B-J Welds Examined During First and Second Interval For Use in Cross Referencing of Westinghouse and Kewaunee Weld Identification

IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
20	RHR-W19	1992	WPS-1-4102	ISIM-957-1SH1	B9.11
9	RHR-W8	1992	WPS-1-4102	ISIM-957-1SH1	B9.11
5	RHR-W28	1992	WPS-1-4203	ISIM-957-1SH1	B9.11
6	RHR-W29	1992	WPS-1-4203	ISIM-957-1SH1	B9.11
12	RHR-W35	1992	WPS-1-4203	ISIM-957-1SH1	B9.11
9	RHR-W32	1992	WPS-1-4203	ISIM-957-1SH1	B9.11
13	SI-W28	1992	WPS-1-4105	ISIM-939SH1	B9.11
15	SI-W26	1992	WPS-1-4105	ISIM-939SH1	B9.11
23	SI-W18	1992	WPS-1-4105	ISIM-939SH1	B9.11
8	PR-W23	1992	WPS-1-4501	ISIM-940-2	B9.11
3	PR-W28	1992	WPS-1-4502	ISIM-940-2	B9.11
3	RTD-W83	1992	WPS-1-4207	ISIM-1461	B9.21
4	RTD-W82	1992	WPS-1-4207	ISIM-1461	B9.21
5	RTD-W81	1992	WPS-1-4207	ISIM-1461	B9.21
6	RTD-W80	1992	WPS-1-4207	ISIM-1461	B9.21
7	RTD-W79	1992	WPS-1-4207	ISIM-1461	B9.21
38	PS-W55	1992	WPS-1-4504	ISIM-874-1	B9.21
39	PS-W56	1992	WPS-1-4504	ISIM-874-1	B9.21
40	PS-W57	1992	WPS-1-4504	ISIM-874-1	B9.21
41	PS-W58	1992	WPS-1-4504	ISIM-874-1	B9.21
42	PS-W59	1992	WPS-1-4504	ISIM-874-1	B9.21
4	RTD-W59S	1992	WPS-1-4209	ISIM-1461	B9.40
23	RTD-W78B	1992	WPS-1-4209	ISIM-1461	B9.21
1BC	RC-W54BC	1992	WPS-1-4204	ISIM-1704	B9.31
1BC	RC-W53BC	1992	WPS-1-4505	ISIM-1704	B9.32
28BC	PS-W27BC	1992	WPS-1-4506	ISIM-874-2	B9.32
2	SI-W41S	1992	WPS-1-4110	ISIM-937-1	B9.40
7	WD-W6S	1992	WPS-1-4111	ISIM-1369-2	B9.40
10	WD-W9S	1992	WPS-1-4111	ISIM-1369-2	B9.40

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
14	WD-W13S	1992	WPS-1-4111	ISIM-1369-2	B9.40
17	WD-W16S	1992	WPS-1-4111	ISIM-1369-2	B9.40
29	CVC-W30S	1992	WPS-1-4112	ISIM-1471	B9.40
32	CVC-W27S	1992	WPS-1-4112	ISIM-1471	B9.40
4	CVC-W21S	1992	WPS-1-4113	ISIM-1471	B9.40
7	CVC-W18S	1992	WPS-1-4113	ISIM-1471	B9.40
8	RTD-W63S	1992	WPS-1-4209	ISIM-1461	B9.40
9	RTD-W64S	1992	WPS-1-4209	ISIM-1461	B9.40
13	RTD-W68S	1992	WPS-1-4209	ISIM-1461	B9.40
16	RTD-W71S	1992	WPS-1-4209	ISIM-1461	B9.40
8	CVC-W90S	1992	WPS-1-4210	ISIM-1473	B9.40
13	CVC-W85S	1992	WPS-1-4210	ISIM-1473	B9.40
16	CVC-W82S	1992	WPS-1-4210	ISIM-1473	B9.40
19	CVC-W79S	1992	WPS-1-4210	ISIM-1473	B9.40
21	CVC-W77S	1992	WPS-1-4210	ISIM-1473	B9.40
9	SI-W77S	1992	WPS-1-4212	ISIM-936	B9.40
3	LD-W6S	1992	WPS-1-4213	ISIM-1474	B9.40
7	LD-W10S	1992	WPS-1-4213	ISIM-1474	B9.40
7	CVC-W146S	1992	WPS-1-4215	ISIM-1476	B9.40
12	CVC-W141S	1992	WPS-1-4215	ISIM-1476	B9.40
24	CVC-W129S	1992	WPS-1-4215	ISIM-1476	B9.40
29	CVC-W124S	1992	WPS-1-4215	ISIM-1476	B9.40
16	CVC-W168S	1992	WPS-1-4506	ISIM-874-3	B9.40
7	RC-W39	1993	WPS-1-4200	ISIM-1704	B9.11
10	RC-W48	1993	WPS-1-4200	ISIM-1704	B9.11
17	RC-W41L	1993	WPS-1-4200	ISIM-1704	B9.12 (2)
18	RC-W40L	1993	WPS-1-4200	ISIM-1704	B9.12 (2)

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IDENTIFICATION NO.		YEAR EXAMINED	DRAWING NO.		2000 ADDENDA ITEM NUMBER
Original	Current		Original	Current (ISI)	
19	RC-W47L	1993	WPS-1-4200	ISIM-1704	B9.12 (2)
20	RC-W46L	1993	WPS-1-4200	ISIM-1704	B9.12 (2)
22	RTD-W3S	1993	WPS-1-4107	ISIM-1460	B9.40
21	RTD-W51S	1993	WPS-1-4108	ISIM-1460	B9.40
24	RTD-W54S	1993	WPS-1-4108	ISIM-1460	B9.40
5	CVC-W54S	1993	WPS-1-4112	ISIM-1471	B9.40
6	CVC-W53S	1993	WPS-1-4112	ISIM-1471	B9.40
7	CVC-W52S	1993	WPS-1-4112	ISIM-1471	B9.40
20	CVC-W39S	1993	WPS-1-4112	ISIM-1471	B9.40
23	CVC-W36S	1993	WPS-1-4112	ISIM-1471	B9.40

(2) Kewaunee Nuclear Power Plant assigned Item Number.

Appendix I

Basis Document for ISI Code Class Boundaries

1. Introduction

The purpose of this appendix is to document the Licensing position for the ASME Boiler and Pressure Vessel Code Section XI boundaries at the Kewaunee Nuclear Power Plant. This document, when used in conjunction with the ISI Flow Diagrams, provides the technical basis for the ISI classification boundaries. These boundaries are defined as required by ASME Section XI, IWA-1400(a). Wisconsin Public Service Corporation has no formal commitment to Regulatory Guide 1.26. Although this document was frequently used to assist in establishing the current ISI classification boundaries, it was referred to for guidance only. The boundaries described in this document apply to inspection, repair and replacement activities for the Fourth Inspection Interval (June 16, 2004 to June 16, 2014). Following publication of Regulatory Guide 1.26, Westinghouse Electric Corporation provided Wisconsin Public Service Corporation with color coded P&IDs showing the classification boundaries for the First Inspection Interval. Gilbert/Commonwealth reviewed and concurred with these boundaries for the Second Inspection Interval with minor changes that were subsequently incorporated. These changes related to new piping that was added to the plant by implementation of post construction design changes. The Third Inspection Interval showing classification boundaries was prepared by the Wisconsin Public Service Corporation Kewaunee Nuclear Power Plant Licensing Department.

2. Background

As part of the design of the Kewaunee Nuclear Power Plant, Pioneer Services and Engineering Company, the architect-engineer, established the original Quality Assurance Boundaries. In June 1970, the Atomic Energy Commission issued quality assurance criteria for nuclear power plants. During construction, the 10 CFR 50, Appendix B program was the primary program used in the design, fabrication, and testing of QA-1 safety-related structures, systems, and components. QA-1 identified those structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. Valve type and placement that are used to represent boundaries for the Section XI classification system are based on the original design and QA classification. With only three exceptions, the Spent Fuel Storage Pool System (QA-3), Service Water System Service Water Pump Strainers (4 Total) 3" Backwash Lines (QA-3) and Service Water Side of Spent Fuel Pool Heat Exchanger up to 6" valves SW-1601 and SW-1602 (QA-3), all Section XI Boiler and Pressure Vessel Code piping falls within the QA-1 boundary at the Kewaunee Nuclear Power Plant. The QA boundary classification system assures the highest possible degree of quality standards consistent with the importance of the safety function at the Kewaunee Nuclear Power Plant. The QA boundaries are defined on the Operations P&IDs.

As explained above, the Kewaunee Nuclear Power Plant was designed, fabricated, and the Section XI pre-service examinations were completed before the ISI classification rules were formalized and published. For this reason, it is not practical and/or not possible for the Kewaunee Nuclear Power Plant to always apply the current ISI classification guidance to all

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portions of safety-related systems that were reviewed for inclusion in the Section XI code class boundary.

Following publication of Regulatory Guide 1.26, Westinghouse Electric Corporation provided Wisconsin Public Service Corporation with color coded P&IDs showing the classification boundaries for the first interval. Gilbert/Commonwealth reviewed and concurred with these boundaries for the second interval.

3. Summary of Design Basis Accidents

- a. One of the primary objectives of an ISI Plan is to ensure that systems and/or portions of systems necessary to protect the health and safety of the public are included in the ASME Boiler and Pressure Vessel Code, Section XI boundary. This section summarizes the safety aspects of the plant and demonstrates that the ASME Boiler and Pressure Vessel Code boundary encompasses systems and/or portions of piping systems necessary to ensure that the guidelines of 10 CFR 100 are maintained.

American Nuclear Society (ANS) has classified plant conditions into four categories in accordance with the anticipated frequency of occurrence and potential radiological consequences to the public. The four categories are as follows.

- Condition I..... Normal Operation and Operational Transients
- Condition II..... Faults of Moderate Frequency
- Condition III..... Infrequent Faults
- Condition IV Limiting Faults

The postulated design basis accidents for the Kewaunee Nuclear Power Plant are as follows.

- i. Uncontrolled RCCA Withdrawal from a Subcritical Condition
- ii. Uncontrolled RCCA Withdrawal at Power
- iii. RCCA Misalignment
- iv. Chemical and Volume Control System Malfunction
- v. Startup of an Inactive Reactor Coolant Loop
- vi. Excessive Heat Removal Due to Feedwater System Malfunctions

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- vii. Excessive Load Increase Incident
- viii. Loss of Reactor Coolant Flow
- ix. Loss of External Electrical Load
- x. Loss of Normal Feedwater
- xi. Anticipated Transients Without SCRAM
- xii. Loss of all AC Power to the Plant Auxiliaries
- xiii. Fuel Handling Accidents
- xiv. Accidental Release - Recycle of Waste Liquid
- xv. Accidental Release - Waste Gas
- xvi. Steam Generator Tube Rupture
- xvii. Steam Line Break
- xviii. Rupture of a Control Rod Drive Mechanism Housing (RCCA Ejection)
- xix. Turbine Missile Damage to Spent Fuel Pool
- xx. Reactor Coolant System Pipe Ruptures (Loss of Coolant Accident)

b. Each of these accidents is summarized below with respect to the piping systems and/or portions of piping systems needed to prevent or mitigate the consequences of the postulated accident.

i. **Uncontrolled RCCA Withdrawal from a Subcritical Condition**

An uncontrolled addition of reactivity due to uncontrolled withdrawal of a rod cluster control assembly results in a power excursion. The transient will be terminated by the following automatic protection or control system actions:

- (1) Source Range High Neutron Flux Reactor Trip
- (2) Intermediate Range High Neutron Flux Rod Stop
- (3) Automatic Reactor Trip Activated at 40 percent full power (unless it has been manually bypassed)
- (4) Power Range High Neutron Flux Reactor Trip (Low Setting)

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- (5) Power Range High Neutron Flux Rod Stop
- (6) Power Range High Neutron Flux Reactor Trip (High Setting)

Termination of the startup accident by the above protection channels prevents core damage. In addition, the reactor trip from high reactor coolant pressure serves as a backup to terminate the accident before an overpressure condition could occur.

No piping is needed as a primary flow path to terminate this postulated accident.

ii. Uncontrolled RCCA Withdrawal at Power

An uncontrolled RCCA withdrawal at power results in a gradual increase in core power followed by an increase in core heat flux. The resulting mismatch between core power and steam generator heat load results in an increase in reactor coolant temperature and pressure. Unless terminated by manual or automatic action, the power mismatch and resultant coolant temperature rise would eventually result in DNB. Therefore, to prevent the possibility of damage to the cladding, the Reactor Protection System is designed to terminate any such transient before the DNBR falls below 1.30. Protection is provided by the nuclear flux overpower and overtemperature ΔT trips.

No piping is needed as a primary flow path to terminate this postulated accident.

iii. RCCA Misalignment

RCC assembly misalignment accidents include: a) dropped full-length assemblies; b) dropped full-length assembly banks; c) statically misaligned full-length assemblies.

Dropped or misaligned RCC assemblies are not deemed to be any hazard to the safe operation of the plant because these events are clearly indicated to the operation crew and the case of the worst misaligned or dropped rod does not result in DNBR less than 1.30.

For all cases of dropped banks, the reactor is tripped by the power range negative flux rate trip and consequently dropped banks do not cause core damage.

No piping is needed as a primary flow path to terminate this postulated accident.

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iv. Chemical and Volume Control System Malfunction

The malfunction of the Chemical and Volume Control System is assumed to deliver unborated water to the Reactor Coolant System. There is only a single source of reactor makeup water for the Reactor Coolant System, the reactor makeup water storage tank. Inadvertent dilution can be readily terminated by isolating this single source. Because of the procedures involved in the dilution process, an erroneous dilution is considered unlikely. Nevertheless, if an unintentional dilution of boron in the reactor coolant does occur, numerous alarms and indications are available to alert the operator to the condition. The maximum reactivity addition due to the dilution is slow enough to allow the operator to determine the cause of the addition and take corrective action before excessive shutdown margin is lost.

To recover shutdown margin, boron concentration can be increased by the addition of boron from the refueling water storage tank via valve CVC-301, through the charging pumps to the Reactor Coolant System.

Per DCR 2786, the boric acid tanks are no longer the safety related source of boron for reactor shutdown. Accordingly, piping from the boric acid tanks through the boric acid blender and valve CVC-440 have been removed from the Section XI code class boundary.

v. Startup of an Inactive Reactor Coolant Loop

The startup of an idle reactor coolant pump in an operating plant would result in the injection of cold water (from the idle loop hot leg) into the core which causes a rapid reactivity insertion and subsequent core power increase. For startup of an inactive loop at 12 percent power, the power and temperature excursions are not severe and place no undue restriction on the plant.

No piping is needed to mitigate this transient other than an intact Reactor Coolant System.

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vi. Excess Heat Removal Due to Feedwater System Malfunctions

The malfunction of the feedwater system such that the feedwater temperature is decreased or the flow is increased causes a decrease in the RCS temperature and an attendant increase in core power level due to negative reactivity coefficients and/or control system action. The overpower-temperature protection prevents any power increase which would lead to a DNBR less than 1.30. Continuous addition of cold feedwater after a reactor trip is prevented since the reduction of Reactor Coolant System temperature, pressure, and pressurizer level leads to the actuation of safety injection on low pressurizer pressure. The safety injection signal trips the main feedwater pumps and closes the feedwater pump discharge valves as well as closing the main feedwater control valves.

Portions of the safety injection system including feedwater isolation via valves FW-12A and FW-12B are needed to terminate this malfunction.

vii. Excessive Load Increase Incident

An excessive load increase causes a rapid increase in steam generator steam flow. The resulting mismatch between core heat generation and secondary side level demand results in a decrease in reactor coolant temperature which causes a core power increase due to negative moderator feedback and/or control system action. The Reactor Control System is designed to accommodate a 10 percent step load increase or a five percent per minute ramp load increase (without a reactor trip) in the range 15 to 95 percent of full power. Any loading rate in excess of these values may cause a reactor trip actuated by the Reactor Protection System. If the load increase exceeds that capability of the Reactor Control System, the transient is terminated in sufficient time to prevent the DNBR from being reduced below 1.30, since the core is protected by the combination of the high nuclear flux trip and the overpower and over temperature ΔT trips.

No piping is needed as a primary flow path to terminate this postulated accident.

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viii. Loss of Reactor Coolant Flow

A loss-of-coolant flow incident can result from a mechanical or electrical failure in one or more reactor coolant pumps or from a fault in the power supply to these pumps. If the reactor is at power at the time of the incident, the immediate effect of loss-of-coolant flow is a rapid increase in coolant temperature. This increase could result in departure from nucleate boiling (DNB) with subsequent fuel damage if the reactor is not tripped promptly. The following trip circuits provide the necessary protection against a loss-of-coolant flow incident.

- (1) Low voltage on pump power supply bus.
- (2) Pump circuit breaker opening (low frequency on pump power supply bus opens pump circuit breaker)
- (3) Low reactor coolant flow

Simultaneous loss of electrical power to all reactor coolant pumps at full power is the most severe credible loss-of-coolant flow condition. For this condition, reactor trip together with flow sustained by the inertia of the coolant and rotating pump parts will be sufficient to prevent fuel failure, Reactor Coolant System overpressure, and prevent the DNB ratio from going below 1.30.

The primary flow path needed to terminate this postulated accident includes primary coolant from the reactor coolant system, through the steam generators; including the auxiliary feedwater system, main steam piping to the turbine stop valves and main steam relief valves.

ix. Loss of External Electrical Load

The loss of external electrical load may result from an abnormal increase in network frequency, opening of the main breaker from the generator, which causes a rapid large Nuclear Steam Supply System load reduction by the action of the turbine control, or by a trip of the turbine generator.

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The plant is designed to accept a full-load rejection without actuating a reactor trip. The automatic steam bypass system with 85 percent steam dump capacity (40 percent to the condenser and 45 percent to the atmosphere) is able to accommodate this load rejection by reducing the transient imposed upon the Reactor Coolant System. The reactor power is reduced to the new equilibrium power level at a rate consistent with the capability of the Rod Control System. The pressurizer relief valves may be actuated, but the pressurizer safety valves and the steam generator safety valves do not lift for a step loss of load with steam dump to auxiliary load.

In the event the steam bypass valves fail to open following a large load loss, the steam generator safety valves may lift causing the reactor to be tripped by the high pressurizer pressure signal, the high pressurizer level signal or the low-low steam generator level signal. The steam generator shell side pressure and reactor coolant temperatures will increase rapidly. The pressurizer safety valves and steam generator safety valves are, however, sized to protect the Reactor Coolant System and steam generator against overpressure for all load losses without taking credit for the steam bypass system.

The primary flow path needed to terminate this postulated accident includes primary coolant from the reactor coolant system, through the steam generators; including the auxiliary feedwater system, main steam piping to the turbine stop valves and main steam relief valves. The pressurizer safety valves and steam generator safety valves provide a key role in mitigating the consequences of this postulated accident. The integrity of the core is maintained by the high pressurizer pressure reactor trip.

x. Loss of Normal Feedwater

A loss of normal feedwater (from a pipe break, pump failure, valve malfunctions, or loss of off-site power) results in a reduction in capability of the secondary system to remove the heat generated in the reactor core. If the reactor were not tripped during this accident, Reactor Coolant System damage could possibly occur from a sudden loss-of-heat sink.

The following provides the necessary protection against a loss of normal feedwater:

- (1) Reactor trip on low-low water level in either steam generator.

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- (2) Reactor trip on steam flow-feedwater flow mismatch in coincidence with low water level in either steam generator.
- (3) Two motor-driven auxiliary feedwater pumps which are started automatically on:
 - (a) Low-low level in either steam generator, or
 - (b) Opening of both feedwater pump circuit breakers, or
 - (c) Safety Injection signal, or
 - (d) Loss of off-site power, or
 - (e) Manually
- (4) One turbine-driven pump which is started automatically on:
 - (a) Low-low level in both steam generator, or
 - (b) Loss of voltage on both 4 kV buses, or
 - (c) Steam Generator AMSAC low-low level, or
 - (d) Manually

The motor-driven auxiliary feedwater pumps are supplied by the emergency diesel generators if a loss of outside power occurs and the turbine-driven pump utilizes steam from the secondary system. The Service Water System is the emergency supply to the auxiliary pumps.

Three auxiliary feedwater pumps are provided in the plant (two motor-driven and one turbine-driven). Necessary protection against consequences of a loss of normal feedwater including that caused by loss of off-site power would therefore be available allowing for an active failure on one of the operable auxiliary feedwater pumps even when one of the pumps is down for maintenance.

When all three pumps are operable, there is considerable backup in equipment and control to insure that reactor trip and automatic auxiliary feedwater flow occur following loss of normal feedwater.

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The loss of normal feedwater does not result in any adverse condition in the core, because it does not result in water discharging from the pressurizer relief or safety valves. In addition, it does not result in uncovering the tubesheets of the steam generator that is being supplied with auxiliary feedwater.

Piping needed to mitigate the consequences of this accident include the AFW pumps and associated piping to the steam generators; service water to the diesel generator cooling water heat exchangers if loss of feedwater is caused by loss of off-site power; auxiliary steam to the TDAFW pump; and service water to the suction of the auxiliary feedwater pumps.

xi. Anticipated Transients Without Scram

An Anticipated Transient Without Scram (ATWS) is a postulated anticipated operational occurrence (such as loss of feedwater, loss of condenser vacuum, or loss of off-site power) that is accompanied by a failure of the Reactor Protection System (RPS) to shut down the reactor.

The Code of Federal Regulations (CFR), Section 10 CFR 50.62 specifies ATWS mitigation system requirements. An actuation on low steam generator water level design has been implemented. The basic logic of AMSAC is to trip the turbine and start all three auxiliary feedwater pumps when low-low steam generator water level signals are present on 3 of 4 channels for a specified time period.

The NRC Safety Evaluation Report and a subsequent NRC Special Inspection Report reviewed the Kewaunee design and installation against 14 key elements for compliance. The NRC concluded that the Kewaunee AMSAC is acceptable and in compliance with the ATWS rule, 10 CFR 50.62.

In 1998, in response to an engineering evaluation of the AFW system, a plant design change added a Diverse Scram System (DSS). The DSS is initiated on a signal from the existing AMSAC system and de-energizes the Rod Drive MG Set exciter field. Removing the Rod Drive MG set exciter field will interrupt power to the control rod grippers, allowing the control rod to free fall into the core, ending the ATWS event.

The DSS was installed to ensure the AFW pumps would continue to run throughout a loss of main feedwater ATWS. The DSS in conjunction with the AMSAC system will end the transient before the AFW flow to the steam generators increases to a point where AFW pump NPSH could be lost. The loss of main feedwater ATWS, mitigated by the DSS and

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AMSAC system, was analyzed using a similar methodology as the loss of main feedwater transient.

The original AMSAC submittal to the NRC was amended to include the DSS. The NRC Safety Evaluation Report concluded that the Kewaunee DSS design was acceptable. The WPSC Safety Evaluation for the original AMSAC and the DSS included a review of the 14 key elements of ATWS compliance used by the NRC. This review concluded that the original AMSAC design reviewed by the NRC was unaffected by the addition of the DSS.

Piping needed to mitigate the consequences of an ATWS event includes the auxiliary feedwater pumps and associated piping to the steam generators; service water to the diesel generator cooling water heat exchangers if caused by loss of off-site power; auxiliary steam to the TDAFW pump; and service water to the suction of the auxiliary feedwater pumps.

xii. Loss of all AC Power to the Plant Auxiliaries

In the event of a complete loss of off-site power and a turbine trip, there will be a loss of power to the plant auxiliaries (i.e., the reactor coolant pumps, main feedwater pumps, etc.). The events following a loss of off-site power with turbine trip are described in the sequence below:

- (1) The reactor is tripped and plant vital instruments are supplied by the emergency power sources.
- (2) The diesel generators will start on loss of voltage on the 4 kV buses to supply plant vital loads.
- (3) As the steam system pressure subsequently increases, the steam generator power relief valves are automatically opened to the atmosphere. Steam bypass to the condenser is assumed not available because of loss of the circulating water pumps.
- (4) If the steam flow rate through the power relief valves is not sufficient (or if the power relief valves are not available), the steam generator self-actuated safety valves may lift to dissipate the sensible heat of the fuel and coolant plus the residual heat produced in the reactor.

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- (5) As the no-load temperature is approached, the steam power relief valves (or self-actuated safety valves if the power relief valves are not available for any reason) are used to dissipate the residual heat and to maintain the plant at the hot shutdown condition.

The auxiliary feedwater system is started automatically on loss of off-site power. The steam-driven auxiliary feedwater pump utilizes steam from the secondary system and exhausts to the atmosphere. The motor-driven auxiliary feedwater pumps are supplied by power from the diesel generators. The pumps take suction directly from the condensate storage tank for delivery to the steam generators. However, the service water system has been designated as the safety-related source of coolant.

Upon the loss of power to the reactor coolant pumps, coolant flow necessary for core cooling and the removal of residual heat is maintained by natural circulation in the reactor coolant loops.

The loss of off-site power to the plant auxiliaries does not cause any adverse condition in the core since it does not result in water relief from the pressurizer relief or safety valves nor does it result in the loss of the steam generator(s) as a heat sink for residual heat removal.

Piping needed to mitigate the consequences of a postulated loss of AC power accident includes an intact Reactor Coolant System to promote natural circulation; the auxiliary feedwater pumps and associated piping to the steam generators; service water to the diesel generator cooling water heat exchangers; auxiliary steam to the TDAFW pumps; service water to the suction of the auxiliary feedwater pumps; and the steam generator safety and relief valves.

xiii. Fuel Handling Accidents

The following fuel handling accidents are evaluated to ensure that no hazards are created.

- (1) A fuel assembly becomes stuck inside the reactor vessel.
- (2) A fuel assembly or RCCA is dropped onto the floor of the reactor refueling cavity or spent fuel pool.
- (3) A fuel assembly becomes stuck in the penetration valve.

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- (4) A fuel assembly becomes stuck in the transfer tube or the carriage becomes stuck.

The possibility of a fuel handling incident of the severity considered in the analysis is very remote because of the many administrative controls and physical limitations imposed on fuel handling operations. Boron concentration in the coolant is raised to the refueling concentration and verified by sampling. Refueling boron concentration is sufficient to maintain the clean, cold, fully loaded core subcritical with all rod cluster assemblies withdrawn. The refueling cavity is filled with water meeting the same boric acid specifications.

As the vessel head is removed, a visual check is made to verify that RCCA drive shafts are free of the mechanism housings.

After the vessel head is removed, the rod cluster control drive shafts are disconnected from their respective assemblies using the manipulator crane and the shaft unlatching tool. A spring scale is used to indicate that the drive shaft is free of the RCCA as the lifting force is applied.

Adequate cooling of fuel during underwater handling is provided by convective heat transfer to the surrounding water. The fuel assembly is immersed continuously while in the refueling cavity or spent fuel pool.

Even if a spent fuel assembly becomes stuck in the transfer tube, the fuel assembly is completely immersed and natural convection will maintain adequate cooling to remove the decay heat.

Two Nuclear Instrumentation System source-range channels are continuously in operation and provide warning of any approach to criticality during refueling operations. This instrumentation provides a continuous audible signal in the containment, and would annunciate a local horn and an annunciator in the plant control room if the count rate increased above a preset low level.

Refueling boron concentration is sufficient to maintain the clean, cold, full loaded core subcritical by at least 5 % $\Delta K/K$ with all rod cluster control assemblies inserted. At this boron concentration, the core would also be more than two percent subcritical with all control rods withdrawn.

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All these safety features make the probability of a fuel handling incident very low. Nevertheless, it is possible that a fuel assembly could be dropped during the handling operations. Therefore, this incident was analyzed both from the standpoint of radiation exposure and accidental criticality.

No piping beyond the refueling cavity and SFP system is needed to mitigate this accident.

xiv. **Accidental Release – Recycle of Waste Liquid**

Accidents in the Auxiliary Building which would result in the release of radioactive liquids are those which may involve the rupture or leaking of system piping or storage tanks. Should failure of any tank located in the Auxiliary Building occur, its content will remain in the Auxiliary Building. The Auxiliary Building, including floor drains and ventilation, is designed to contain leakage resulting from accidents of this type. Building structures are not within the scope of Section XI. No process piping is needed to maintain the release below 10 CFR 100 limits.

xv. **Accidental Release - Waste Gas**

The gas decay tanks contain the gases vented from the Reactor Coolant System, the volume control tank, and the liquid holdup tanks. Sufficient volume is provided in each of four tanks to store the gases involved during a reactor shutdown. The system is adequately sized to permit storage of these gases for forty-five days prior to discharge.

Two accidents were analyzed regarding release of waste gas: failure of the volume control tank, and rupture of the gas decay tank. In both cases, the reactive gases contained in the tank were assumed to escape to atmosphere. It was concluded by dose assessment calculations that a rupture in the waste gas system or in the volume control tank would present no undue hazard to public health and safety.

No process piping systems are required to maintain the release below 10 CFR 100 guidelines.

xvi. **Steam Generator Tube Rupture**

The analysis of this accident assumes a complete severance of a single steam generator tube with the reactor at power. This accident leads to an increase in contamination of the secondary system due to leakage of radioactive coolant from the Reactor Coolant System.

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Recovery from a steam generator tube rupture is accomplished by:

- (1) Identifying and isolating the ruptured steam generator.
- (2) Cooldown to provide adequate subcooling need to depressurize the RCS.
- (3) Depressurize the RCS to less than or equal steam generator pressure to stop RCS leakage.

Piping needed to mitigate the consequences of this accident includes in the following:

- (4) AFW pumps and associated piping to the steam generators.
- (5) Service water to the suction of the AFW pumps.
- (6) Auxiliary steam piping to the TDAFW pump.
- (7) Safety Injection piping from the RWST to the reactor vessel and Reactor Coolant Coldlegs.
- (8) Main steam piping to the Main Steam Isolation valve.
- (9) Service water to the SI pump stuffing boxes and lube oil coolers.

xvii. Steam Line Break

A steam line break results in an uncontrolled steam release from a steam generator. The steam release results in an initial increase in steam flow which decreases during the accident as the steam pressure falls. The energy removal from the Reactor Coolant System causes a reduction of coolant temperature and pressure. In the presence of a negative coolant temperature coefficient, the cooldown results in a reduction of core shutdown margin. If the most reactive RCCA is assumed stuck in its fully withdrawn position, there is an increased possibility that the core will become critical and return to power. A return to power following a steam line break is a potential problem mainly because of the high hot channel factors that exist when the most reactive assembly is assumed stuck in its fully withdrawn position. Assuming the most pessimistic combination of circumstances which could lead to power generation following a steam line break, the core is ultimately shut down by boric acid injection delivered by the Emergency Core Cooling System.

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The following piping systems or portions of systems provide the necessary protection against a steam pipe rupture:

- (1) Service Water to the SI pump stuffing boxes and lube oil coolers.
- (2) Safety Injection System piping from the RWST to the reactor (reactivity control, inventory, and pressure control).
- (3) Feedwater System piping to the containment isolation valves FW-12A and FW-12B.
- (4) Main Steam piping to the Main Steam isolation valves.

xviii. Rupture of a Control Rod Drive Mechanism Housing (RCCA Ejection)

This accident is a result of an extremely unlikely mechanical failure of a control rod mechanism pressure housing such that the Reactor Coolant System pressure would then eject the RCCA (RCCA Ejection) and drive shaft. The consequences of this mechanical failure, in addition to being a minor loss-of-coolant accident, may also be a rapid reactivity insertion together with an adverse core power distribution, possibly leading to localized fuel rod damage for severe cases. The resultant core thermal power excursion is limited by the Doppler reactivity effect of the increased fuel temperature and terminated by reactor trip actuated by high neutron flux signals.

Analysis was performed for beginning and end of life at zero and full power.

The analyses indicates that the fuel and clad limits will not be exceeded. It was concluded that there was no danger of sudden fuel dispersal into the coolant. The pressure surge was shown to be insufficient to exceed 2750 psia, and it was concluded that there was no danger of consequential damage to the primary circuit. The amount of fission products released as a result of clad rupture during DNB is considerably less than in the case of the double-ended main coolant pipe break (the Design Basis Accident), and therefore within the guidelines of 10 CFR 100.

Piping needed to terminate this accident includes the following:

- (1) Safety injection piping from the RWST to the reactor vessel.
- (2) Pressurizer spray and pressure relief valves.

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- (3) Main Steam piping to Main Steam Isolation valves.
 - (4) AFW pumps and associated piping to the steam generators.
 - (5) Service water to the suction of the AFW pumps.
 - (6) Auxiliary steam to the TDAFW pump.
- xix. Turbine Missile Damage to Spent Fuel Pool
- Deleted from USAR as referenced in USAR Section 14.2.7.
- xx. Reactor Coolant System Pipe Ruptures (*Loss of Coolant Accident*)

A loss-of-coolant accident is defined as a rupture of the Reactor Coolant System piping or of any line connected to the system. A large break LOCA accident is defined as a rupture 0.5 ft.² or larger of the Reactor Coolant System piping including the double-ended rupture of the large pipe in the Reactor Coolant System or of any line connected to the system. A small break LOCA is defined as a rupture smaller than 0.5 ft.² Reactor Coolant System piping. Breaches equal to or smaller than $\frac{3}{8}$ inch diameter instrument tubing can be made up with normal charging and are considered to be leaks.

For the purposes of determining which piping is needed to recover from these accidents the design basis LOCA is the most limiting case. Recovery from the double-ended Reactor Coolant System break requires support from the following piping systems:

- (1) Accumulator injection to the reactor vessel.
- (2) Safety Injection System piping from the RWST to the reactor vessel and Reactor Coolant System Coldlegs.
- (3) Service water piping to the SI pump stuffing boxes and lube oil coders, CCW HXs, and containment FCUs.
- (4) Internal containment spray from RWST to containment spray ring header.
- (5) RHR piping from RWST and containment sump to reactor coolant loop.

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- (6) RHR pump discharge to SI pump and ICS pump suction.
 - (7) Component Cooling Water to RHR HXs, RHR pump shaft seal HXs, safety injection pump shaft seal HXs, and ICS pump gland coolers.
 - (8) Letdown piping to LD-3.
- c. Piping needed to prevent or mitigate the consequences of the postulated design bases accidents summarized above is listed in Table 1. Piping listed in Table 1 represents the minimum extent of the ASME Boiler and Pressure Vessel Section XI boundary.

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Summary of Piping Systems or Portions of Piping Systems Needed to Mitigate and/or Terminate Design Basis Accidents at Kewaunee Nuclear Power Plant	
•	Chemical and Volume Control System piping from the refueling water storage tank through valve CVC-301 through the charging pumps to the Reactor Coolant System.
•	Feedwater System piping out to feedwater isolation valves FW-12A and FW-12B.
•	Pressurizer safety valves and associated piping.
•	Steam generator safety and relief valves including associated piping from the steam generators to the main steam stop valves.
•	Auxiliary Feedwater System pumps and associated piping to the steam generators.
•	Service Water to the diesel generator cooling water heat exchangers.
•	Auxiliary steam to the TDAFW pump.
•	Service water to the suction of the auxiliary feedwater pumps.
•	Reactor Coolant System pressure boundary.
•	Spent Fuel Pool System.
•	Safety injection piping from RWST to the reactor vessel and reactor coolant system coldlegs.
•	Service water to the safety injection pump stuffing boxes and lube oil coolers, component cooling water heat exchangers and containment fan coil units.
•	Accumulator injection to the reactor vessel and reactor coolant system coldlegs.
•	Internal containment spray from the RWST to containment.
•	Residual Heat Removal System piping from the RWST and containment sump to the reactor coolant loops.
•	Residual Heat Removal pump discharge piping to suction of safety injection and containment spray pumps.
•	Component Cooling Water to RHR HXs, RHR pump shaft seal HXs, safety injection pump seal HXs, and ICS pump gland coolers.
•	Letdown piping to LD-3.

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4. Guidance from Regulatory Guide 1.26, 10 CFR Part 50, and Section XI

This appendix provides the documentation and technical basis for the determination of the ASME Section XI ISI Classification Boundaries at Kewaunee Nuclear Power Plant in accordance with ASME Section XI of the Boiler and Pressure Vessel Code, IWA-1400(a). Specific references are made to various regulatory and licensing documents used by the staff of the NRR for guidance during review of applications to operate nuclear power plants. Regulatory Guide 1.26, "Quality Group Classification and Standards for Water-, Steam-, and Radioactive Waste- Containing Components of Nuclear Power Plants," describes a quality classification system related to specified national standards that may be used to determine quality standards acceptable to the NRC staff for satisfying General Design Criterion 1 for Class 2 and Class 3 components. As stated in 10 CFR Part 50, Appendix B, it is also the responsibility of the owner to test systems that contain fluids other than those that contain water, steam, and radioactive waste containing components that are important to safety. However, these systems are not required to be included within the ISI boundaries, but they are tested in accordance with plant approved procedures commensurate with the safety function to be performed.

- a. General Design Criterion 1, "Quality Standards and Records," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that structures, systems and components important to safety be tested to quality standards commensurate with the importance of the safety functions to be performed. Also, in accordance with IWA-1400 of ASME Section XI of the Boiler and Pressure Vessel Code, the Owner is responsible for the determination of the appropriate Code classes for each component of the power plant, identification of the system boundaries for each class of components subject to inspection and the components exempt from examination requirements.

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- b. During construction, 10 CFR Part 50, Appendix B was the primary document used in the design, fabrication, and testing of QA-1 safety-related structures, systems, and components. QA-1 identified those structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. Types of valves and their location within the system, that were used to establish boundaries for the Section XI classification system, were based on the original design and QA classification. With only three exceptions, the Spent Fuel Storage Pool System (QA-3), Service Water System Service Water Pump Strainers (4 Total) 3" Backwash Lines (QA-3) and Service Water Side of Spent Fuel Pool Heat Exchanger up to 6" valves SW-1601 and SW-1602 (QA-3), all Section XI Boiler and Pressure Vessel Code piping falls within the QA-1 boundary at the Kewaunee Nuclear Power Plant. 10 CFR Part 50.2, Regulatory Guide 1.26 and KNPP USAR, Section 14 were used extensively for the classification of components for ISI at Kewaunee Nuclear Power Plant. 10 CFR Part 50.55a requires that components of the reactor coolant pressure boundary, as defined in 10 CFR Part 50.2, be tested to the highest available national standards. The highest available national standard for ISI classification is ISI Class 1 and is described in Regulatory Guide 1.26.
5. Exceptions to Regulatory Guide 1.26 and Classification Boundary Termination Philosophy
 - a. The classification of piping systems for the purpose of inservice inspection requirements has been performed to 10 CFR Part 50.2, Regulatory Guide 1.26 and KNPP USAR, Section 14. This classification is not consistent with the ASME Section III design requirements for classification of safety-related systems. The purpose of the Section III classification system is to ensure the integrity of the components in terms of material properties and design parameters. The purpose of the Section XI classification system is in part, to identify systems or portions of systems necessary to mitigate the consequences of postulated design basis accidents and the classification of systems for ISI is limited to systems important to safety that contain water, steam or radioactive materials.

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- b. Regulatory Guide 1.26, Footnote 4 defines a system boundary as including those portions of the system required to accomplish the specified safety function and connected piping up to and including the first valve (including a safety or relief valve) that is either normally closed or capable of automatic closure when the safety function is required. However, due to the fact that Kewaunee Nuclear Power Plant was constructed and licensed prior to the development of the regulatory guide, strict adherence to this document was not practical when classifying ISI Class 3 systems. In particular, with the service water system, provisions for system isolation are not always available with remote operated valves due to the original plant General Design Criteria which was not formalized and published as 10 CFR Part 50, Appendix A prior to 1971. Therefore, the use of manual valves was not restricted. For these cases, guidance was taken from the Kewaunee Nuclear Power Plant Updated Safety Analysis Report. Where normally open manual valves are used to designate an ISI boundary, the valves are accessible to an operator so that the piping can be isolated if necessary. In addition, postulated leakage in the service water system downstream of the open manual valves where ISI classification breaks were taken has been shown to have little effect on functionality of the service water system or the frequency of core damage as calculated in the KNPP PRA. No classification boundary breaks were taken at normally open manual valves inside containment. Hence, all systems at KNPP are being tested to quality standards commensurate with the safety function to be performed.
- c. Instrumentation impulse lines beyond the root valves have not been classified for ISI since they are under the jurisdiction of IEEE and not ASME, and these lines are not required for the system to perform its safety function nor upon a single active failure would they prevent the system from performing its safety function when required. The lines are typically 0.065-in. wall thickness and rated to withstand in excess of 5000 psig. Therefore, no leakage is expected from this tubing. However, should a leak occur, there would be no danger to health and public safety since the sumps and drains are capable of handling all leakage of this magnitude. In addition, since this tubing is 3/8-in. diameter, essentially one charging pump has the capability to provide adequate reactor water makeup if needed to maintain the appropriate reactor coolant levels. KNPP Technical Specifications mandates that at least two charging pumps be operable. This ensures that adequate makeup is available should a leak of this size occur.
- d. New construction that has added small diameter piping or tubing required for the sole purpose of testing has also not been classified for ISI. For example, 3/8-in. tubing to the RTD flow measurement test connections has not been classified for ISI. These lines originally terminated at one valve. Tubing was subsequently added to allow for system performance testing and provides no safety function. Therefore, the classification boundaries for these configurations have remained unchanged from the original classification boundaries.

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- e. The reactor coolant system and the chemical and volume control system employ the use of four flow restricting devices that provide adequate protection against the unlikely event of a line break beyond these devices. Since any leakage through these devices would be controlled and capable of being made up by the charging system, they are being used to provide for a Class 1 to Class 2 boundary transition in the same manner as a closed valve.

6. Technical Basis

This section contains the bases and justification for defining the ISI classification boundaries. Plant Operations Flow Diagrams that contained piping systems or portions of piping systems addressed by 10 CFR Part 50.2, Regulatory Guide 1.26 and KNPP USAR, Section 14 were selected for review to determine their relevance to the ISI Program. Selected Flow Diagrams were then used to create ISI Flow Diagrams that identify the ISI boundaries for the fourth inspection interval. The systems or portions of systems that have been included in the ISI Program at KNPP are documented and graphically depicted on these drawings.

- a. ISIXK-100-10
 - i. The reactor coolant pressure boundary (RCPB) has been reviewed using 10 CFR Part 50.2 and classified ISI Class 1 in accordance with 10 CFR Part 50.55a(c).
 - ii. The RPV flange seal leakoff lines have been classified as ISI Class 1 up to the reducers that reduce the line size to 3/8-in. According to the KNPP USAR Section 4.3.1 and 14.3.1, the normal reactor makeup system (Charging) is capable of supplying adequate coolant in the event of a line break of small cross section permitting the operator to execute an orderly shutdown. Therefore, in accordance with 10 CFR Part 50.55a(c)(2)(i), this portion of the system need not meet the requirements for Class 1.
 - iii. The pressurizer relief valves provide the boundary for the reactor coolant system in accordance with 10 CFR Part 50.2, "Reactor Coolant Pressure Boundary" (2)(iii).
 - iv. The tubes and primary coolant side of the steam generators contains reactor coolant and has therefore been classified ISI Class 1. Portions of the RPV head vent system up to the flow restricting orifice have been classified ISI Class 1; and ISI Class 2 up to valves RC-46 and RC-49; in accordance with the RCPB as defined in 10 CFR Part 50.2. This flow restricting device provides adequate protection against the unlikely event of a line break. Since any leakage through the orifice would be controlled and capable of being made up by the charging system, it is being used to provide for a Class 1 to Class 2 boundary transition.

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- v. The incore flux thimble tube has been classified ISI Class 1 up to the seal table since it contains reactor coolant. The swagelock fitting provides for a high degree of leak tightness by design and, therefore, provides an adequate Class 1 boundary. Although these tubes are approximately 3/8-in. and normal makeup is capable of supplying the required amount of coolant as stated in the KNPP USAR, Section 14.3.1, KNPP has elected to classify this tubing as ISI Class 1 up to the Seal Table since it is not isolable up to that point. The RVLIS has not been classified for ISI since it is instrument tubing under the jurisdiction of IEEE, not ASME, and is capable of being made up by the charging system.
- vi. The pressurizer relief tank has not been classified since it is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
- vii. Portions of the pressurizer vent piping up to the flow restricting orifice have been classified ISI Class 1; and ISI Class 2 up to valves RC-46 and RC-49; in accordance with the RCPB as defined in 10 CFR Part 50.2. This flow restricting device provides adequate protection against the unlikely event of a line break. Since any leakage through the orifice would be controlled and capable of being made up by the charging system, it is being used to provide for a Class 1 to Class 2 boundary transition.
- viii. The loop B accumulator injection line shown on this drawing beyond valve RHR-11 has been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.b(2) and C.1.a(1).
- ix. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

RC-700 (E-8), NPS 0.375"

RC-704 (D-8), NPS 0.375"

Reducers in RPV flange seal leakoff lines (G-6), NPS 0.375"

Reference paragraph 6.a.v for additional information regarding classification transitions at normally open manual valves.

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- b. ISIXK-100-18
- i. Portions of the residual heat removal system have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.b(2) and C.1.a(1).
 - ii. A portion of the residual heat removal system up to and including motor operated valves RHR-2A, RHR-2B and RHR-11 are part of the reactor coolant pressure boundary as defined in 10 CFR Part 50.2 and has been classified ISI Class 1.
 - iii. The tube side of the residual heat removal pump shaft seal water heat exchangers are supplied by component cooling water and has been classified ISI Class 3.
 - iv. The shell side of the residual heat removal heat exchangers has been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
 - v. There were no classification boundary breaks at normally open manual valves for this drawing other than instrumentation, vents and drains.
- c. ISIXK-100-19
- i. Portions of the component cooling water system have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b. This system supplies cooling water to components that are important to safety such as the shell side of the RHR heat exchangers.
 - ii. The component cooling surge tank protects and accommodates the component cooling water system from sudden changes in volume due to temperature changes or a leak in the reactor coolant pump thermal barrier, and is therefore, classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
 - iii. The shell side of the letdown heat exchanger and the reactor coolant pump seal water heat exchanger are within the component cooling water system boundary as defined in Footnote 4 of Regulatory Guide 1.26, and have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
 - iv. The shell side of the residual heat removal high radiation sample heat exchanger and the reactor coolant high radiation sample heat exchanger have not been classified since they do not perform a safety function and are not required for safe shutdown in the event of an accident.

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- v. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

CC-310 (F-6), NPS 2"

Flange to waste disposal system (A-4), NPS 3"

- d. ISIXK-100-20

- i. The waste gas compressors have not been classified in part since they do not contain water, steam, or radioactive fluid as described in Regulatory Guide 1.26. Failure of the waste gas compressors will not result in exceeding the 10 CFR 100 guidelines. Furthermore, this component has not been classified since it is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
- ii. The reactor coolant pump bearing cooling water for both reactor coolant pumps is supplied by component cooling water and is within the component cooling water system boundary as defined in Footnote 4 of Regulatory Guide 1.26, and have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
- iii. The shell side of the excess letdown heat exchangers is supplied by component cooling water and is within the component cooling water system boundary as defined in Footnote 4 of Regulatory Guide 1.26, and has been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
- iv. The shell side of the safety injection pump seal water heat exchangers, the containment spray pump gland seal coolers, the RHR pump seal water heat exchangers, RHR pump stuffing box water jackets and connected piping have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
- v. The shell side of the pressurizer steam sample heat exchanger, the pressurizer liquid sample heat exchanger and the reactor coolant hot leg sample heat exchanger have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.

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- vi. The boric acid evaporator and the waste evaporator condenser and distillate cooler have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
- vi. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

CC-500 (B-2), NPS 2"
CC-503 (B-3), NPS 2"
CC-800 (C-3), NPS 6"
CC-809 (C-6), NPS 6"
CC-1000A (E-3), NPS 1.5"
CC-1000B (F-3), NPS 1.5"
CC-1002A (E-6), NPS 1.5"
CC-1002B (F-6), NPS 1.5"

- e. ISIXK-100-28
 - i. Portions of the safety injection system are part of the RCPB as defined in 10 CFR Part 50.2 and have been classified ISI Class 1.
 - ii. Remaining portions of the safety injection system, within the system boundary as defined in Footnote 4 of Regulatory Guide 1.26, including the accumulators, have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(3) and Article C.1.e.
 - iii. The containment sump suction piping has been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(2) and C.1.b(2).
 - iv. The classification transition from ISI Class 1 to ISI Class 2 occurs at the valves RHR-11, SI-303A, SI-303B, SI-12A, SI-12B, SI-16A, SI-16B, SI-21A and SI-21B in accordance with Regulatory Guide 1.26, Article C.1.b(2) and C.1.a(1).
 - v. There were no classification boundary breaks at normally open manual valves for this drawing.

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- f. **ISIXK-100-29**
- i. The RWST and connected piping have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(1), (2), (3) and C.1.b(1). The RWST supplies borated water to the safety injection pumps, the residual heat removal pumps and the internal containment spray pumps.
 - ii. The tube side of the safety injection pump seal water heat exchangers has been classified ISI Class 2 since this fluid is supplied from the safety injection pump cavity and is part of the safety injection system boundary as defined in Footnote 4 of Regulatory Guide 1.26.
 - iii. Per DCR 2786, the boric acid tanks are no longer the safety related source of boron for reactor shutdown. Accordingly, the chemical and volume control system piping from the boric acid tanks to valves SI-2A and SI-2B have been reclassified as Section XI Non Code Class.
 - iv. There were no classification boundary breaks at normally open manual valves for this drawing other than instrumentation, vents and drains.
- g. **ISIXK-100-35**
- i. Portions of the chemical and volume control system through the tube side of the regenerative heat exchanger to CVC-11 and CVC-15 is a preferred flow path to mitigate the consequences of a boron dilution malfunction. However, this flow path is not essential as the shutdown function can be satisfied by the safety injection following a reactor trip. As a good practice, KNPP has elected to classify this piping ISI Class 2. WPSC may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.
 - ii. Portions of the chemical and volume control system from valve LD-3 through the shell side of the regenerative heat exchanger to the tube side of the letdown heat exchanger are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. Piping beyond the RCPB as defined by 10 CFR 50.2, i.e., LD-6, need not be included in the ISI boundaries since it is not needed to terminate any of the postulated design basis accidents described in Section 3 of this appendix. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.

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- iii. Portions of the chemical and volume control system are part of the reactor coolant pressure boundary as defined by 10 CFR Part 50.2, including the reactor coolant pump seal water to valves CVC-205A and CVC-205B, the auxiliary spray line up to fail closed valve CVC-15, the tube side of the excess letdown heat exchangers up to valve LD-301, the charging line to valve CVC-11, the letdown line to valve LD-3 and the No. 1 seal bypass orifice for the reactor coolant pumps. This flow restricting device provides adequate protection against the unlikely event of a line break. Since any leakage through the orifice would be controlled and capable of being made up by the charging system, it is being used to provide for a Class 1 to Class 2 boundary transition.
- iv. Portions of the chemical and volume control system piping from the discharge of the charging pumps provide water for reactor coolant pump seal injection. Neither the reactor coolant pump seal injection piping upstream of CVC-205A and CVC-205B, the return piping downstream of the No. 1 seal bypass orifice or the return piping from the No. 2 seal is needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.
- v. There were no classification boundary breaks at normally open manual valves for this drawing.
- h. ISIXK-100-36
 - i. Discharge piping from the charging pumps to the regenerative heat exchanger is a preferred flow path to mitigate the consequences of a boron dilution malfunction. However, this flow path is not essential as the shutdown function can be satisfied by the safety injection following a reactor trip. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.

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- ii. The portion of the chemical and volume control system piping from the discharge of the charging pumps provides water for reactor coolant pump seal injection. The reactor coolant pump seal injection piping is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. Piping beyond the RCPB as defined by 10 CFR 50.2, i.e., CVC-202-1 and CVC-203B, need not be included in the ISI boundaries since it is not needed to terminate any of the postulated design basis accidents described in Section 3 of this appendix. As a good practice, WPSC has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.
- iii. The reactor coolant pump seal water return piping to the volume control tank and the tube side of the seal water heat exchanger are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. Piping beyond the RCPB as defined by 10 CFR 50.2, i.e., CVC-212, need not be included in the ISI boundaries since it is not needed to terminate any of the postulated design basis accidents described in Section 3 of this appendix. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.
- iv. Portions of the chemical and volume control system including the tube side of the letdown heat exchanger to the volume control tank are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. This piping is not required to be included in the ISI boundaries. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.
- v. The deborating demineralizers, the cation bed and the mixed bed demineralizers have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.

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- vi. The chemical and volume control system piping from the refueling water storage tank through valve CVC-301 to the charging pumps is a preferred flow path to mitigate the consequences of a boron dilution malfunction. However, this flow path is not essential as the shutdown function is satisfied by safety injection following a reactor trip. Since this malfunction is very slow to develop, the operators will have sufficient time to detect and correct for this condition without automatic equipment actuation. KNPP considered pursuing an alternative to classifying this piping as non-code class. Following Regulatory Guide 1.26 classification termination criteria for systems in support of reactor shutdown, this piping has been classified ISI Class 2. As a good practice, KNPP has elected to classify this piping ISI Class 2. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 2 to Non-Code Class.

- vii. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

MG(R)-531 (C-6), NPS 0.375"
MG(R)-540 (C-6), NPS 0.75"

- i. ISIXK-100-38
 - i. Per DCR 2786, the boric acid tanks are no longer the safety-related source of boron for reactor shutdown. The safety-related source of boron is now the RWST. The chemical and volume control system piping including the boric acid tanks shown on ISIXK-100-38 have been classified as ASME Section XI Non-Code Class.

- j. ISIXK-100-44
 - i. Portions of the sampling system that penetrate the reactor containment are part of the reactor coolant pressure boundary as defined in 10 CFR Part 50.2 and have been classified ISI Class 1 up to the outermost containment isolation valve capable of automatic closure.

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- ii. Portions of the sampling system that do not penetrate the reactor containment but are a part of other systems performing safety functions and not isolated from these systems have been classified ISI Class 2 in accordance with Footnote 4 of Regulatory Guide 1.26 defining system boundaries.
 - iii. Remaining portions of the sampling system have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
 - iv. There were no classification boundary breaks at normally open manual valves for this drawing.
- k. ISIM-202-1
- i. Portions of the service water system including the service water pumps and the tube side of the diesel generator cooling water heat exchangers up to valves SW-301A and SW-301B have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a and C.2.b.
 - ii. Diesel generator cooling water heat exchanger discharge piping beyond valves SW-301A and SW-301B to the 24" turbine building standpipe has not been classified for ISI. The safety function of the service water pipe to the diesel generator cooling water heat exchangers is satisfied after service water has exited the heat exchangers. The discharge piping beyond this point is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
 - iii. Adequate provisions for system isolation have been provided with at least one manual isolation valve provided for normally operating return lines.
 - iv. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

SW-400A&C (A-1), NPS 1"
SW-200A (D-1), NPS 6"
SW-200B (D-1), NPS 6"
SW-100A (D-9), NPS 2"

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SW-100B (D-3), NPS 2"
SW-20A (D-8), NPS 1.5"
SW-20B (D-4), NPS 1.5"
SW-28A1 (F-9), NPS 1"
SW-28A2 (F-7), NPS 1"
SW-28B1 (F-4), NPS 1"
SW-28B2 (F-2), NPS 1"

I. ISIM-202-2

- i. Portions of the service water system including service water to the auxiliary feedwater pumps, the tube side of the component cooling heat exchangers and the containment fan coil units, the shell side of the spent fuel pool heat exchanger, the emergency makeup line to the component cooling surge tank, the shell side of the safety injection pump stuffing box jackets and the safety injection pump lube oil coolers have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a and C.2.b.
- ii. Discharge piping outside of containment from the component cooling heat exchangers, the containment fan coil units, the shell side of the spent fuel pool heat exchanger, the shell side of the safety injection pump stuffing box jackets and the safety injection pump lube oil coolers is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. This piping is not required to be included in the ISI boundaries. As a good practice, KNPP has elected to classify this piping ISI Class 3. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 3 to Non-Code Class.
- iii. The service water system was designed to also provide cooling water to non safety related components (e.g., the steam generator blowdown heat exchangers). The design of this system allows for the discharge of both safety related and non safety related service water into a common standpipe. This non safety related piping has not been classified for ISI.
- iv. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

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SW-29101-1 (F-1), NPS 1"
SW-29101-2 (F-2), NPS 1"
SW-29101-5 (F-3), NPS 1"
SW-29105-1 (F-6), NPS 1"
SW-29105-2 (F-5), NPS 1"
SW-29105-5 (F-4), NPS 1"
SW-850 (C-5), NPS 1.5"
SW-1219A (C-6), NPS 1.5"
SW-1219B (C-6), NPS 1.5"
SW-650 (G-7), NPS 1.5"
SW-700A (G-7), NPS 1.5"
SW-700B (F-7), NPS 1.5"
SW-800A (E-7), NPS 1.5"
SW-800B (E-7), NPS 1.5"
SW-1000A (D-7), NPS 4"
SW-1000B (C-7), NPS 4"
SW-1200A (D-8), NPS 1.5"
SW-1200B (E-7), NPS 1.5"
SW-1250 (D-8), NPS 1.5"
SW-1260 (D-9), NPS 1.5"
SW-400A&C (H-10), NPS 1"
SW-400C2 (H-8), NPS 1"
SW-400B (H-8), NPS 1"
SW-5003 (E-7), NPS 1.5"

m. ISIM-203

- i. The secondary side of the steam generators up to and including the main steam isolation valves and the main steam relief valves have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.d.
- ii. Portions of the blowdown system up to and including the motor operated valves located outside the reactor containment, BT-3A and BT-3B are part of the steam generator secondary and the feedwater system boundary as defined in Footnote 4 of Regulatory Guide 1.26. These portions have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.d.
- iii. The main steam supply from valves MS-100A and MS-100B up to and including the turbine driven auxiliary feedwater pump performs the function of supplying steam for the system that supplies auxiliary feedwater to the steam generators and has therefore, been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a. It should be noted that while performing the function of supplying steam to

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the turbine driven auxiliary feedwater pump, the associated steam supply piping can be isolated from the main steam system by 3" Motor Operated Valves MS-100A and MS-100B, thus satisfying the Main Steam classification boundary as defined in Article C.1.d of Regulatory Guide 1.26. KNPP may, at some time in the future, elect to revise the current classification boundary for this portion of piping from ISI Class 3 to ISI Class 2 due to ASME Boiler and Pressure Vessel Code Section XI 1998 Edition through 2000 Addenda additional Nondestructive examination requirements for Auxiliary Feedwater Piping

- iv. The steam generator blowdown tank has not been classified since it is not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.
 - v. There were no classification boundary breaks at normally open manual valves for this drawing other than instrumentation, vents and drains.
- n. ISIM-205
- i. Portions of the auxiliary feedwater system are part of the steam generator secondary and the feedwater system boundary as defined in Footnote 4 of Regulatory Guide 1.26. These portions have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.d up to and including the control and motor operated valves located outside the reactor containment, AFW-2A, AFW-2B, AFW-10A and AFW-10B.
 - ii. The auxiliary feedwater pumps and connected piping have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a(1). The KNPP USAR Section 6.6.2 states that the normal feedwater supply to the auxiliary feedwater pumps is from the condensate storage tank and that the emergency supply is from the service water system. Section 6.6.3 of the USAR states that the condensate storage tanks were designed as Class III and the service water system providing suction to the auxiliary feedwater pumps has been designed as Class I (as defined in Section 1.3.1 of the USAR). Therefore, the condensate storage tanks and connecting piping to the suction side of the auxiliary feedwater pumps have not been classified for ISI since the service water system provides the safety related source of cooling water.
 - iii. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee

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Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

AFW-100A (G-8), NPS 1.5"

AFW-100B (G-6), NPS 1.5"

AFW-100C (G-9), NPS 1.5"

- o. ISIM-214
 - i. Portions of the feedwater system up to and including the feedwater isolation valve(s) are part of the steam generator secondary and the feedwater system boundary as defined in Footnote 4 of Regulatory Guide 1.26. These portions have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.d.
 - ii. The AFW hydrazine tank, the CD hydrazine tank and the morpholine tank are for chemical injection and have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. Therefore, in this case, the ISI classification boundaries are terminated at the same location as the QA-1 to QA-2 boundaries.
 - iii. The AFW pumps including chemical injection piping to valves CI-122A, CI-122B, and CI-122C have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a footnote 3.
 - iv. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

CI-128A (G-4), NPS 0.75"

CI-128B (G-4), NPS 0.75"

CI-232A (F-8), NPS 0.75"

CI-232B (F-8), NPS 0.75"

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- p. ISIM-217
- i. The containment spray pumps and connected piping up to and including the spray nozzles have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(2) and C.1.a(3).
 - ii. The tube side of the containment spray pump gland seal coolers have been classified ISI Class 2 since this fluid is supplied from the containment spray pump cavity and is part of the containment spray system boundary as defined in Footnote 4 of Regulatory Guide 1.26.
 - iii. The refueling water storage tank and connected piping have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(1), (2) and (3). The RWST supplies borated water to the safety injection pumps, the residual heat removal pumps and the containment spray pumps for either a loss-of-coolant accident or a steam line break accident.
 - iv. The caustic additive standpipe and pump have not been classified since they are not needed to terminate any of the postulated design basis accidents listed in Section 3 of this appendix. Furthermore, the caustic (sodium hydroxide) is a corrosive chemical possessing properties that differentiate this fluid from those that are within the scope of Regulatory Guide 1.26.
 - v. There were no classification boundary breaks at normally open manual valves for this drawing.
- q. ISIM-218
- i. The refueling water storage tank and connected piping up to valves FPC-1100, FPC-1000 and FPC-1010 have been classified ISI Class 2 in accordance with Regulatory Guide 1.26, Article C.1.a(1), (2) and (3). The RWST supplies borated water to the safety injection pumps, the residual heat removal pumps and the containment spray pumps for either a loss-of-coolant accident, steam break accident, or boron dilution malfunction.
 - ii. Portions of the spent fuel pool cooling system have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a(4).
 - iii. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines

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of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

FPC-206 (B-1), NPS 2"

FPC-200 (B-2), NPS 2"

FPC-6A (B-3), NPS 3"

FPC-6B (B-4), NPS 3"

FPC-5A (B-3), NPS 4"

FPC-5B (B-4), NPS 4"

r. ISIM-219

- i. Secondary sampling system and blowdown piping are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. However, the piping up to valves BT-32A and BT-32B and the steam generators are a part of other systems performing safety functions and have been classified ISI Class 2 in accordance with Footnote 4 of Regulatory Guide 1.26 defining system boundaries.
- ii. Remaining portions of the secondary sampling system have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.

s. ISIM-350

- i. Portions of miscellaneous vent and drain lines on the tube side of the RHR heat exchangers are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. However, these portions are part of the ISI Class 2 system boundaries as defined in Footnote 4 of Regulatory Guide 1.26.
- ii. Portions of miscellaneous vent and drain lines on the tube side of the seal water heat exchanger and the letdown heat exchanger are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. However, these portions are part of the ISI Class 2 system boundaries as defined in Footnote 4 of Regulatory Guide 1.26.
- iii. Remaining portions of miscellaneous vent and drains have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix.

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- iv. There were no classification boundary breaks at normally open manual valves for this drawing.

- t. ISIM-547
 - i. Portions of the service water system including service water to and from the four containment fan coil units have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.a.
 - ii. The shroud cooling coils have not been classified since they are not needed to mitigate any of the postulated design basis accidents listed in Section 3 of this appendix. Furthermore, the shroud cooling coils will isolate from the service water system in the event of an accident.
 - iii. There were no classification boundary breaks at normally open manual valves for this drawing.

- u. ISIM-588
 - i. Portions of the service water system that provide cooling water to the control room air conditioning coils have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
 - ii. Balance of plant systems and components that are supplied by the service water system are not within the scope of Section XI and have not been classified since the classification of systems for ISI is limited to systems important to safety that contain water, steam or radioactive materials. This piping typically provides water for the cooling of area fan coil units. The fan coil units control the temperature of various rooms within the auxiliary building. Regulatory Guide 1.26 limits the extent of the ISI boundaries, with respect to cooling of rooms, to the containment vessel and the control room.
 - iii. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

HS-2202A (E-4), NPS 3.0"
HS-2202B (E-6), NPS 3.0"
HS-2248A (E-2), NPS 0.75"
HS-2248B (E-6), NPS 0.75"

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- v. ISIM-606
- i. Portions of the service water system that provide cooling water to the control room air conditioning coils have been classified ISI Class 3 in accordance with Regulatory Guide 1.26, Article C.2.b.
 - ii. Balance of plant systems and components that are supplied by the service water system are not within the scope of Section XI and have not been classified since the classification of systems for ISI is limited to systems important to safety that contain water, steam or radioactive materials. This piping typically provides water for the cooling of area fan coil units. The fan coil units control the temperature of various rooms within the turbine and auxiliary buildings. Regulatory Guide 1.26 limits the extent of the ISI boundaries, with respect to cooling of rooms, to the containment vessel and the control room.
 - iii. The service water system was designed to also provide cooling water to non safety related components (e.g., the steam generator blowdown heat exchangers). The design of this system allows for the discharge of both safety related and non safety related service water into a common standpipe. This non safety related piping has not been classified for ISI.
 - iv. There are cases where normally closed valves or valves capable of automatic closure do not exist or are not in locations that make it practical to terminate the ISI boundary at locations consistent with the guidelines of Regulatory Guide 1.26. The following classification boundary breaks at normally open manual valves were used due to the fact that Kewaunee Nuclear Power Plant was designed, constructed and licensed prior to the publication of ISI classification guidelines such as Regulatory Guide 1.26, 10 CFR Part 50, Appendix A and Appendix B.

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SW-650 (A-1), NPS 1.5"
SW-700A (A-4), NPS 1.5"
SW-700B (A-7), NPS 1.5"
SW-800A (C-3), NPS 1.5"
SW-800B (B-3), NPS 1.5"
SW-850 (B-5), NPS 1.5"
SW-1030A (E-1), NPS 1"
SW-1030B (E-7), NPS 1"
SW-1039A (D-1), NPS 2.5"
SW-1059B (E-7), NPS 1.5"
SW-1200A (A-10), NPS 1.5"
SW-1200B (B-8), NPS 1.5"
SW-1219A (E-10), NPS 1.5"
SW-1219B (F-10), NPS 1.5"
SW-1225 (A-12), NPS 2"
SW-1260 (G-10), NPS 1.5"
SW-1263 (G-11), NPS 1.5"
SW-6028 (D-1), NPS 1"
SW-1223A (E-12), NPS 1.5"