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.

<u>Summary of Level 1 PRA Results:</u> 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).

<u>Summary of Level 2 PRA Results</u>: 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.

<u>PRA Model Description</u>: 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

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

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 ΔTs 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 ΔTs 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_o and is expected to have a value less than 1E-08. Piping locations identified as medium failure potential have a likelihood of $20x_o$. 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.

System	Risk		Consequence Rank	Failure Potential	
	Category	Rank(1)		DMs	Rank
FW	5 (3)	Medium (High)	Medium	TASCS, TT, (FAC)	Medium (High)

In this example if FAC is not considered, the failure potential rank is "medium" instead of "high" based on the TASCS and TT damage mechanisms. When a "medium" failure potential rank is combined with a "medium" consequence rank, it results in risk category 5 ("medium" risk) being assigned instead of risk category 3 ("high" risk).

In this example if FAC were considered, the failure potential rank would be "high" instead of "medium". If a "high" failure potential rank were combined with a "medium" consequence rank, it would result in risk category 3 ("high" risk) being assigned instead of risk category 5 ("medium" risk).

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.

IE 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	Dan Bryce 7/11/2003	Scott Kulat 7/11/03	Phillip C. Bukes 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	9
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
HIGH	Category 7b - Low Risk 01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 0 Elements	**Category 5b - Medium Risk** **01RC - 0** **02RHR - 0** **03SI - 0** **04CVC - 0** **05MS - 0** **06FW - 0** **07ICS - 0** **08AF - 0** **Total - 0 Elements**	Category 3 - High Risk 01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 0 Elements	Category 1 - High Risk 01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 0 Elements
MEDIUM	Category 7c - Low Risk 01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 0 Elements	Category 6b - Low Risk 01RC - 0 02RHR - 2 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 2 Elements	**Category 5a - Medium Risk** **01RC - 0** **02RHR - 6** **03SI - 10** **04CVC - 5** **05MS - 0** **06FW - 16** **07ICS - 0** **08AF - 6** **Total - 43 Elements**	Category 2 - High Risk 01RC - 22 02RHR - 8 03SI - 4 04CVC - 35 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 69 Elements
LOW	Category 7d - Low Risk 01RC - 0 02RHR - 0 03SI - 0 04CVC - 0 05MS - 0 06FW - 0 07ICS - 0 08AF - 0 Total - 0 Elements	Category 7a - Low Risk 01RC - 0 02RHR - 21 03SI - 0 04CVC - 9 05MS - 0 06FW - 0 07ICS - 17 08AF - 0 Total - 47 Elements	Category 6a - Low Risk 01RC - 0 02RHR - 219 03SI - 207 04CVC - 76 05MS - 76 06FW - 35 07ICS - 16 08AF - 108 Total - 737 Elements	**Category 4 - Medium Risk** **01RC - 248** **02RHR - 107** **03SI - 317** **04CVC - 88** **05MS - 0** **06FW - 0** **07ICS - 88** **08AF - 33** **Total - 881 Elements**

Kewaunee Risk Ranking Report

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, PS-W055, 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 RC-W022BC	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, RC-W060 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 RC-W067DM	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	RHR-W027, 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, SI-W076	2	ISIM-938-1	1
03SI	SI-040	2	High	IL-C-19	High	PWSCC	Medium	4-SI-ISIM-938-2	SI-W112DM	1	ISIM-938-2Sh1	1
03SI	SI-047	2	High	IL-C-22	High	PWSCC	Medium	4-SI-ISIM-939	SI-W054DM	1	ISIM-939Sh1	1
04CVC	CVC-010	2	High	CVCS-C-09	High	TASCS	Medium	2-CVC-ISIM-1369-2	WD-W004S, WD-W005S	2	ISIM-1369-2	1
04CVC	CVC-003	2	High	CVCS-C-02	High	TT	Medium	2-CVC-ISIM-1473	CVC-W096S, CVC-W095S, CVC-W094S, CVC-W093S, CVC-W092S, CVC-W091S, CVC-W090S, CVC-W089S, CVC-W088S, CVC-W087S, CVC-W086S, CVC-W085S, CVC-W084S, CVC-W083S, CVC-W082S, CVC-W081S, CVC-W080S, CVC-W079S, CVC-W078S, CVC-W077S, CVC-W076S, CVC-W075S, CVC-W074S, CVC-W073S, CVC-W072S, CVC-W071S, CVC-W070S, CVC-W069S, CVC-W068S, CVC-W067S, CVC-W066S, CVC-W065S, CVC-W064S	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	RC-W001DM, RC-W070, RC-W005, RC-W080, RC-W076DM	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

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

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-011	4	Medium	RCS-C-02	High	None	Low	31-RC-ISIM-1703	RC-W077DM, 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, RC-W026DM	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, RTD-W019S, 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	RC-W030DM, RC-W069, RC-W035, RC-W082, RC-W078DM	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	RC-W079DM, 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, RC-W058DM	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

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

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-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, RTD-W083, 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	PR-W001DM, PR-W002 PR-W003, PR-W004, PR-W005, PR-W006, PR-W037, PR-W007, PR-W008, 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	PR-W016DM, 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	PR-W026DM, PR-W027, PR-W028, PR-W029, PR-W030, PR-W031, PR-W032, PR-W033, 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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2) Welds that were selected for examination are underlined.

Kewaunee Risk Ranking Report

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-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, PS-W044, PS-W045, PS-W046, PS-W047, PS-W048, 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, PS-W061DM	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, PS-W020, 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	RC-W003BC	1	ISIM-1703	1
01RC	RC-043	4	Medium	RHR-C-05B1	High	None	Low	8-RC-ISIM-1704	RC-W034BC	1	ISIM-1704	1
02RHR	RHR-021	4	Medium	RHR-C-05A1	High	None	Low	8-RHR-ISIM-957-1	RHR-W001, RHR-W002	2	ISIM-957-1Sh1	1
02RHR	RHR-023	4	Medium	RHR-C-05A1	High	None	Low	8-RHR-ISIM-957-1	RHR-W007, RHR-W008, RHR-W009	3	ISIM-957-1Sh1	1
02RHR	RHR-025	4	Medium	RHR-C-05B1	High	None	Low	8-RHR-ISIM-957-1	RHR-W025, RHR-W026	2	ISIM-957-1Sh1	1
02RHR	RHR-027	4	Medium	RHR-C-05B1	High	None	Low	8-RHR-ISIM-957-1	RHR-W031, 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	RHR-W082, RHR-W083, RHR-W084, RHR-W085 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

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

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-016	4	Medium	RHR-C-02BS	High	None	Low	12-RHR-ISIM-959-2 10-RHR-ISIM-959-2	RHR-W111, RHR-W112, RHR-W113, 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	RHR-W419, 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, SI-W121, 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, SI-W049, SI-W050, SI-W051, SI-W052	5	ISIM-939Sh1	1
03SI	SI-001	4	Medium	IL-C-01	High	None	Low	3-SI-ISIM-934-2	SI-W265, SI-W266, SI-W267, SI-W268	4	ISIM-934-2	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

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-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, SI-W277, SI-W278, SI-W279, SI-W280, SI-W281, SI-W282, SI-W283, SI-W284, SI-W285, SI-W286, SI-W287 SI-W288, SI-W289S, SI-W557S, SI-W291S SI-W438S, SI-W439S, 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, SI-W307, SI-W308 SI-W309S, SI-W310S, 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, SI-W348, 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, SI-W571, SI-W573, SI-W574, SI-W575, 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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Kewaunee Risk Ranking Report

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 SI-W417, 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, SI-W372S, SI-W373S, SI-W374S, SI-W375S, SI-W376S, SI-W377S, SI-W378S, SI-W379S, SI-W380S, SI-W381S, SI-W382S, SI-W383S, 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	SI-W429, 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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Kewaunee Risk Ranking Report

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, SI-W244, SI-W245, 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 SI-W249, 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, SI-W225, 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, SI-W262, 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, SI-W232, SI-W233	4	ISIM-934-1	2
03SI	SI-088	4	Medium	SI-C-10B	High	None	Low	3-SI-ISIM-934-1	SI-W234, SI-W235, SI-W236	3	ISIM-934-1	2
04CVC	CVC-005	4	Medium	CVCS-C-05	High	None	Low	2-CVC-ISIM-1474	LD-W001S, 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, WD-W002S, 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, WD-W010S, WD-W011S	6	ISIM-1369-2	1

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

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					
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, CVC-W050S, CVC-W051S, 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, CVC-W138S, CVC-W139S, CVC-W140S, 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, CVC-W166S, 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	ICS-W045 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, ICS-W004, 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, ICS-W103, ICS-W104 ICS-W109, ICS-W108	7	ISIM-953	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.

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-009	4	Medium	ICS-C-04A	High	None	Low	6-ICS-ISIM-951	ICS-W006, ICS-W007BC, ICS-W008, ICS-W011, ICS-W012, 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, ICS-W111, ICS-W112, 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, ICS-W174, ICS-W175, 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, AFW-W005, AFW-W006, 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, AFW-W087, AFW-W088, 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, RHR-W168	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

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

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-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	SI-W074	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, CVC-W062S, 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	FW-W024, 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, FW-W061, 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, AFW-W143, 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	6-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

NOTES:
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2) Welds that were selected for examination are underlined.

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-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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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

NOTES:
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2) Welds that were selected for examination are underlined.

Kewaunee Risk Ranking Report

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

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

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

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

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

NOTES:
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2) Welds that were selected for examination are underlined.

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					
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

NOTES:
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2) Welds that were selected for examination are underlined.

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

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

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.

IE INSERVICE ENGINEERING	**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	Dan Bruzgen 7/11/2003	Scott Kulat 7/11/03	Phillip C. Baker 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:

> $\Delta R_{CDF} = CCDP*RF*[(POD_S*N_S) - (POD_R*N_R)]$

CCDP	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 CCDP 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 CCDP (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 CCDP 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

<table>
<tr><th rowspan="2">Consequence Rank</th><th colspan="2">Upper Bound</th><th colspan="2">Failure Potential</th><th rowspan="2">Best Estimate Failure Rate</th><th rowspan="2">Upper Bound Failure Rate</th><th colspan="3">POD Improvement Factors</th></tr>
<tr><th>CCDP</th><th>CLERP</th><th>Damage Mechanisms</th><th>Rank</th><th>Section XI</th><th>RI-ISI</th><th>None</th></tr>
<tr><td>High</td><td>1.00E-02</td><td>1.00E-03</td><td>FAC</td><td>High</td><td>2.00E-06</td><td>1.00E-04</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td rowspan="2">Medium</td><td rowspan="2">1.00E-04</td><td rowspan="2">1.00E-05</td><td>TASCS, TT</td><td rowspan="2">Medium</td><td rowspan="2">2.00E-07</td><td rowspan="2">1.00E-05</td><td>0.3</td><td>0.9</td><td rowspan="3">0.5</td></tr>
<tr><td>IGSCC, TGSCC, PWSCC, ECSCC, MIC, PIT, CC, E-C</td><td>0.5</td><td>0.5</td></tr>
<tr><td>Low</td><td>1.00E-06</td><td>1.00E-07</td><td>None</td><td>Low</td><td>1.00E-08</td><td>1.00E-06</td><td>0.5</td><td>0.5</td></tr>
</table>

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	-
03SI	4	Medium	High	None	Low	B-J	12	3	0	4	-
						C-F-1	305	14	12	28	-
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	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	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														-1.67E-08	-9.46E-09	-1.67E-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 file 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.

<u>**Supports**</u>

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

<u>**Valves**</u>

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

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 Acmtrs 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 Acmtr 1B to Loop B Cold Leg	1, 2	SI-33-006
ISIM-938-2SH1	SI – From Cntmt PEN. 10 to Reactor From Acmtr 1B to Loop B Cold Leg	1, 2	SI-33-006
ISIM-938-2SH2	SI – From Cntmt PEN. 10 to Reactor From Acmtr 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

Appendix A

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 Acmtrs 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

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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

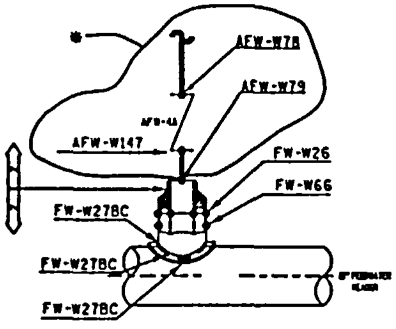
ISI Drawings

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

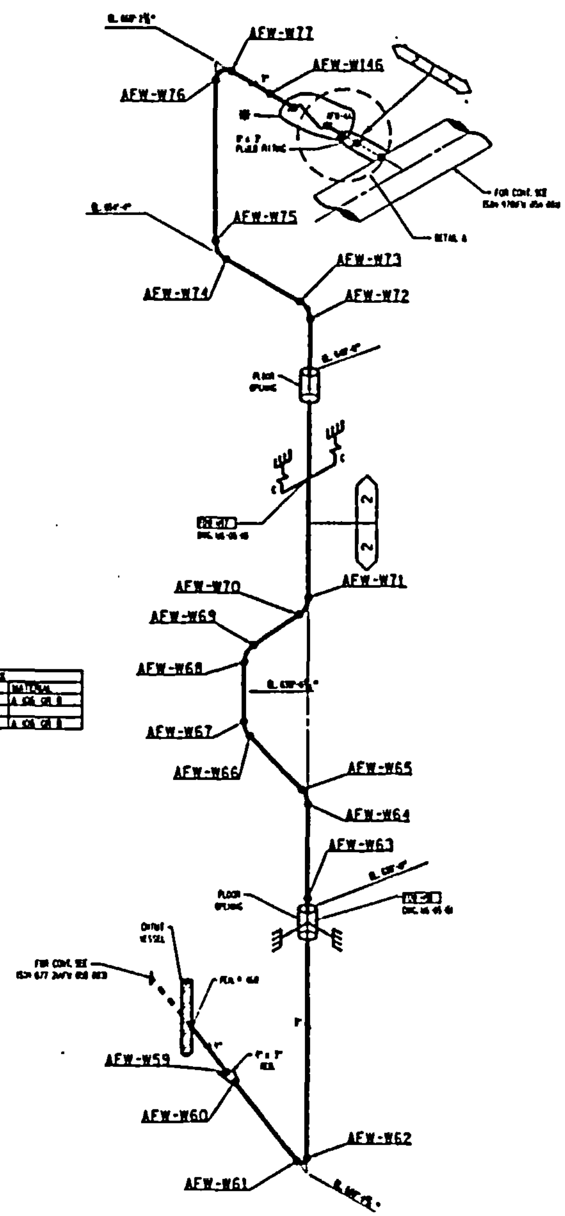
Appendix A

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



DETAIL A



PIPE			CALIBRATION BLOCK		
[illegible]	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
[illegible]	100/0.594	A 106 GR B	[illegible]	100/0.594	A 106 GR B
[illegible]	80/0.337	SA333	[illegible]	80/0.337	
[illegible]	[illegible]/0.300	A 106 GR B	[illegible]	80/0.300	A 106 GR B

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
FDW-H97	1.0
FDW-H98	1.0

VALVE BONNET BOLTING DATA		
I.D.	STUDS/DIA. (IN.)	NUTS
AFW-4A	4 CAP SCREWS-0.5[illegible], 4 STUDS-0.375", 1 CAP SCREW-0.625"	4

C-1 *
KAP 01-001639

CODE CLASS 2

LOCATION: CONTAINMENT

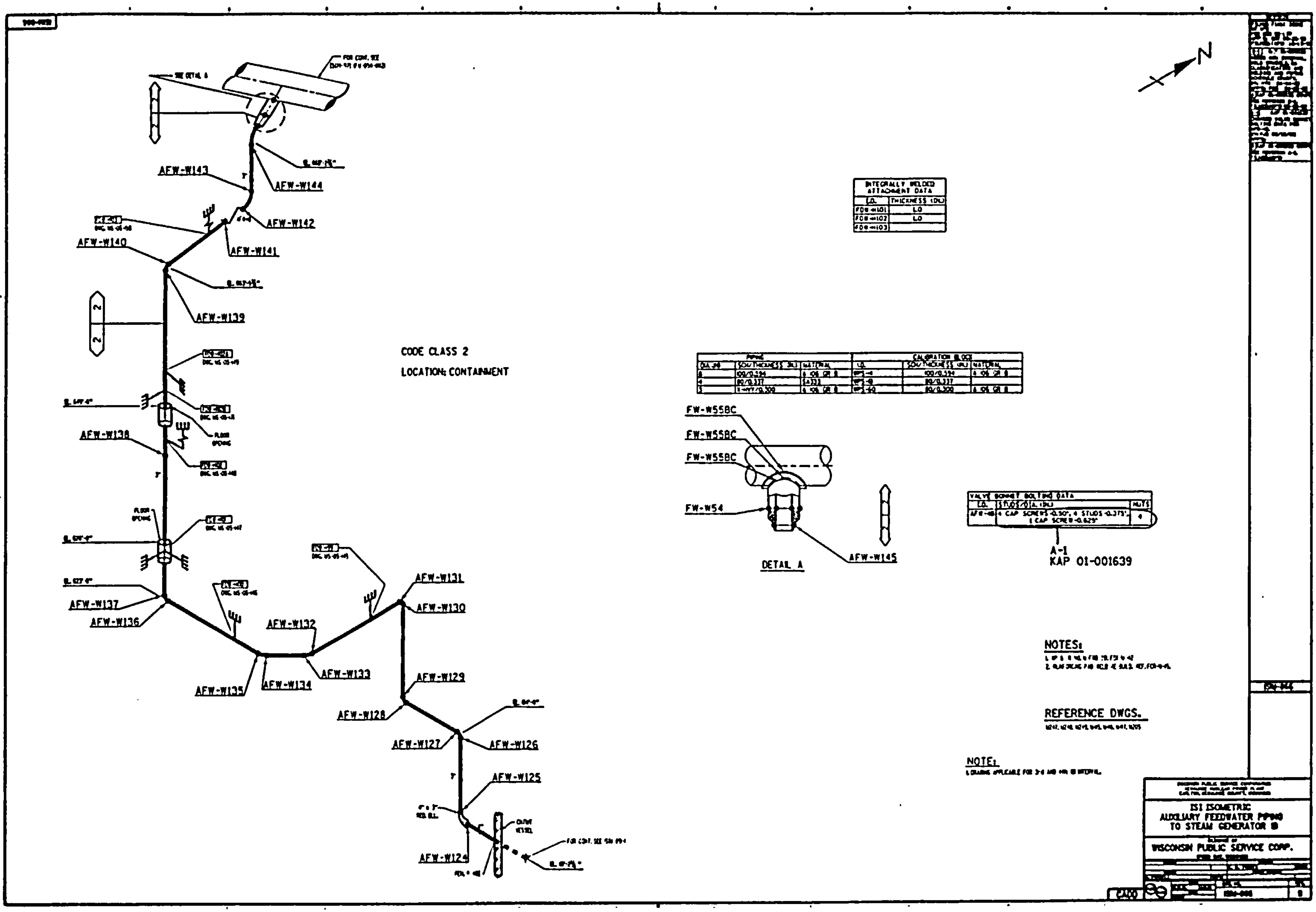
REFERENCE DWGS.

NOTE:

ISI ISOMETRIC
AUXILIARY FEEDWATER PIPING
TO STEAM GENERATOR IA

WISCONSIN PUBLIC SERVICE CORP.

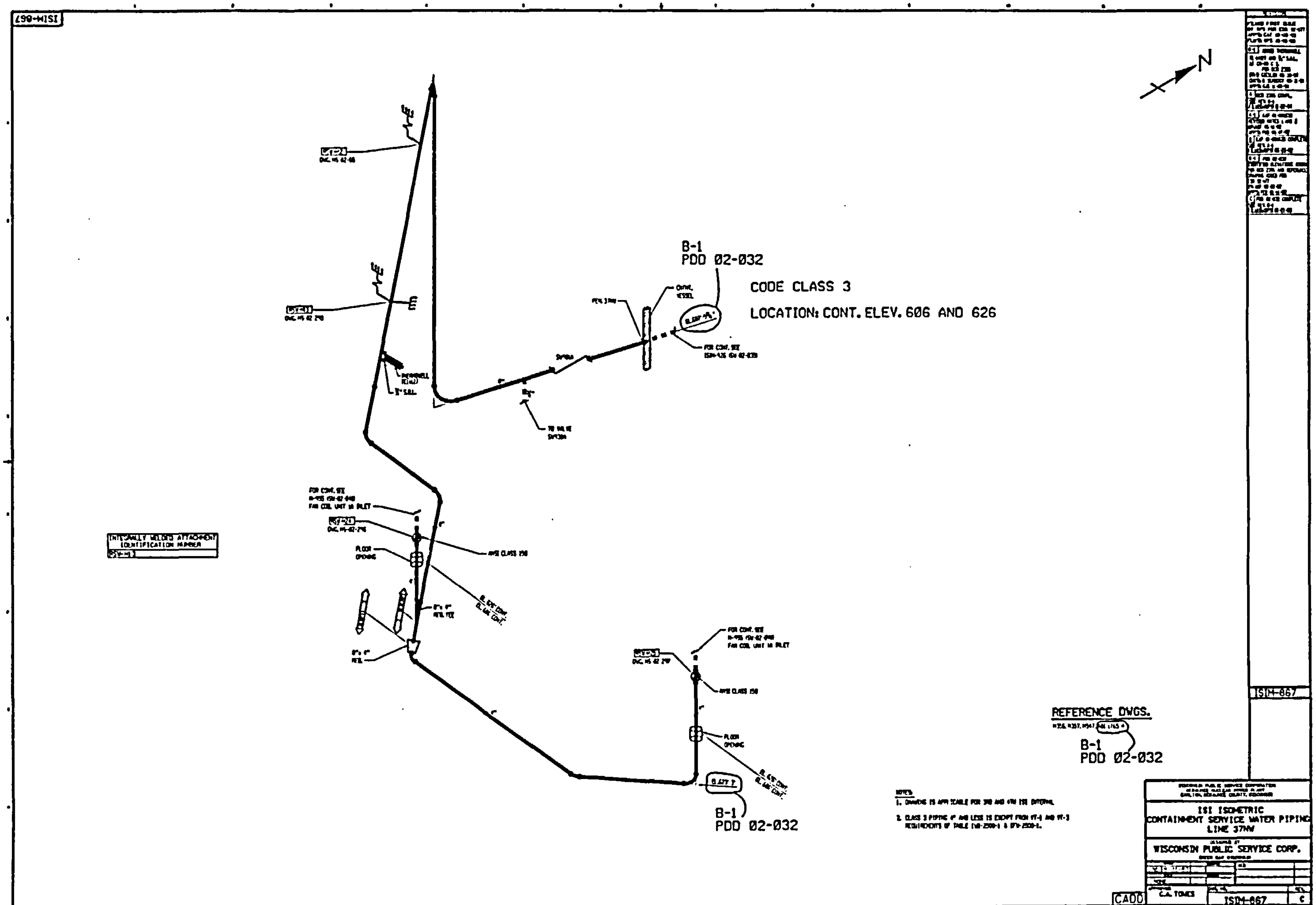
CADD



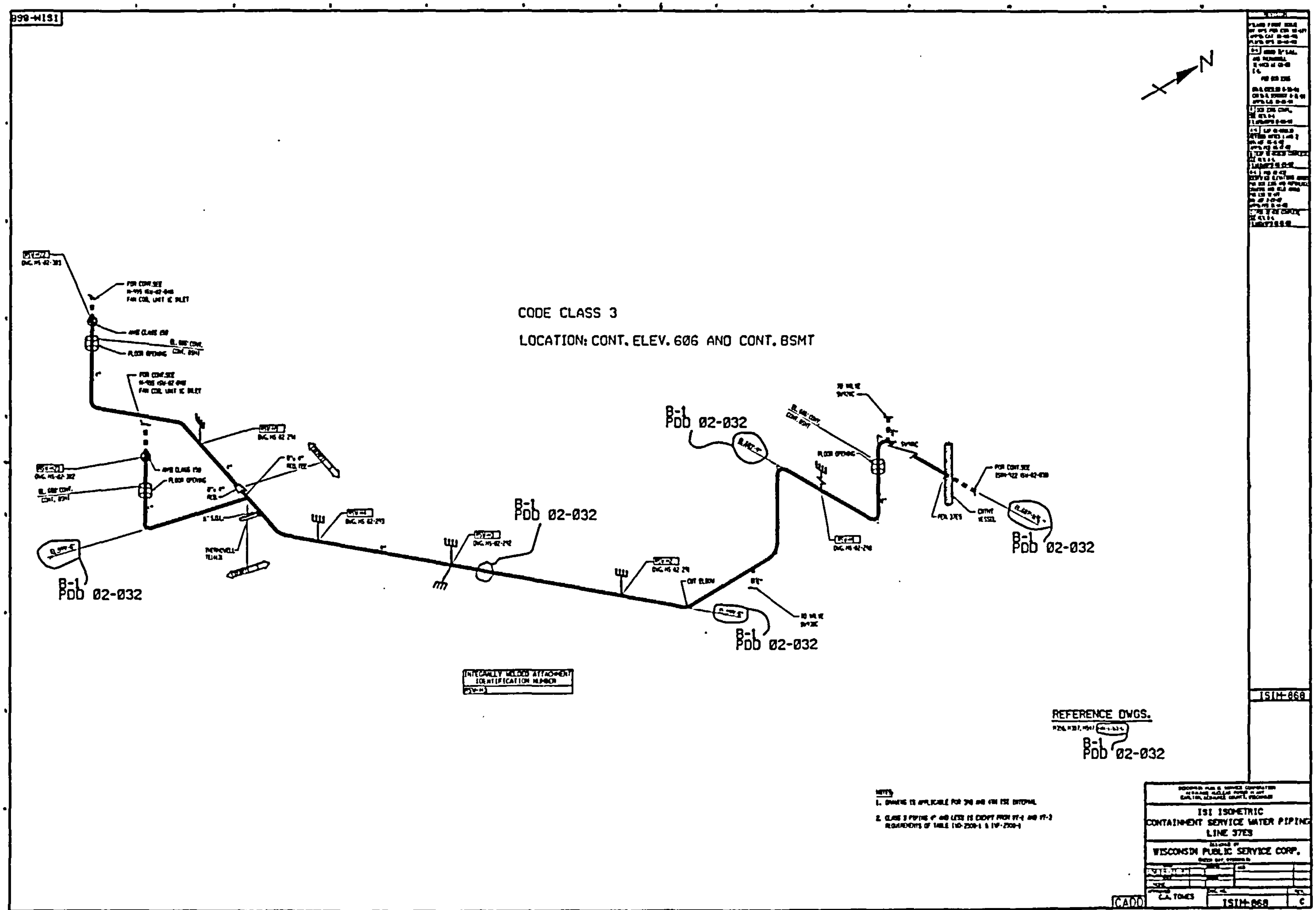
INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
FDW-H101	1.0
FDW-H102	1.0
FDW-H103	

PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
8	100/0.594	A 106 GR B	[illegible]	100/0.594	A 106 GR B
4	80/0.337	SA333	[illegible]	80/0.337	
3	[illegible]/0.300	A 106 GR B	[illegible]	80/0.300	A 106 GR B

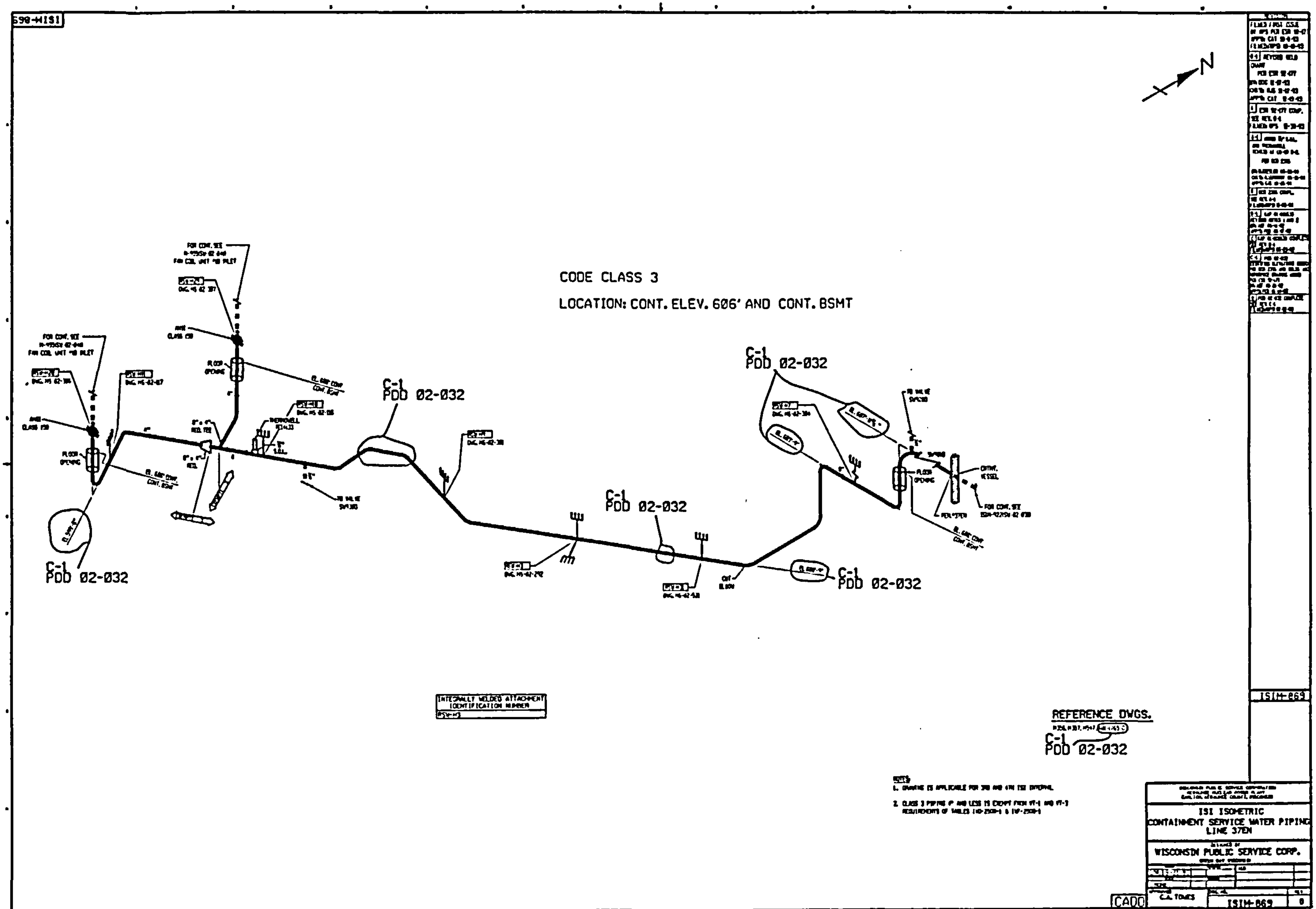
VALVE BONNET BOLTING DATA		
I.D.	STUDS/DIA. (IN.)	NUTS
AFW-[illegible]	4 CAP SCREWS-0.50", 4 STUDS-0.375", 1 CAP SCREW-0.625"	4



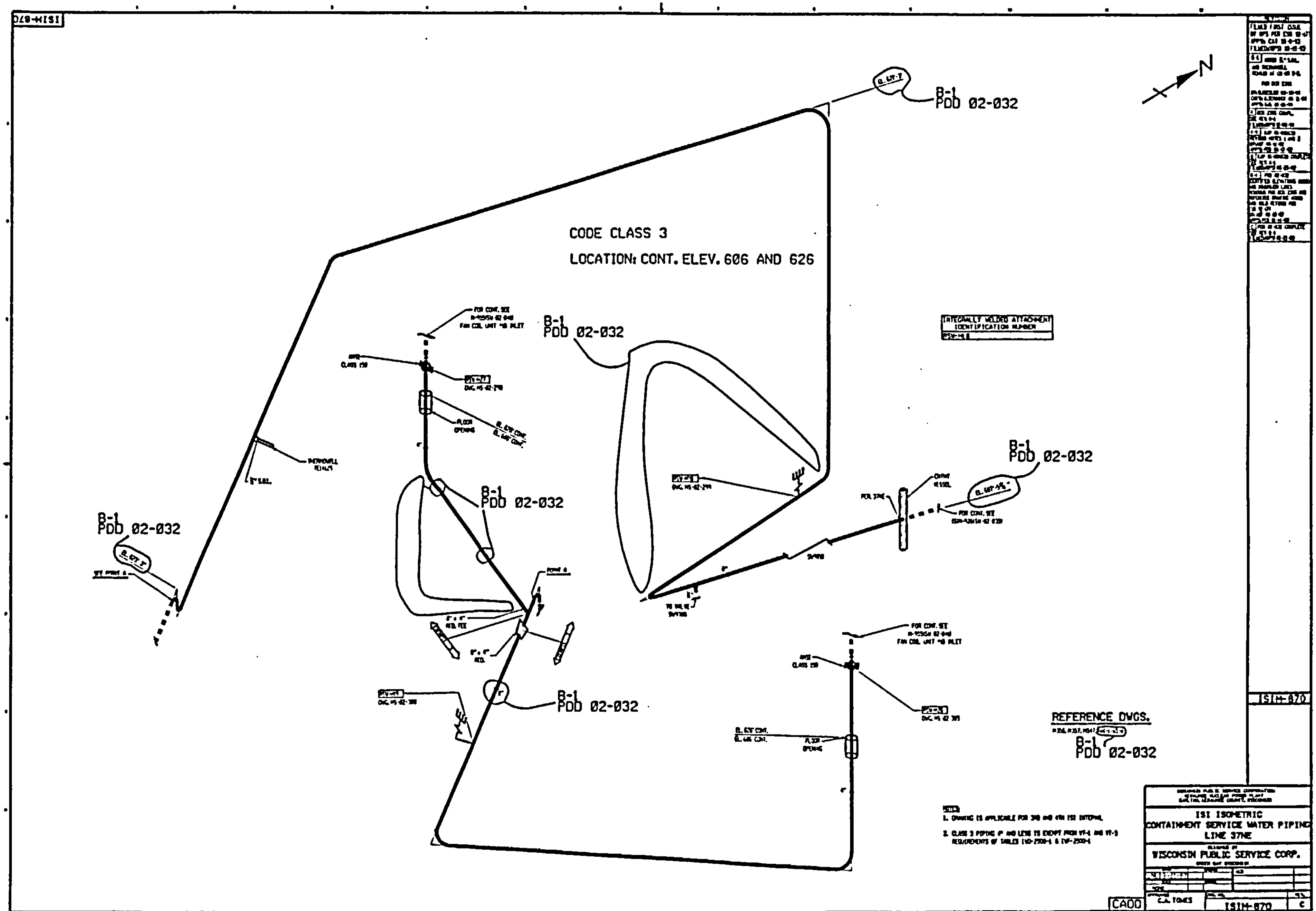
ISIM-067
N
B-1
PDD 02-032
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 626
B-1
PDD 02-032
REFERENCE DWGS.
B-1
PDD 02-032
ISIM-067
ISI ISOMETRIC
CONTAINMENT SERVICE WATER PIPING
LINE 37NW
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. TOMES
ISIM-067
C



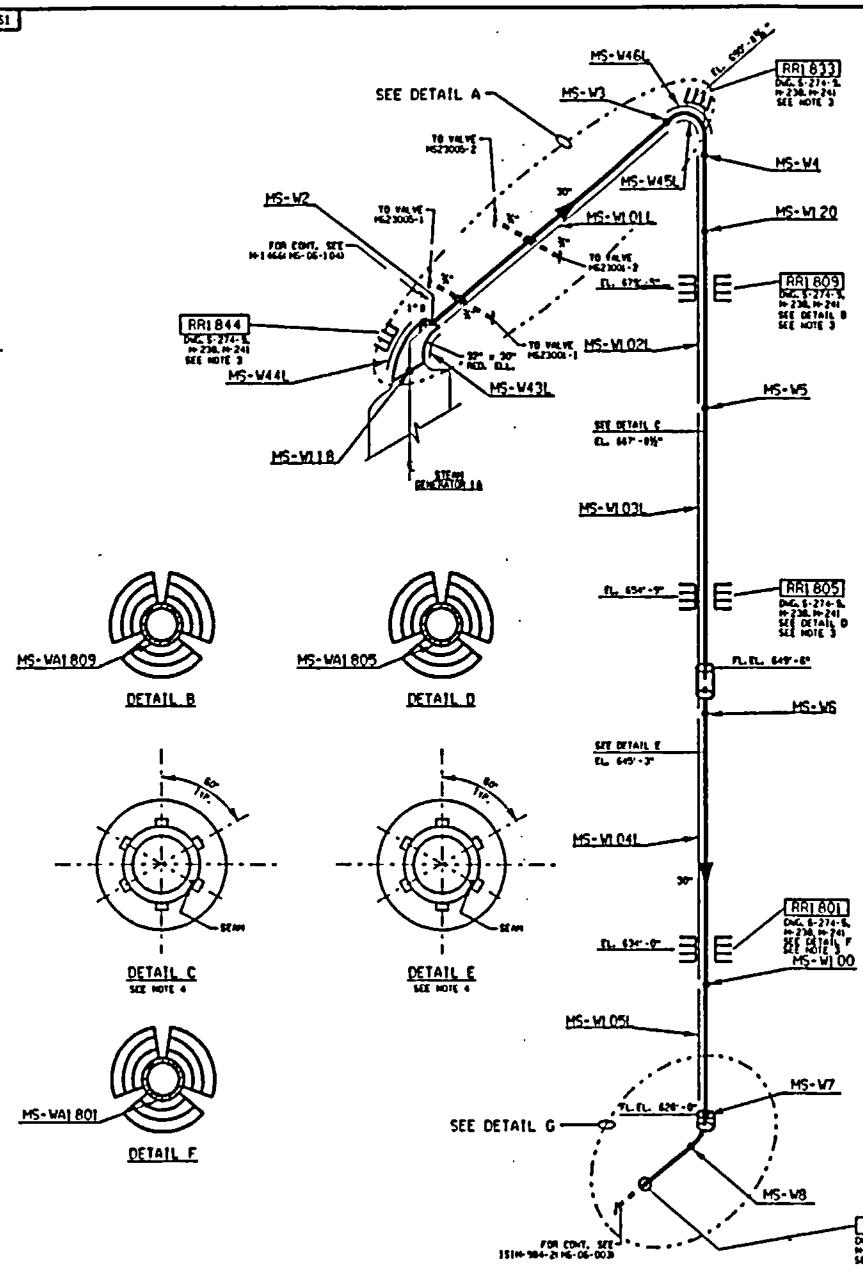
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND CONT. BSMT
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
B-1
PDD 02-032
ISI ISOMETRIC
CONTAINMENT SERVICE WATER PIPING
LINE 37ES
WISCONSIN PUBLIC SERVICE CORP.
ISIM-868
CADD



ISIM-869
N
CODE CLASS 3
LOCATION: CONT. ELEV. 606' AND CONT. BSMT
C-1
PDD 02-032
C-1
PDD 02-032
C-1
PDD 02-032
C-1
PDD 02-032
C-1
PDD 02-032
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
C-1
PDD 02-032
NOTES
ISI ISOMETRIC
CONTAINMENT SERVICE WATER PIPING
LINE 37EN
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISIM-869


ISIM-870
N
B-1
PDD 02-032
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 626
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
REFERENCE DWGS.
B-1
PDD 02-032
ISIM-870
ISI ISOMETRIC
CONTAINMENT SERVICE WATER PIPING
LINE 37NE
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. TOMES
ISIM-870
C

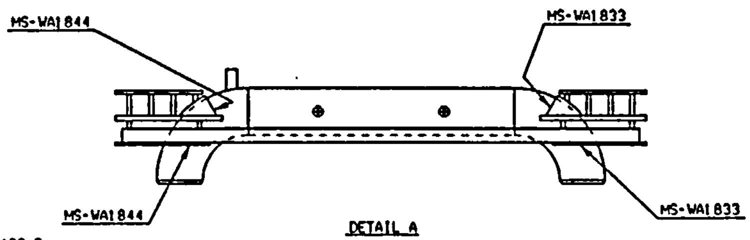
ISIM-871



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
29.0531ID X 27.951ID RED. ELL	N/A / 1.266 N/A / 1.046	A 155 KC70 CL 1	WPS-35	N/A / 2.3	SA 508 CL 2
31 x 30 O.D. ELL	N/A / 1.750	A 155 KC70 CL 1	WPS-37	N/A / 1.10	SA 515 GR70 CL 1
27.951ID	N/A / 1.046	A 155 KC70 CL 1	WPS-37	N/A / 1.10	SA 515 GR70 CL 1
31	N/A / 1.75	A 106 Gr B	WPS 26	N/A / 1.50	SA 516 GR70

A-1
KAP 01-00632

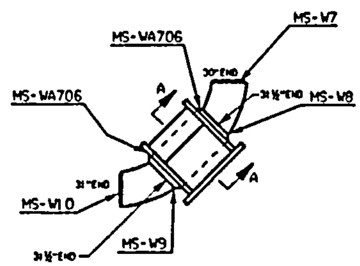
INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RR706 (MS-WA706)	0.750
RR1801 (MS-WA1801)	1.25
RR1805 (MS-WA1805)	1.25
RR1809 (MS-WA1809)	1.25
RR1833 (MS-WA1833)	0.750
RR1844 (MS-WA1844)	0.750



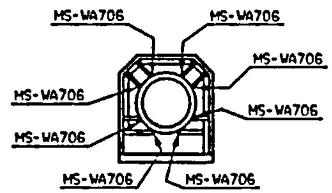
DETAIL A

CODE CLASS 2

LOCATION: CONTAINMENT



DETAIL G



SECTION A-A

REFERENCE DWGS.

NOTES:

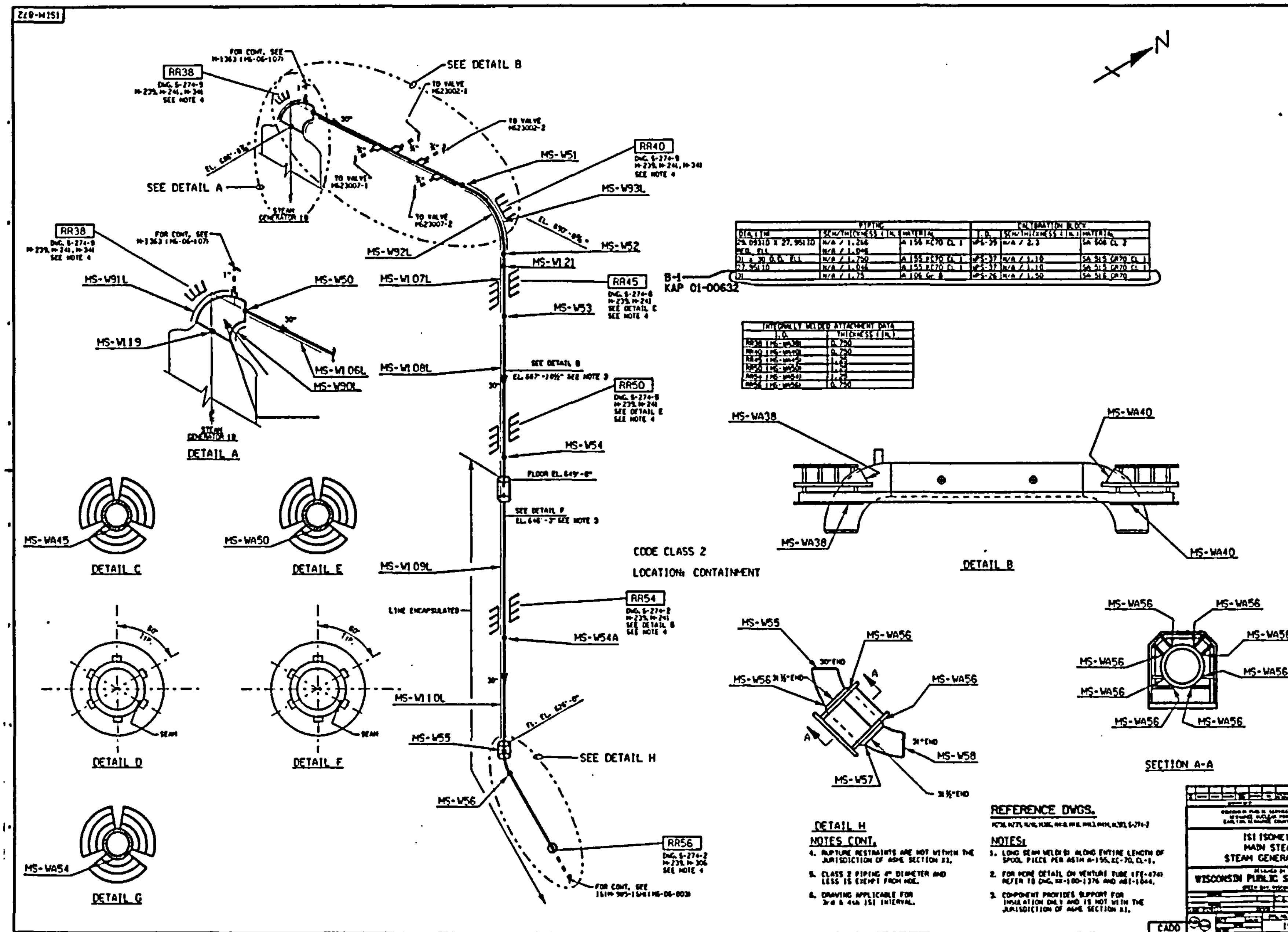
1. LONG SEAM WELD(S) ALONG ENTIRE LENGTH OF SPOOL PIECE PER ASTM A-155, KC-70, CL-1.
2. FOR MORE DETAIL ON VENTURI TUBE (FE-464) REFER TO DWG. XK-100-1375 AND A81-1042.
3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
4. COMPONENT PROVIDES SUPPORT FOR INSULATION ONLY AND IS NOT WITH THE JURISDICTION OF ASME SECTION XI.
5. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
6. DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL.

ISI ISOMETRIC
MAIN STEAM
STEAM GENERATOR 1A

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-871 | B



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
29.093 ID x 27.951 ID RED. ELL	N/A / 1.266 N/A / 1.048	A 155 KC70 CL 1	WPS-35	N/A / 2.3	SA 508 CL 2
31 x 30 O.D. ELL	N/A / 1.750	A 155 KC70 CL 1	WPS-37	N/A / 1.10	SA 515 GR70 CL 1
27.951 ID	N/A / 1.046	A 155 KC70 CL 1	WPS-37	N/A / 1.10	SA 515 GR70 CL 1
31	N/A / 1.75	A 106 Gr B	WPS-26	N/A / 1.50	SA 516 GR70

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RR38 (MS-WA38)	0.750
RR40 (MS-WA40)	0.750
RR45 (MS-WA45)	1.25
RR50 (MS-WA50)	1.25
RR54 (MS-WA54)	1.25
RR56 (MS-WA56)	0.750

DETAIL H

NOTES CONT.

4. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
5. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
6. DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL.

REFERENCE DWGS.

NOTES:

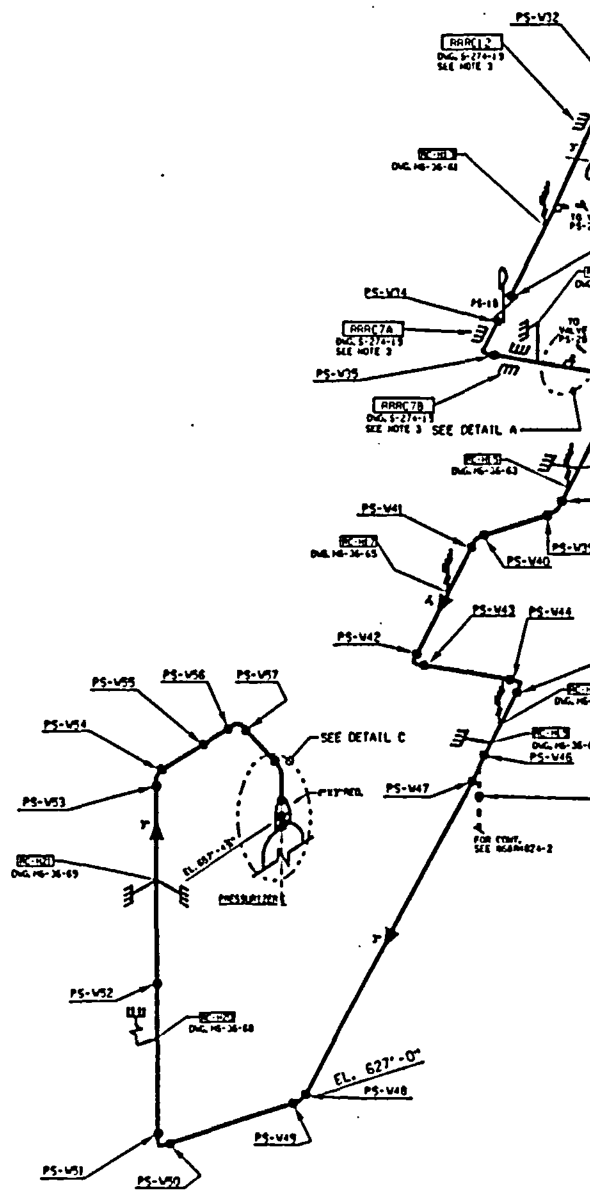
1. LONG SEAM WELD(S) ALONG ENTIRE LENGTH OF SPOOL PIECE PER ASTM A-155, KC-70, CL-1.
2. FOR MORE DETAIL ON VENTURI TUBE (FE-474) REFER TO DWG. XK-100-1376 AND ABI-1044.
3. COMPONENT PROVIDES SUPPORT FOR INSULATION ONLY AND IS NOT WITH THE JURISDICTION OF ASME SECTION XI.

ISI ISOMETRIC
MAIN STEAM
STEAM GENERATOR 1B

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-872 C



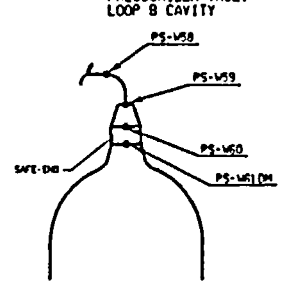
INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RC-H19	0.154

VALVE DATA				
VALVE ID	MANUFACTURER	TYPE	STUDS / DIA. (IN.)	BONNET NUTS
PS-18	MASONEILAN INT.	GLOBE	8 / 1.125 DIA.	8

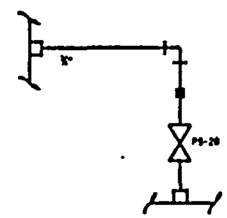
PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
4x3 RED.	160/0.531	A 403 WP316	WPS-18	160/0.531	A 376 TP316
3	160/0.438	A 376 TP304	WPS-20	160/0.438	A 376 TP316

CODE CLASS 1

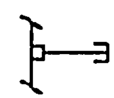
LOCATION: CONTAINMENT
PRESSURIZER VAULT
LOOP B CAVITY



DETAIL C



DETAIL A



DETAIL B

0-1
KAP 01-001639

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

REFERENCE DWGS.

REVISION
FILMED FIRST ISSUE BY WPS PER ESR 92-177 APP'D: CAT 09-28-93 FILMED: WPS 10-12-93
0-1 KAP 01-001639 REVISED NOTE 1 BY: ABF 06-11-02 APP'D:
A KAP 01-001639 COMPLETE SEE REV. 0-1 FILMED: WPS

ISIM-874-1

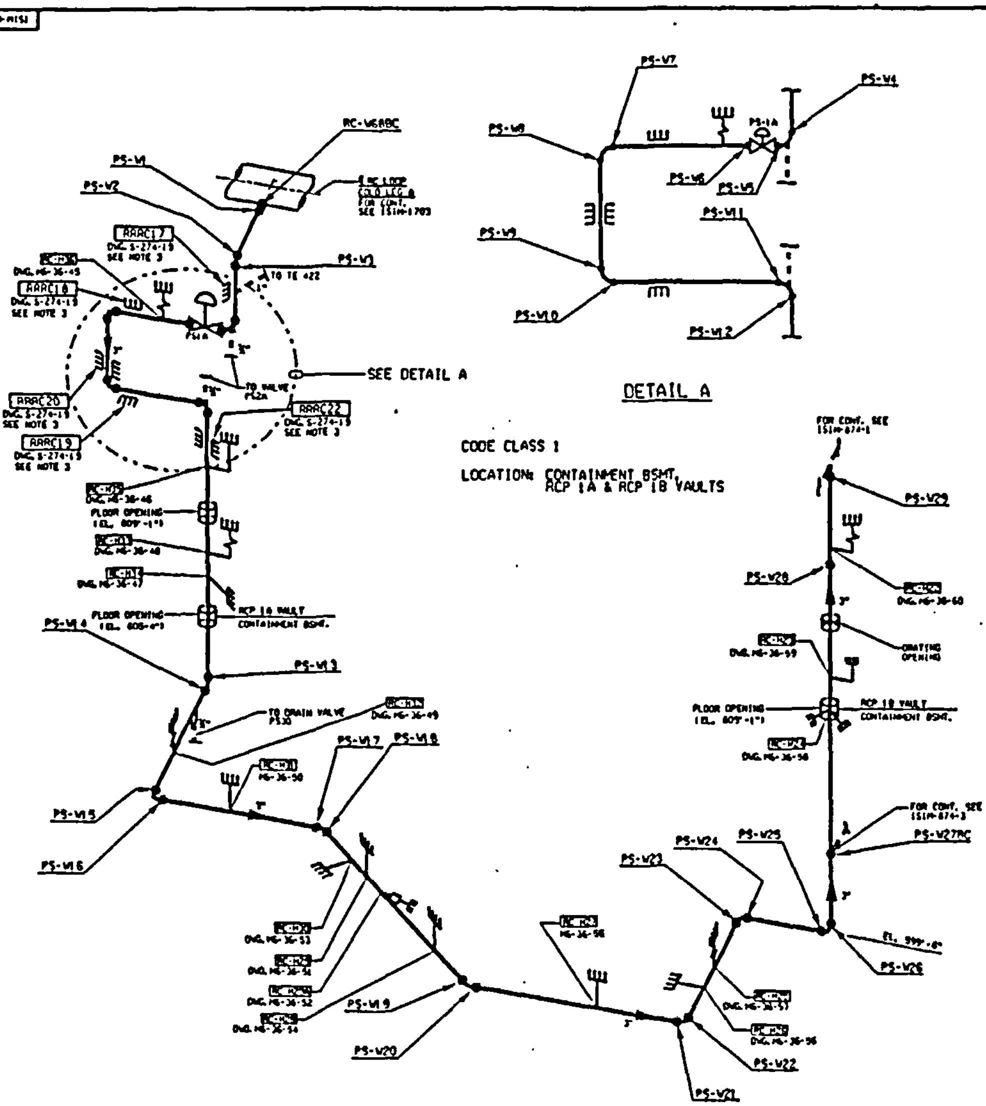
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

ISI ISOMETRIC
3" R.C. TO PRESSURIZER

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

C. A. TOMES
S. POWELL
CADD

DWG. NO. ISIM-874-1 REV. A



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RC-H22	1.0
RC-H23	1.0
RC-H24	1.0
RC-H27	1.0
RC-H28	1.0
RC-H32	1.0
RC-H33	1.0
RC-H35	1.0

VALVE DATA				
VALVE ID	MANUFACTURER	TYPE	STUDS / DIA. (IN.)	BONNET NUTS
PS-1A	MASONEILAN INT	3" GLOBE	8 / 1.125	8

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
3	160/0.438	A 376 TP304	WPS-50	160/0.438	A 376 TP316

0-1
KAP 01-001639

NOTES:

1. DRAWING APPLICABLE FOR 3rd and 4th ISI INTERVAL.
2. CLASS 1 PIPING 1" DIA. AND LESS IS EXEMPT FROM NDE.
3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.

REFERENCE DWGS.

ISIM-874-2

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.
GREEN BAY, WISCONSIN

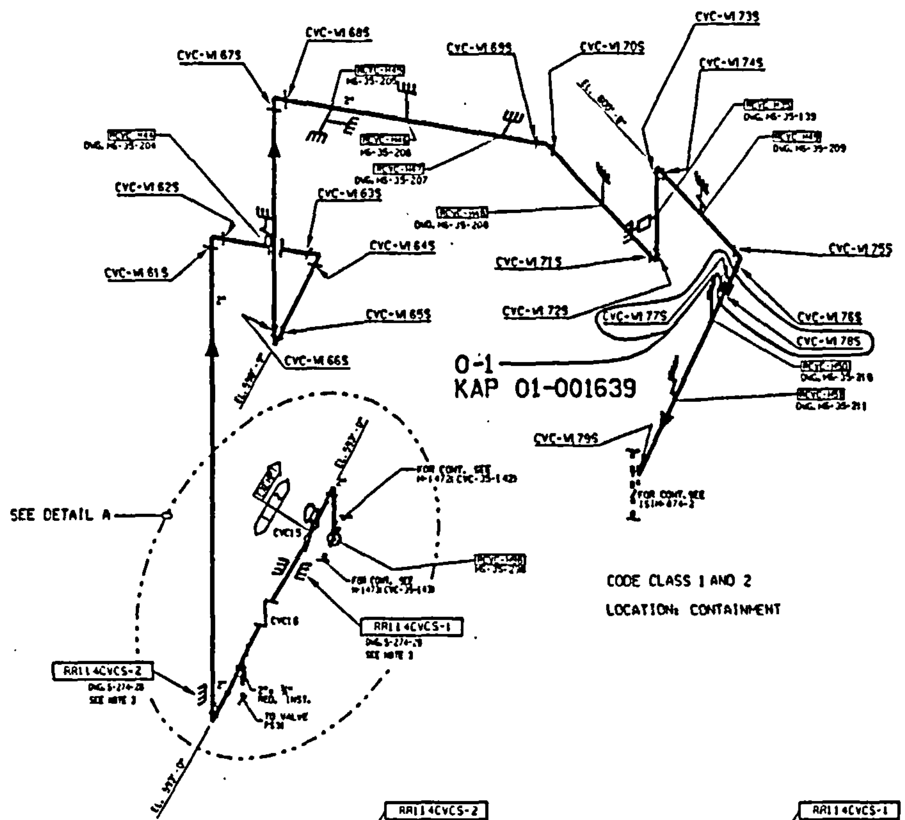
C. A. TOMES

S. POWEL

CADD

DWG. NO. ISIM-874-2

REV. A



CODE CLASS 1 AND 2

LOCATION: CONTAINMENT

VALVE DATA				
VALVE ID	MANUFACTURER	TYPE	STUDS DIA. (IN.)	BONNET NUTS
CVC-16	ROCKWELL INT	2" CHECK	NONE	NONE
CVC-15	MASONEILAN INT.	2" GLOBE	8 / 0.875	8

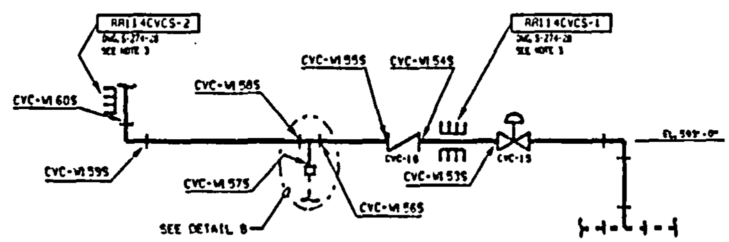
PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
2	160/0.344	A376 TP304	N/A	N/A	N/A

0-1
KAP 01-001639

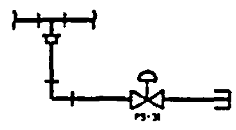
NOTES:

1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. CLASS 1 PIPING 1" DIA. AND LESS IS EXEMPT FROM NDE.
3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.

REFERENCE DWGS.



DETAIL A



DETAIL B

REVISION
FLAGS FIRST ISSUE BY WPS PER ESR 92-077 APP'D: CAT 09-28-93 FILMED: WPS: 10-12-93
0-1 KAP 01-001639 ADDED 4th INTERVAL TO NOTE 1. REVISED LOCATION OF CVC-W117S AND CVC-W178S. BY: MTM 04-02-02 APP'D: PEB 04-05-02
A KAP 01-001639 COMPL. SEE REVISION 0-1. FILMED: WPS: 04-16-02

ISIM-874-3

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

ISI ISOMETRIC
2" CVC TO PRESSURIZER RC

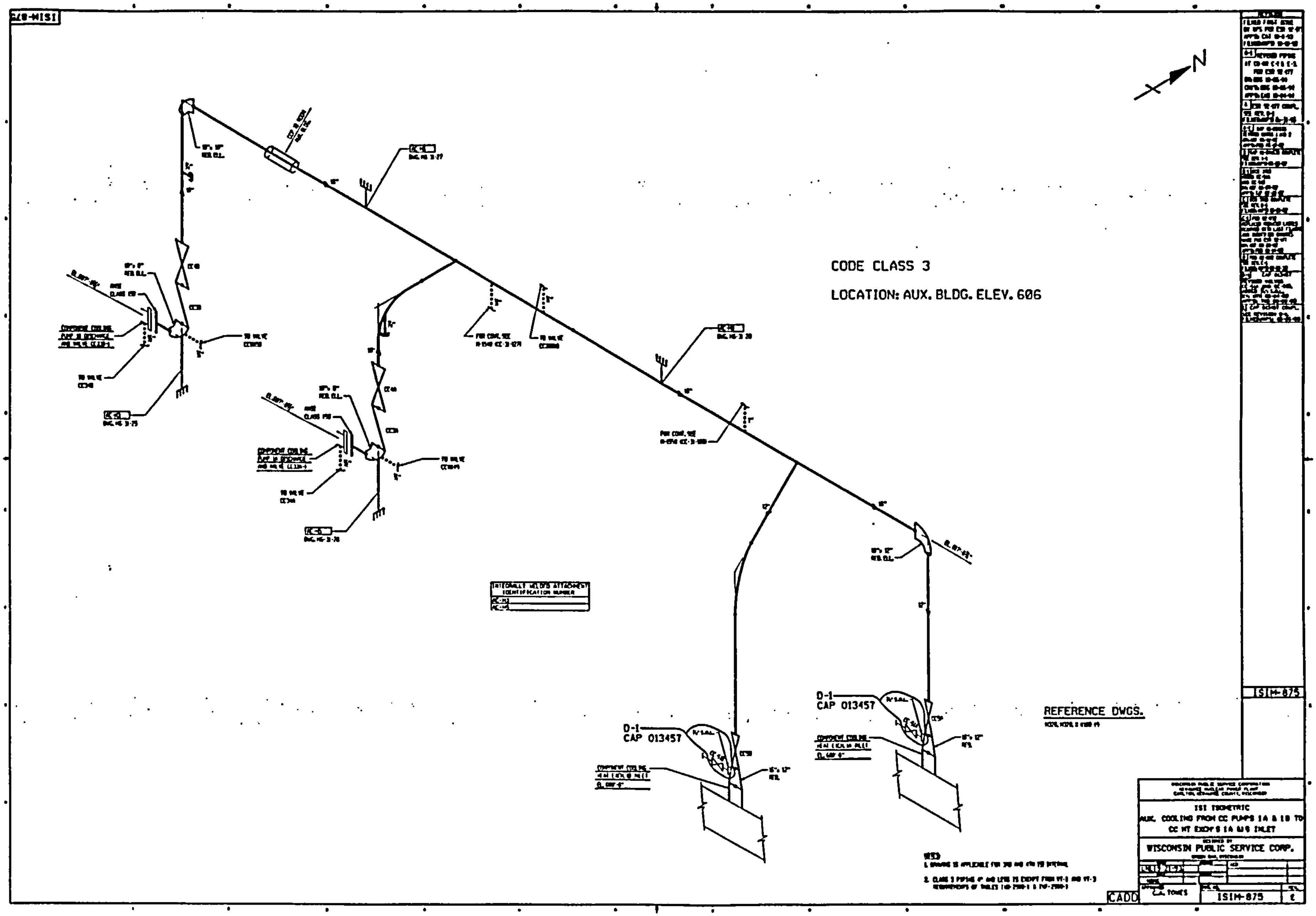
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

C. A. TOMES

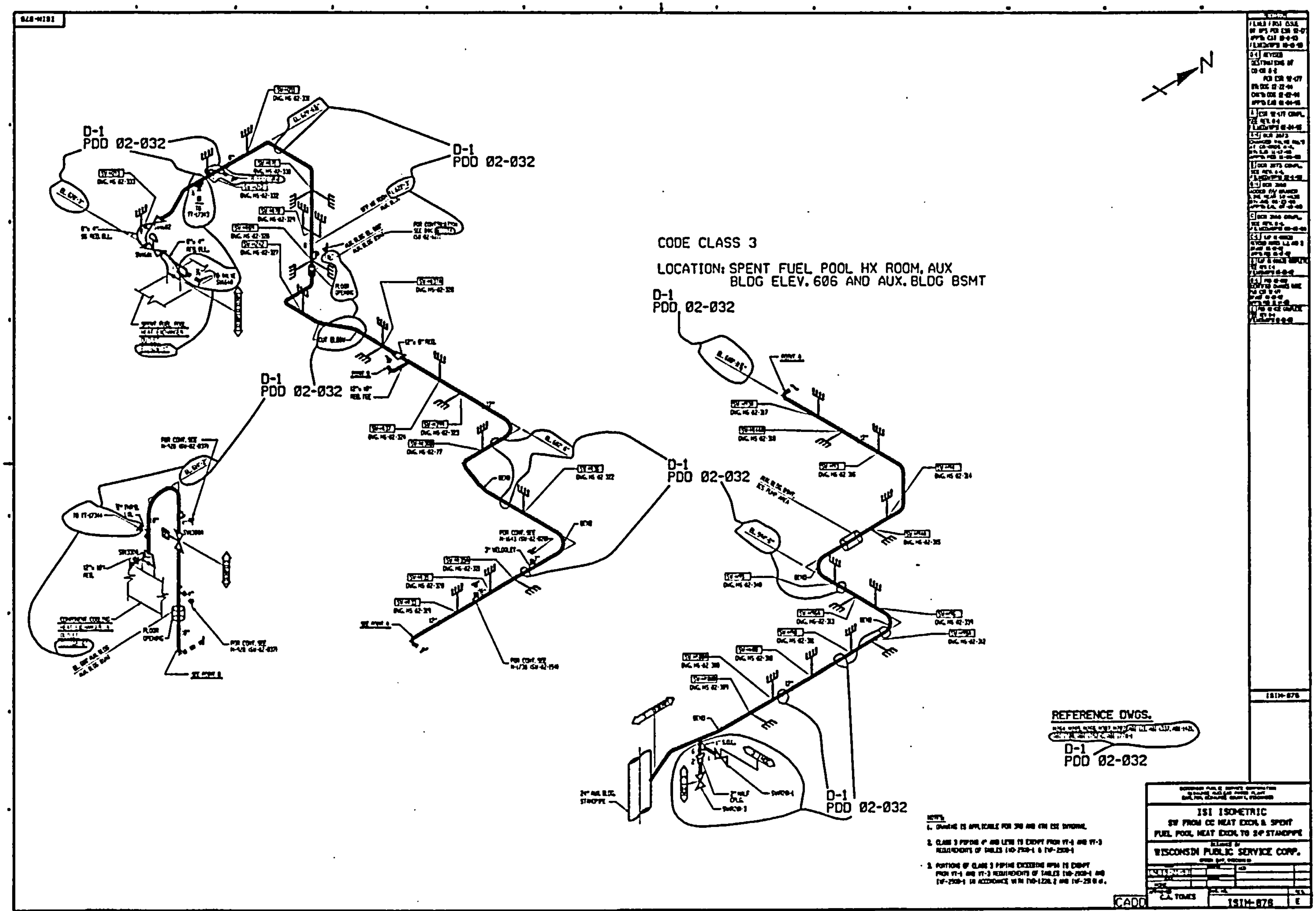
S. PAWEL

CADD

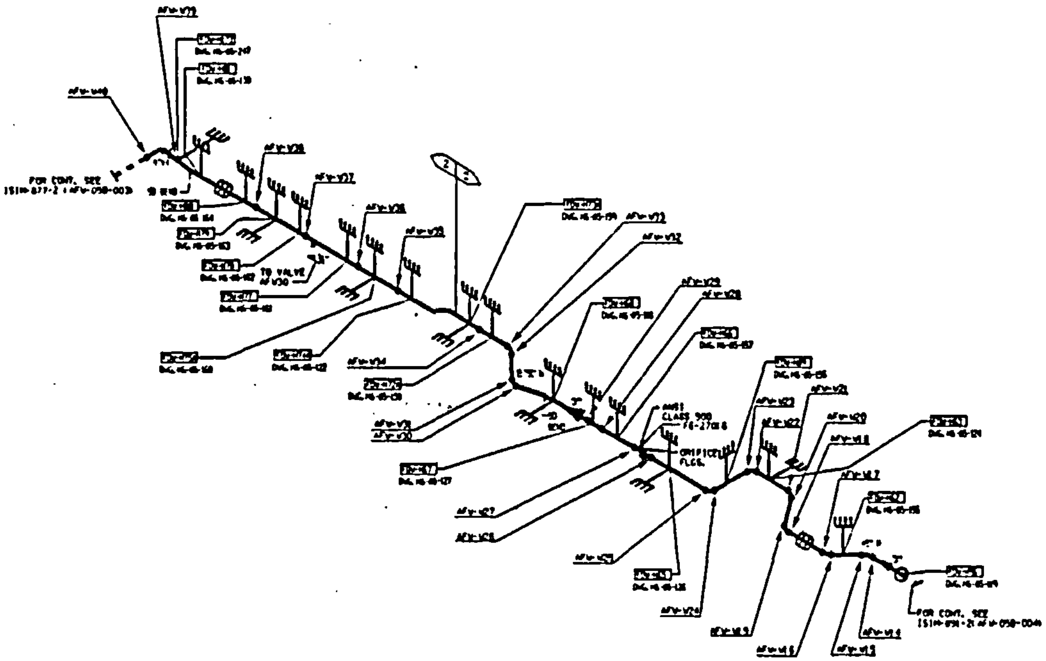
DWG. NO. ISIM-874-3 REV. A



ISIM-875
N
CODE CLASS 3
LOCATION: AUX. BLDG. ELEV. 606
D-1
CAP 013457
D-1
CAP 013457
REFERENCE DWGS.
ISIM-875
ISI ISOMETRIC
AUX. COOLING FROM CC PUMPS 1A & 1B TO
CC HT EXCH'S 1A U/S INLET
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOWES
CADD
ISIM-875


CODE CLASS 3
LOCATION: SPENT FUEL POOL HX ROOM, AUX BLDG ELEV. 606 AND AUX. BLDG BSMT
D-1
PDD 02-032
D-1
PDD 02-032
D-1
PDD 02-032
D-1
PDD 02-032
D-1
PDD 02-032
D-1
PDD 02-032
N
REFERENCE DWGS.
D-1
PDD 02-032
NOTES
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. TOMES
ISIM-876
E

ISIM-877-1



NOTES:

REFERENCE DWGS.

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

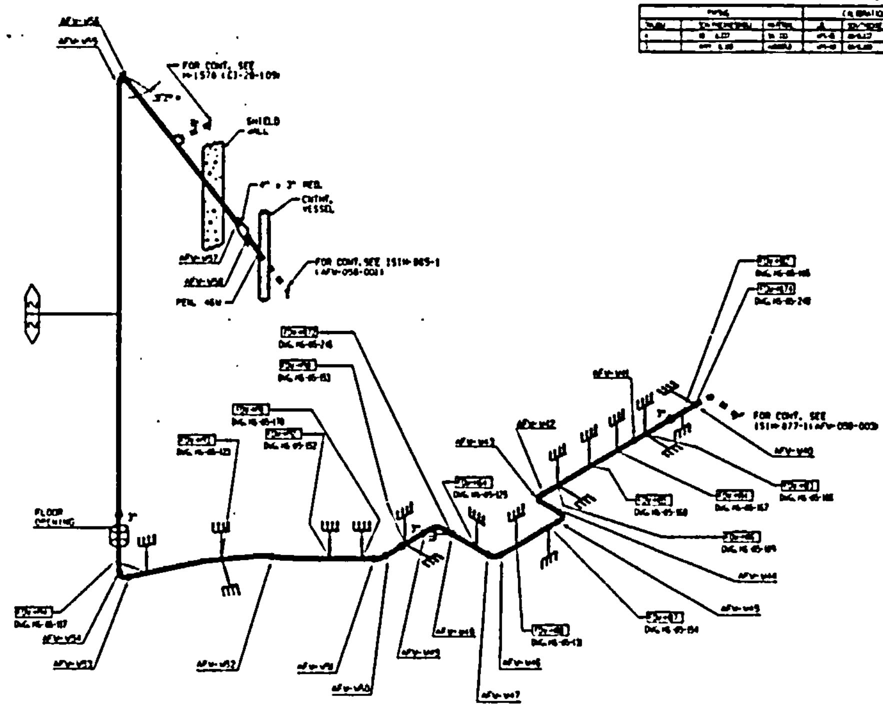
AUXILIARY FEEDWATER PIPING FROM INTERMEDIATE ANCH. TO PEN. #46W

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

CADD

DWG. NO. ISIM-877-1

REV. (-)



N

NOTES:

1. [illegible]
2. CLASS 2 PIPING [illegible]

REFERENCE DWGS.

[illegible]

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

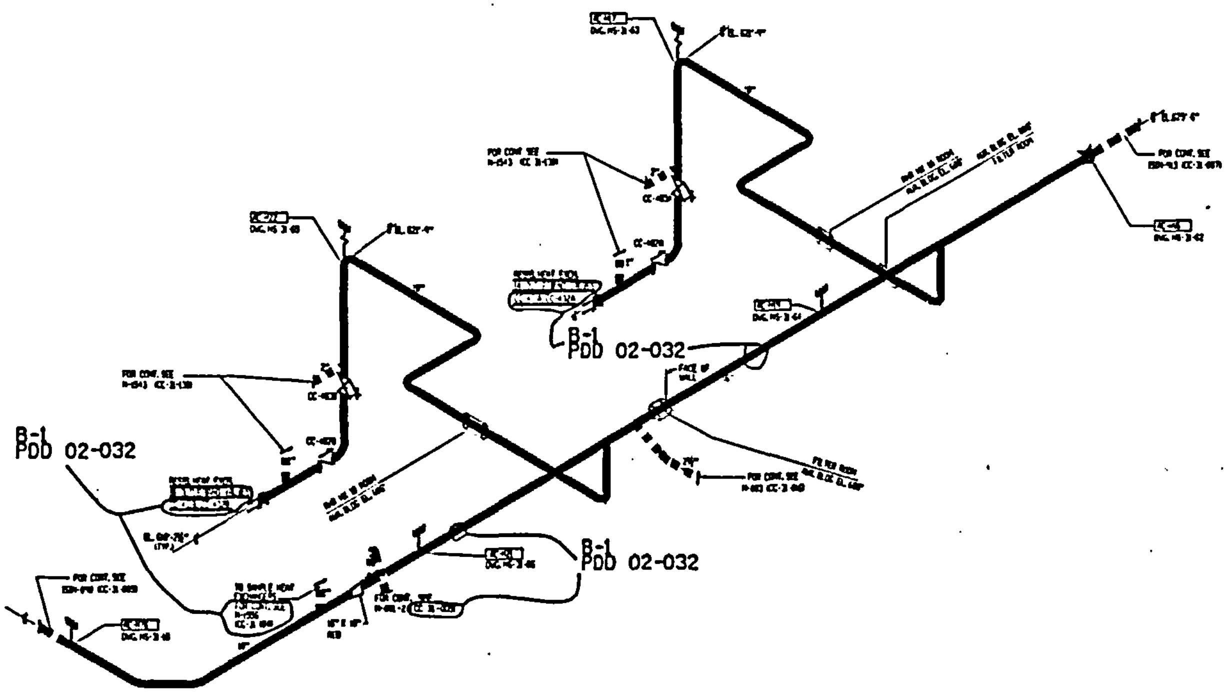
AUXILIARY FEEDWATER PIPING FROM INTERMEDIATE ANCH. TO PEN. #46W

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

CADD

DWG. NO.	REV.
ISIM-877-2	(-)

I-189-WIS



CODE CLASS 3

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

INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
AC-H22
AC-H17
AC-H16

REFERENCE DWGS.

B-1
PDD 02-032

ISI ISOMETRIC
CC-RSOL HX 1A, 1B, BA EVAP PKG OUTS
& PENS 33N, 40 33E TO SURGE TK

WISCONSIN PUBLIC SERVICE CORP.

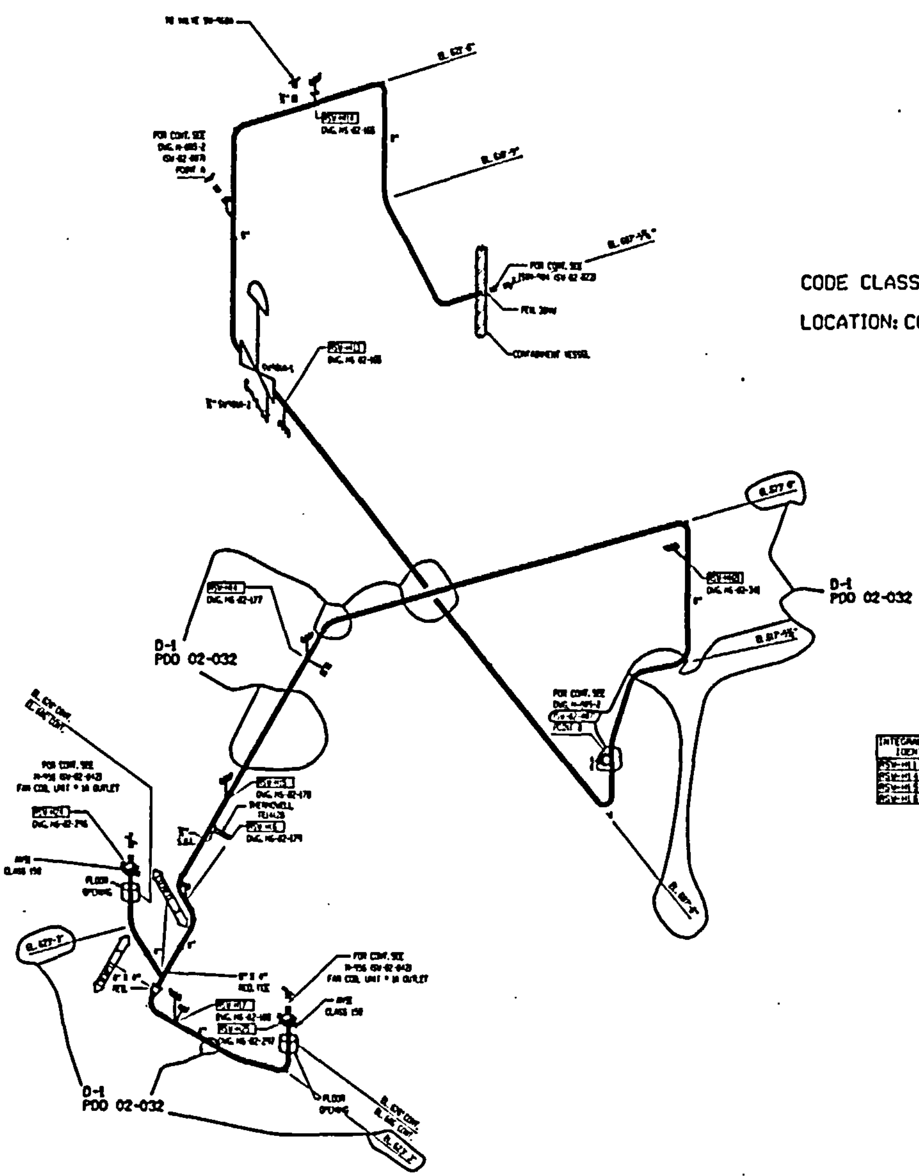
CADD

C.A. TOWES

ISIM-881-1

C

ISIM-885-1



CODE CLASS 3

LOCATION: CONT. ELEV. 606 AND 626

INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
PSW-H13
PSW-H14
PSW-H15
PSW-H16

REFERENCE DWGS.

NOTES:

1. DRAWING IS APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 3 PIPING 4" AND LESS IS EXEMPT FROM VT-1 AND VT-3 REQUIREMENTS OF TABLES IWD-2500-1 & IWF-2500-1

ISI ISOMETRIC

SERVICE WATER FROM FCU 1A TO SHROUD COOLING COIL 1A TO PENE. 30W

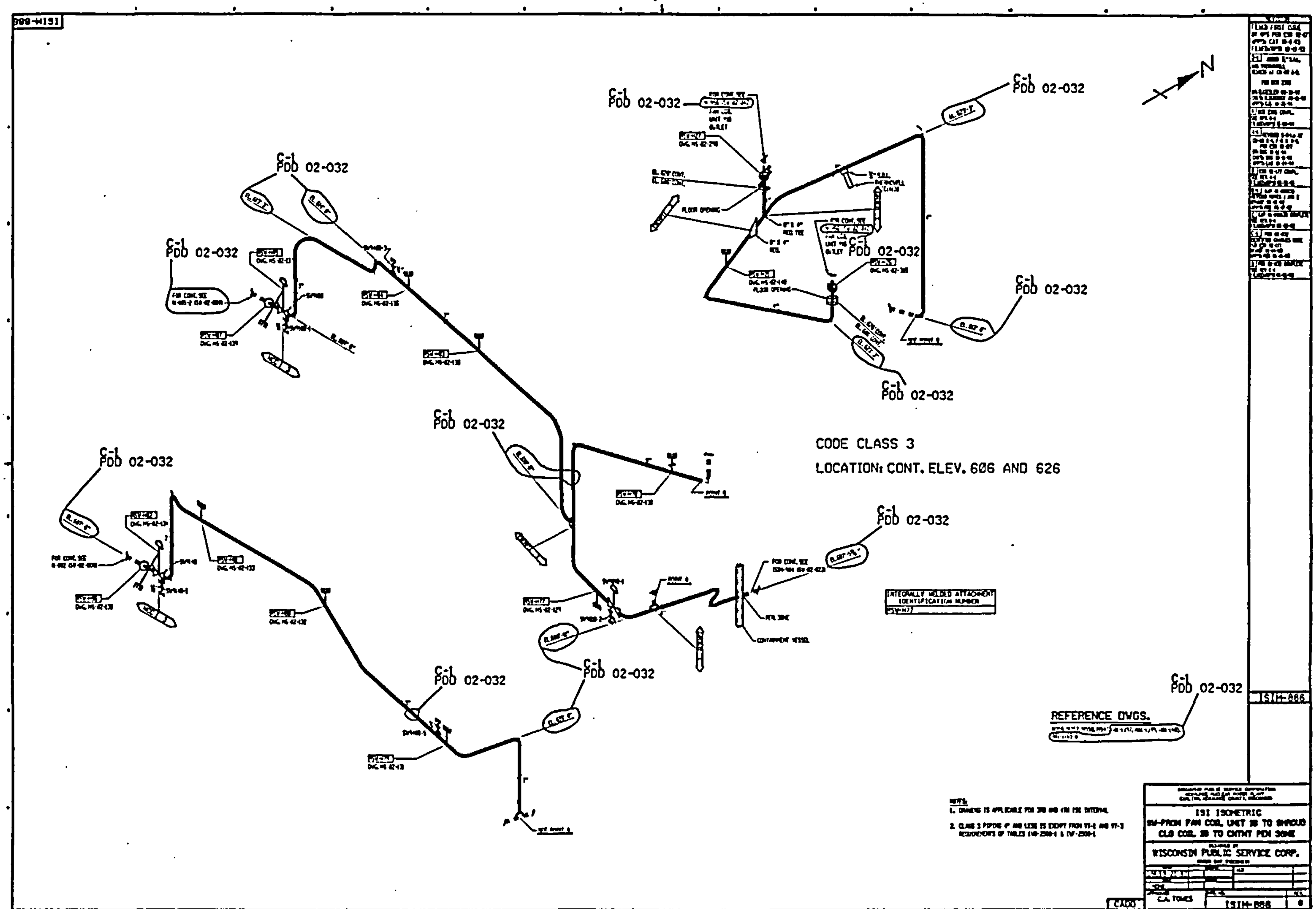
WISCONSIN PUBLIC SERVICE CORP.

CADD

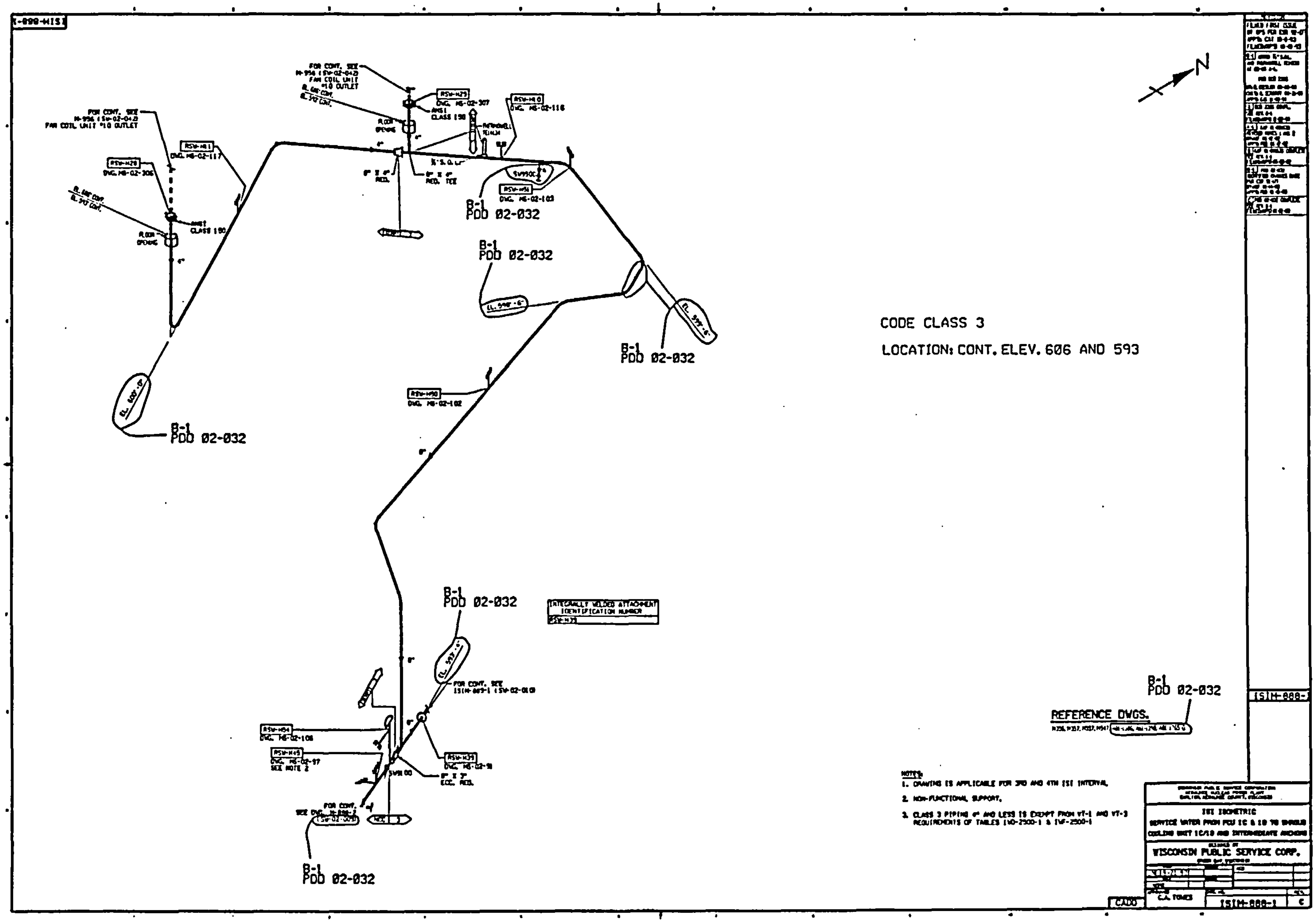
C.A. TOMES

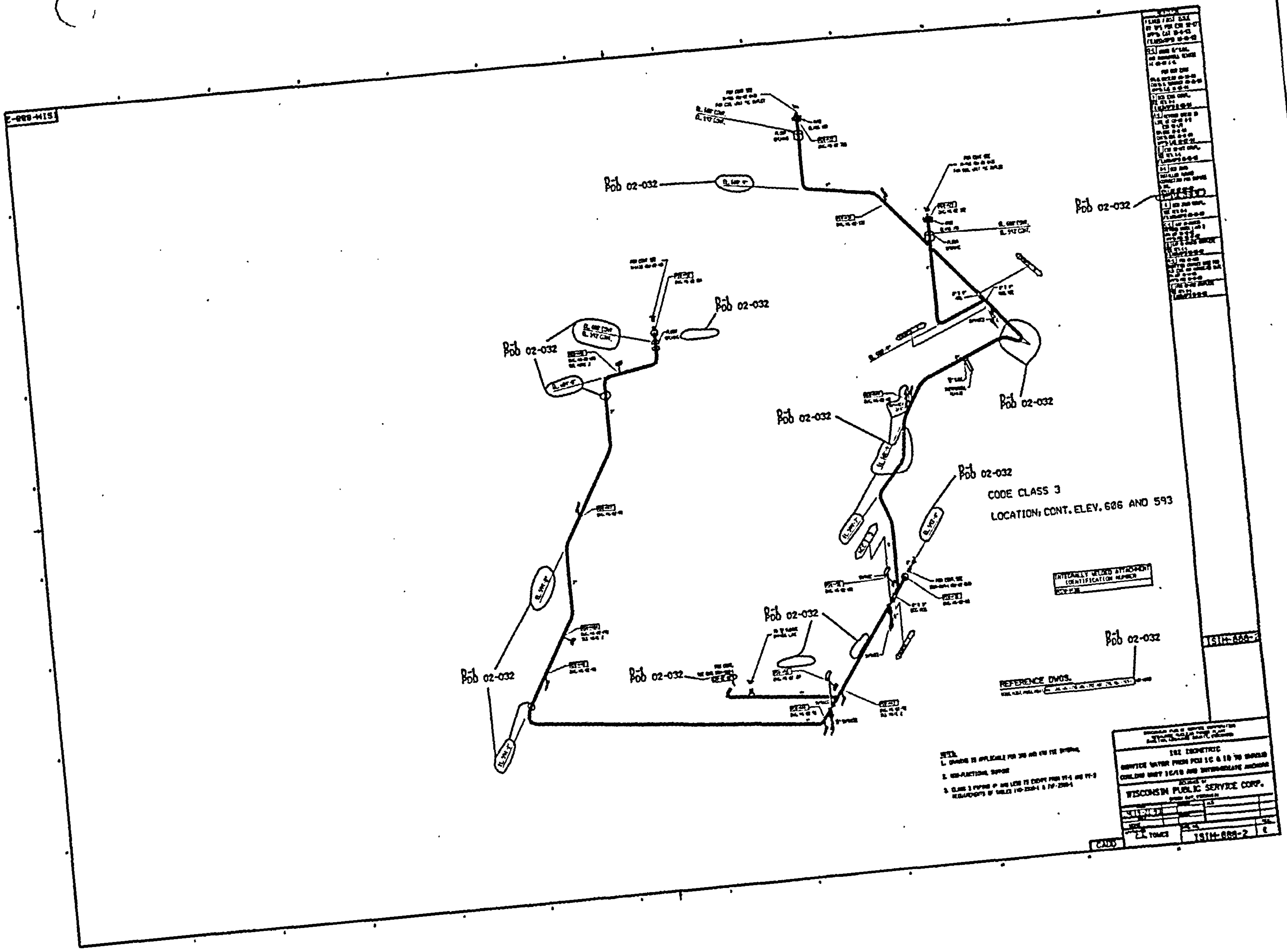
ISIM-885-1

E

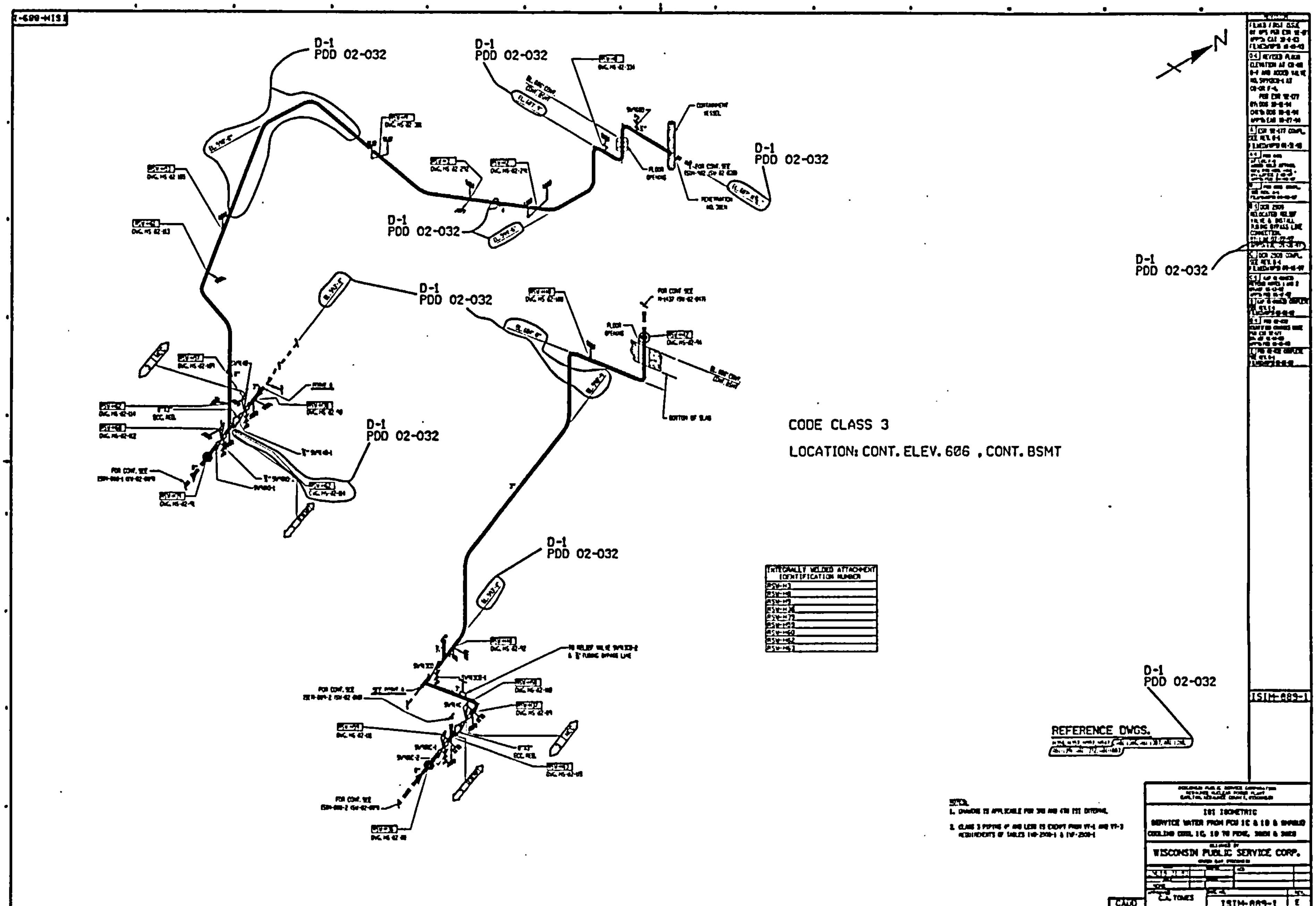


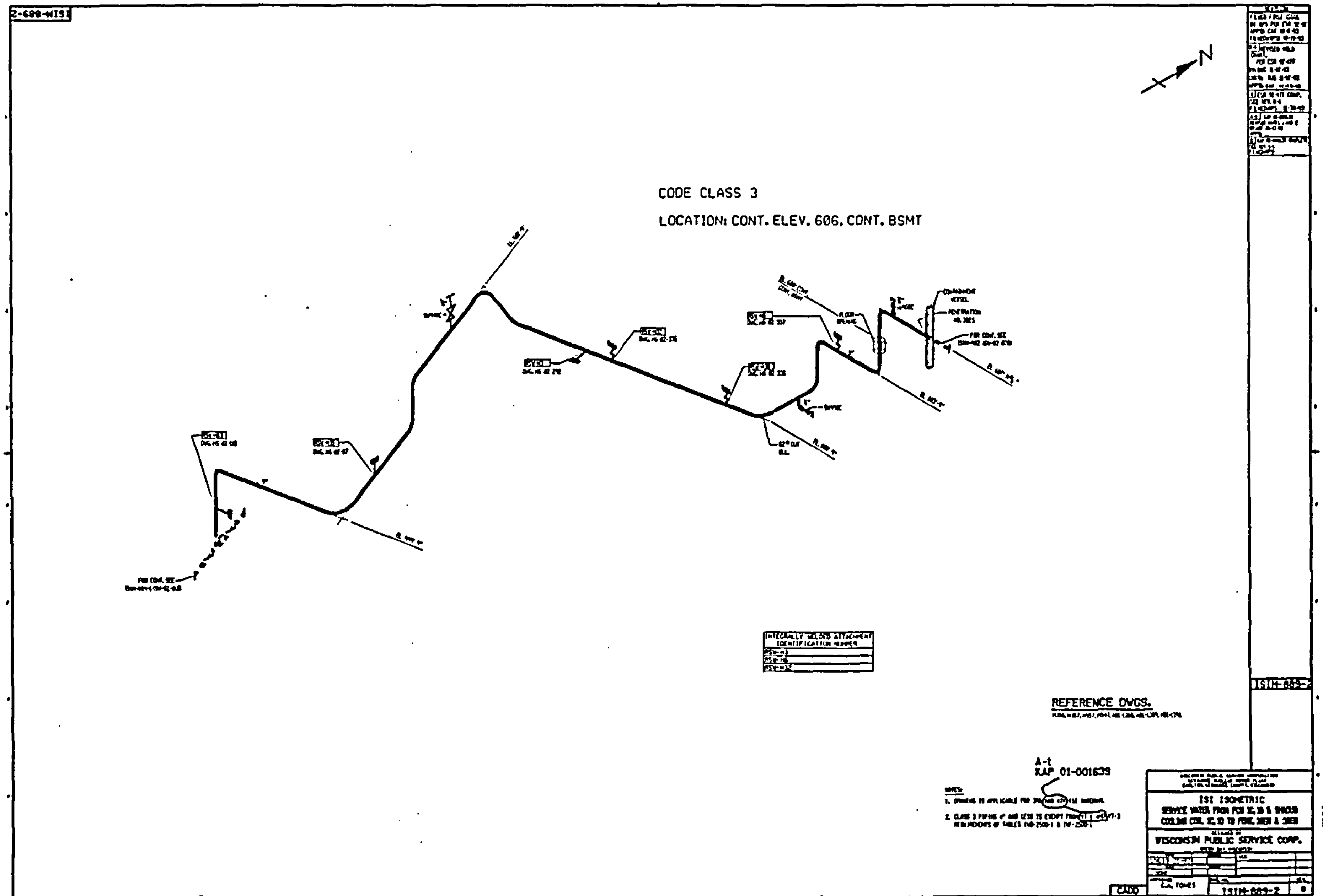
ISIM-888
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
C-1 PDD 02-032
N
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 626
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIM-888


ISIM-888-1
FOR CONT. SEE M-956 (SW-02-042) FAN COIL UNIT #10 OUTLET
RSW-H29
DWG. HS-02-307
ANSI CLASS 150
RSW-H10
DWG. HS-02-116
RSW-H31
DWG. HS-02-117
RSW-H28
DWG. HS-02-306
FLOOR OPENING
ANSI CLASS 150
6" X 4" RED.
8" X 4" RED. TEE
SW990C
RSW-H51
DWG. HS-02-103
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
B-1
PDD 02-032
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 593
RSW-H50
DWG. HS-02-102
B-1
PDD 02-032
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
FOR CONT. SEE ISIM-889-1 (SW-02-010)
RSW-H54
DWG. HS-02-108
RSW-H45
DWG. HS-02-97
SEE NOTE 2
RSW-H39
DWG. HS-02-98
SW9100
8" X 3" ECC. RED.
B-1
PDD 02-032
B-1
PDD 02-032
REFERENCE DWGS.
NOTES:
1. DRAWING IS APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. NON-FUNCTIONAL SUPPORT.
3. CLASS 3 PIPING 4" AND LESS IS EXEMPT FROM VT-1 AND VT-3 REQUIREMENTS OF TABLES IWD-2500-1 & IWF-2500-1
ISI ISOMETRIC
SERVICE WATER FROM FCU 1C & 1D TO SHROUD COOLING UNIT 1C/1D AND INTERMEDIATE ANCHORS
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. TOMES
ISIM-888-1
C

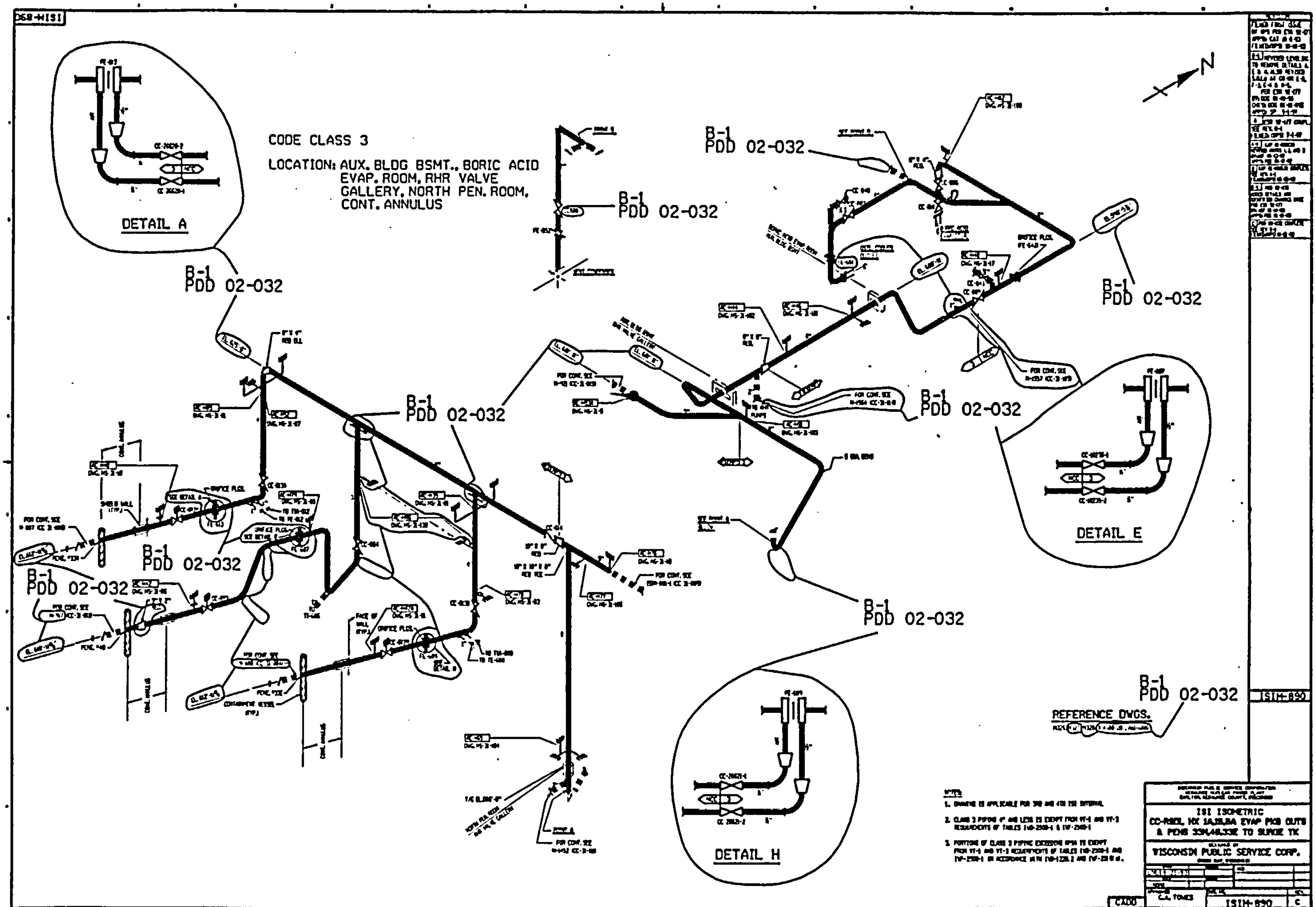


Pob 02-032
CODE CLASS 3
LOCATION: CONT. ELEV. 606 AND 593
REFERENCE DWGS.
WISCONSIN PUBLIC SERVICE CORP.
CADD

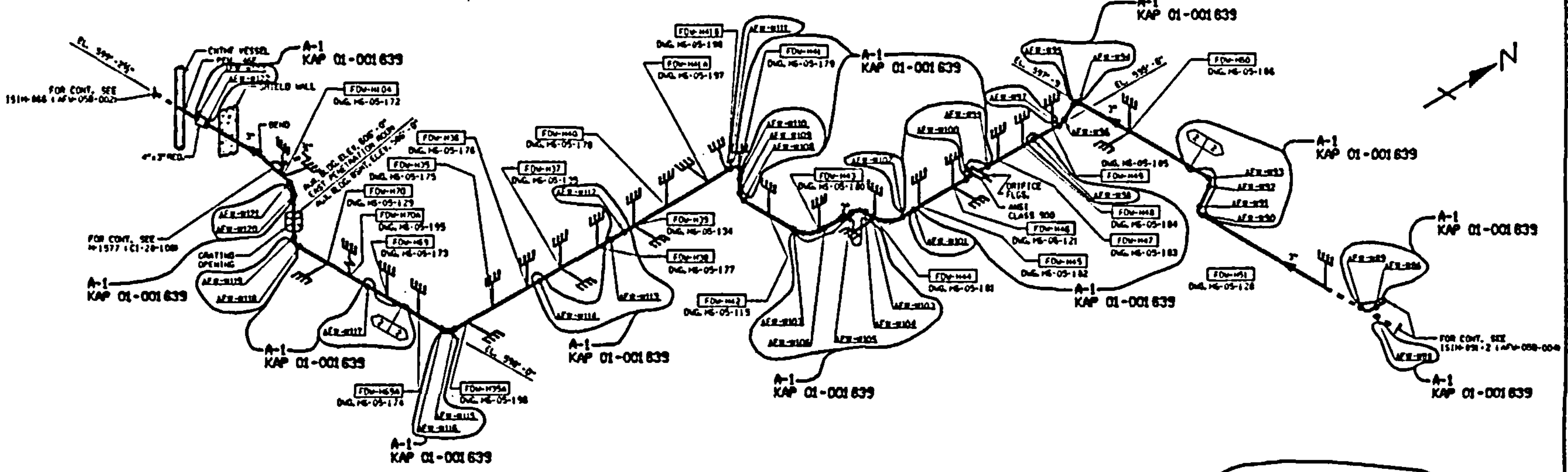

D-1
PDD 02-032
CODE CLASS 3
LOCATION: CONT. ELEV. 606 , CONT. BSMT
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. TOMES
ISIM-889-1
E



2-688-WISI
CODE CLASS 3
LOCATION: CONT. ELEV. 606, CONT. BSMT
N
REFERENCE DWGS.
A-1
KAP 01-001639
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIM-889-2



D68-HISI
CODE CLASS 3
LOCATION: AUX. BLDG BSMT., BORIC ACID EVAP. ROOM, RHR VALVE GALLERY, NORTH PEN. ROOM, CONT. ANNULUS
DETAIL A
DETAIL E
DETAIL H
B-1 PDD 02-032
N
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
ISIH-890
CADD
C



CODE CLASS 2

LOCATION: AUXILIARY BLDG
EAST PENETRATION ROOM
AUXILIARY BLDG BASEMENT

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

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

A-1
KAP 01-001639

NOTES:

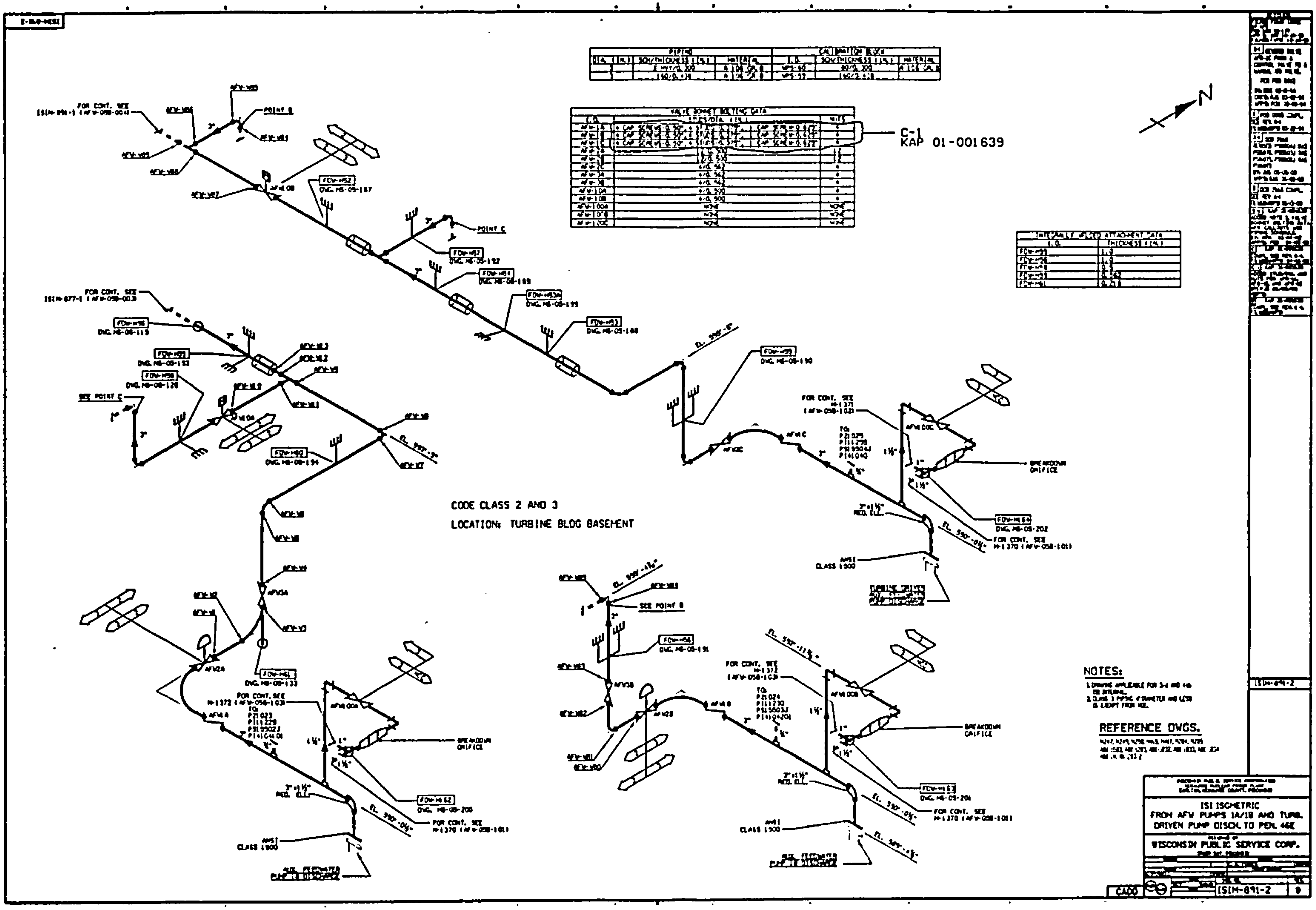
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. CLASS 2 PIPING 1¼" DIAMETER AND LESS IS EXEMPT FROM NDE.

REFERENCE DWGS.

ISI ISOMETRIC
FROM AFW PUMPS 1A/1B AND TURB. DRIVEN PUMP DISCH. TO PEN. 46E

WISCONSIN PUBLIC SERVICE CORP.

ISIM-891-1

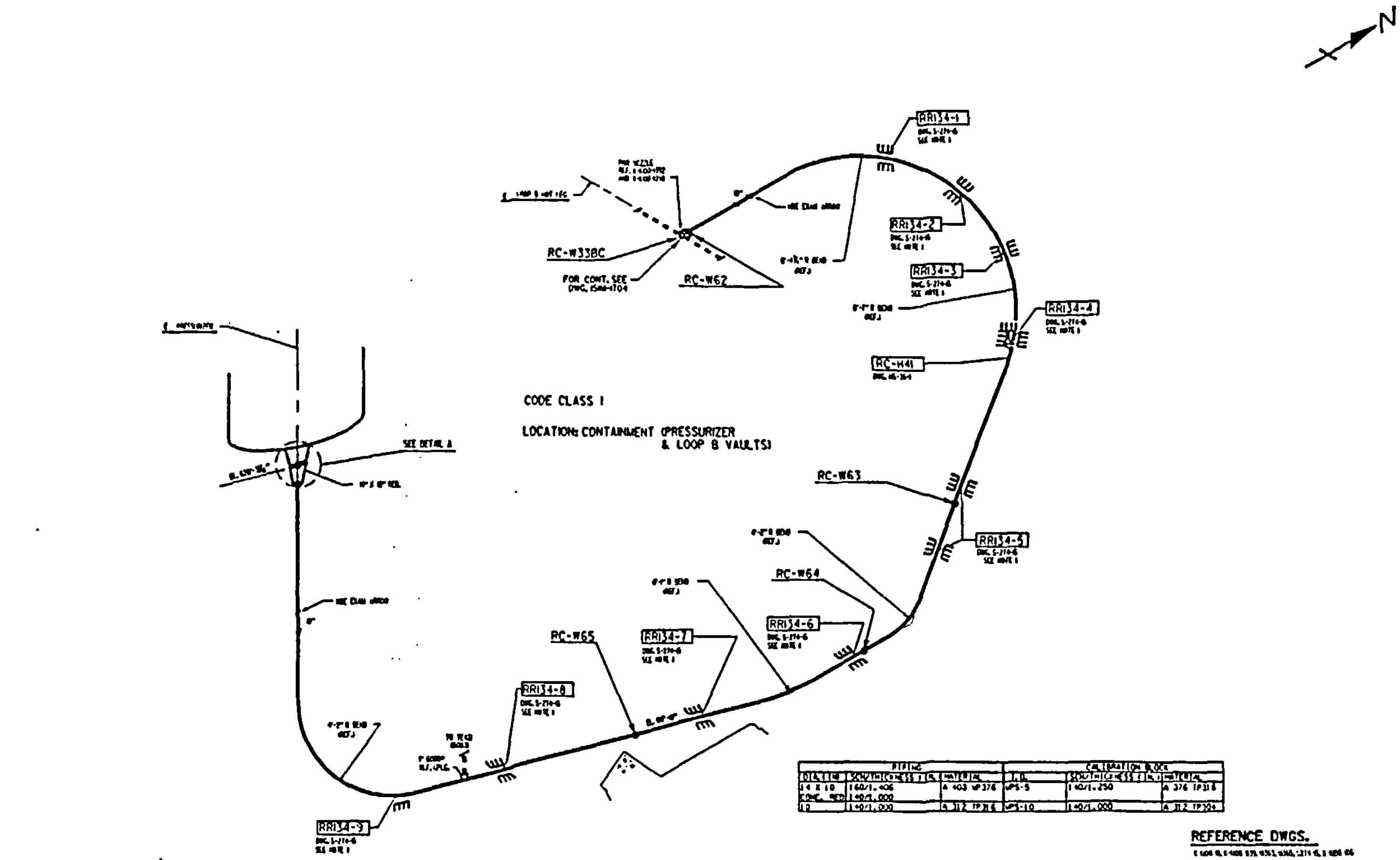


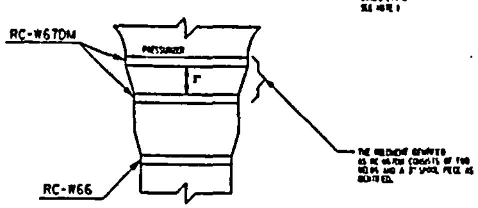
PIPING				CALIBRATION BLOCK		
DIA. (IN.)	SCH/THICKNESS (IN.)	MATERIAL		I.D.	SCH/THICKNESS (IN.)	MATERIAL
3	[illegible]/0.300	A 106 GR. B		[illegible]-60	80/0.300	A 106 GR. B
3	160/0.438	A 106 GR. B		[illegible]-59	160/0.438	

VALVE BONNET BOLTING DATA		
I.D.	SPECS/DIA. (IN.)	NUTS
AFW-1A	[illegible]	4
AFW-1B	[illegible]	4
AFW-1C	[illegible]	4
AFW-2A	[illegible]/0.500	12
AFW-2B	[illegible]/0.500	12
AFW-2C	4/0.562	4
AFW-3A	4/0.562	4
AFW-3B	4/0.562	4
AFW-10A	4/0.500	4
AFW-10B	4/0.500	4
AFW-100A	NONE	NONE
AFW-100B	NONE	NONE
AFW-100C	NONE	NONE

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
FDW-H55	1.0
FDW-H58	1.0
FDW-H60	0.5
FDW-H59	0.562
FDW-H61	0.218

260-MPS1





DETAIL A

PIPING			CALIBRATION BLOCK		
DIA. LINE	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
14 X 10 CONC. RED.	160/1.406 140/1.000	A 403 WP376	WPS-5	140/1.250	A 376 TP316
10	140/1.000	A 312 TP316	WPS-10	140/1.000	A 312 TP304

REFERENCE DWGS.

NOTES:

1. RUPTURE RESTRAINTS RR134-1 THRU RR134-9 HAVE BEEN REMOVED FROM SERVICE PER DCR #2541 (REF. DWG. S-274-15).
2. DRAWING APPLICABLE FOR 3rd ISI INTERVAL.
3. CLASS 1 PIPING 1" DIAMETER AND LESS EXEMPT FROM NDE.

B-1
KAP 01-001639

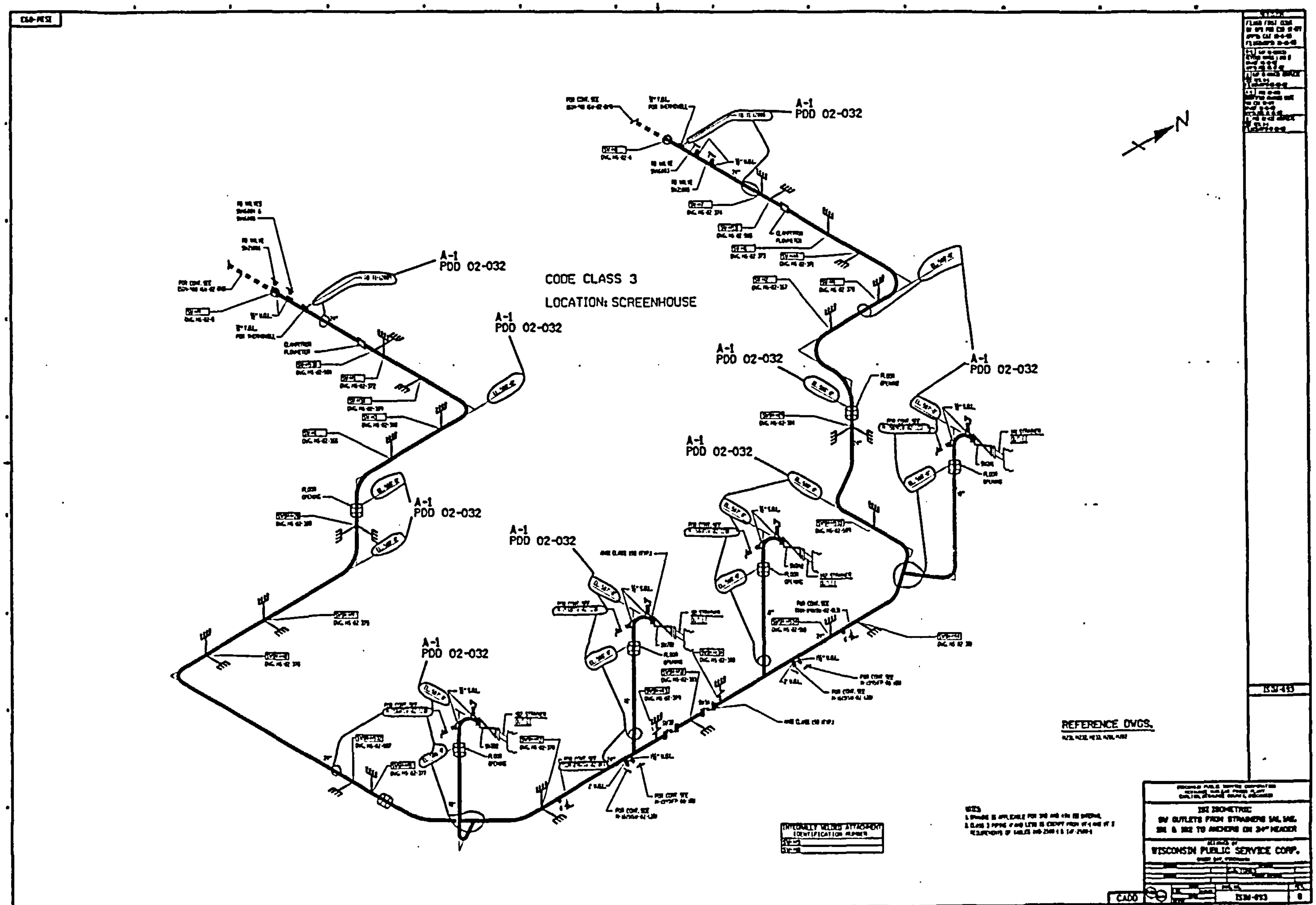
ISI ISOMETRIC
PRESSURIZER SURGE LINE

WISCONSIN PUBLIC SERVICE CORP.

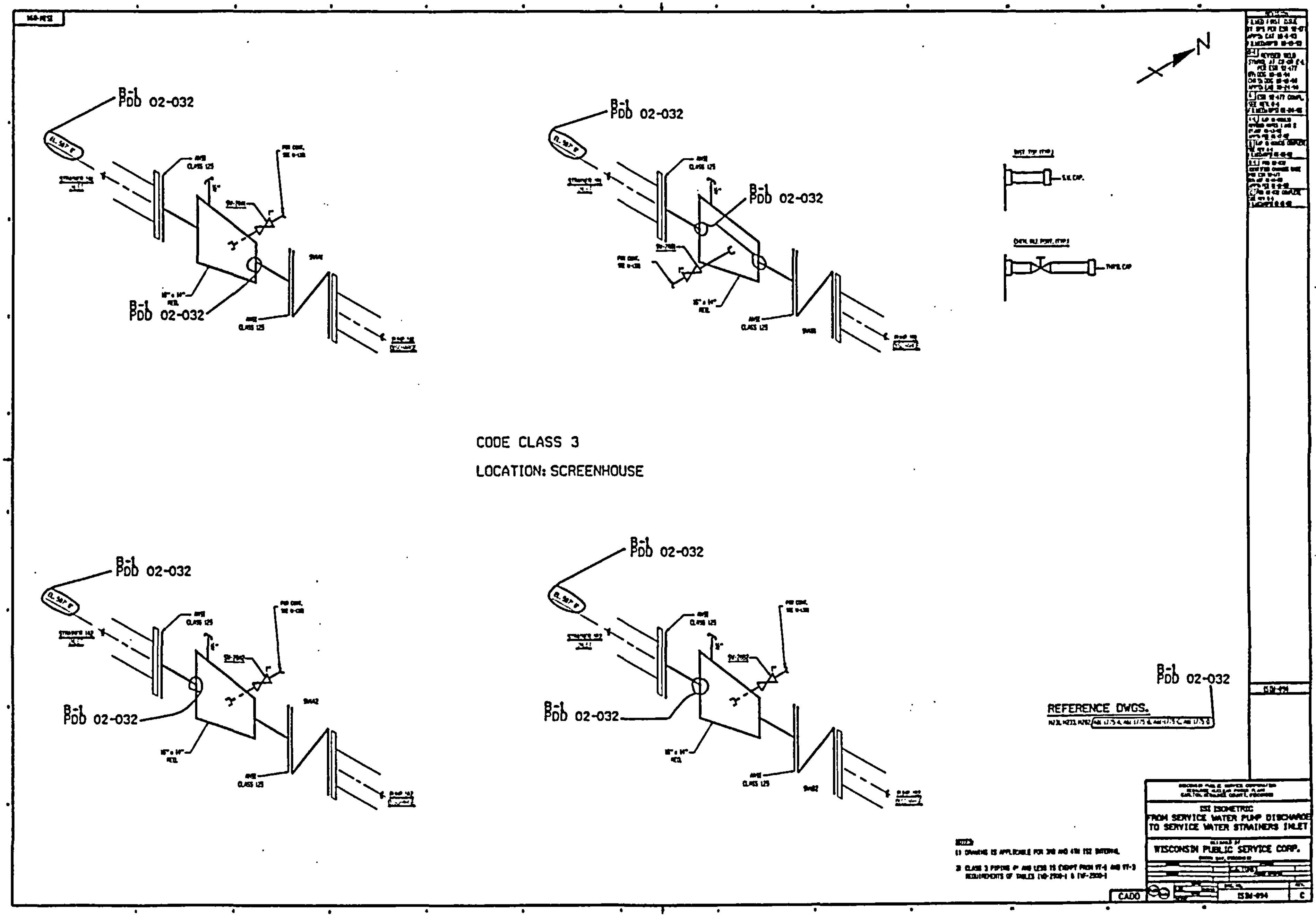
CADD

ISAW-892

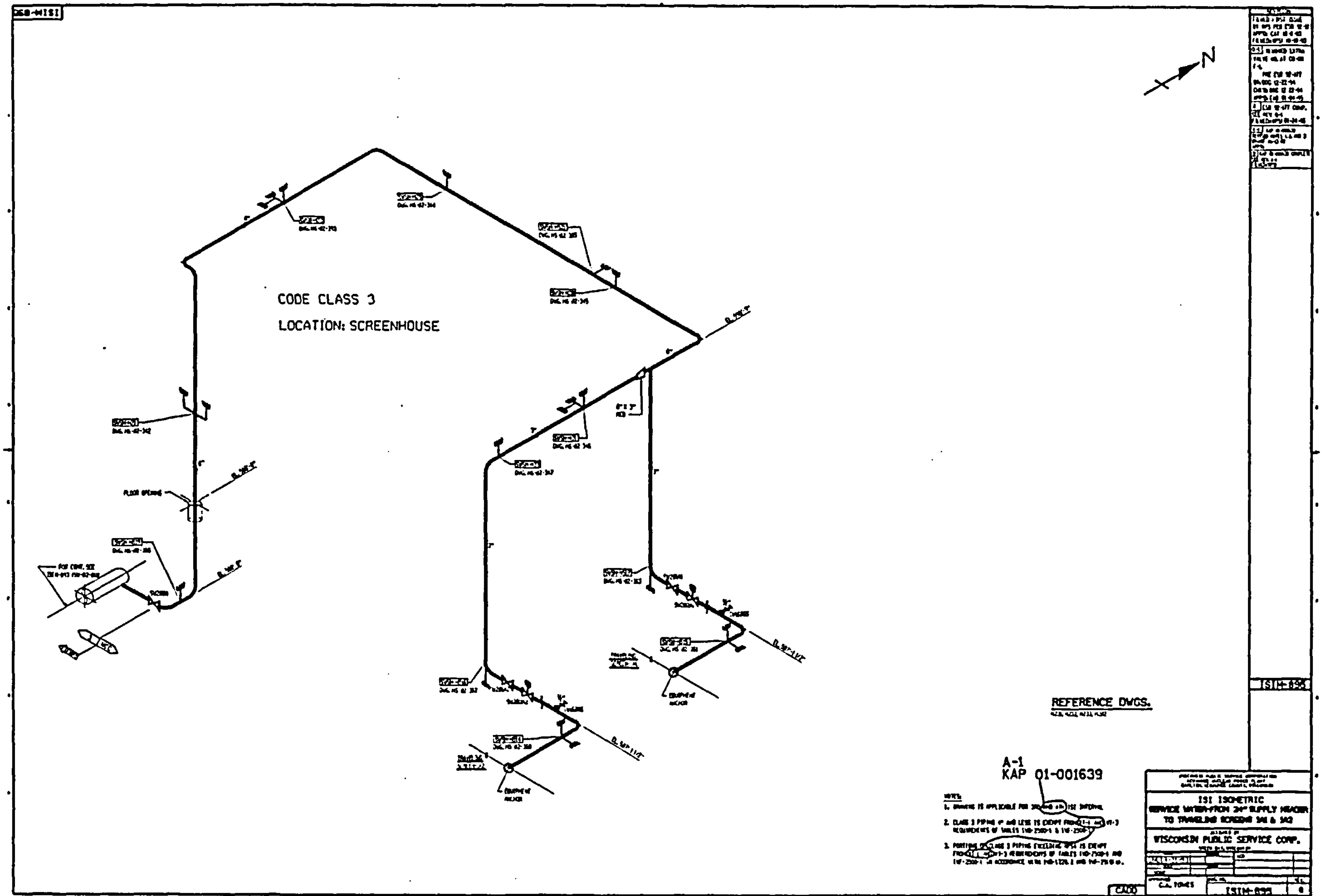
8



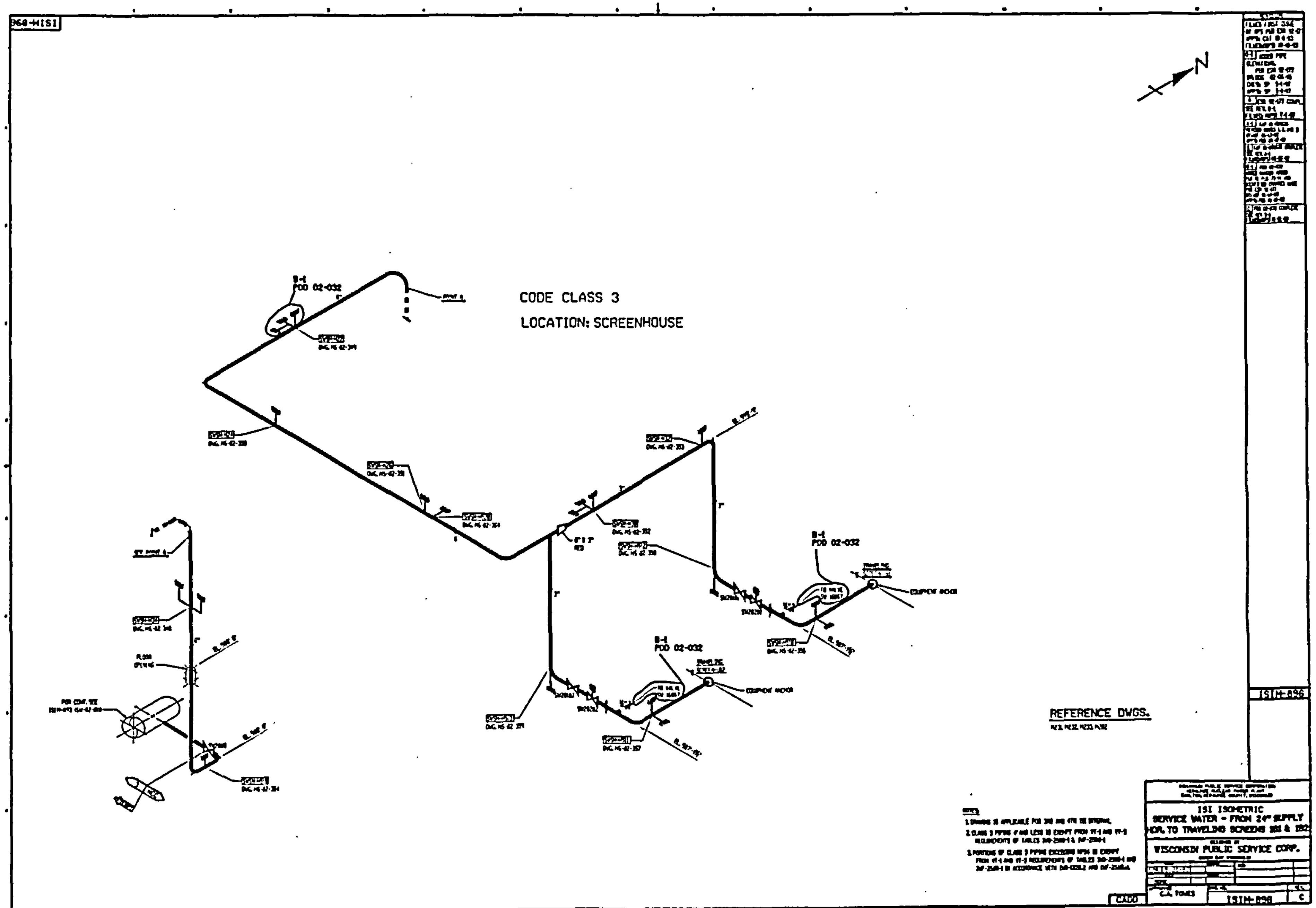
A-1
PDD 02-032
A-1
PDD 02-032
CODE CLASS 3
LOCATION: SCREENHOUSE
A-1
PDD 02-032
A-1
PDD 02-032
A-1
PDD 02-032
A-1
PDD 02-032
A-1
PDD 02-032
A-1
PDD 02-032
A-1
PDD 02-032
N
REFERENCE DWGS.
WISCONSIN PUBLIC SERVICE CORP.
CADD



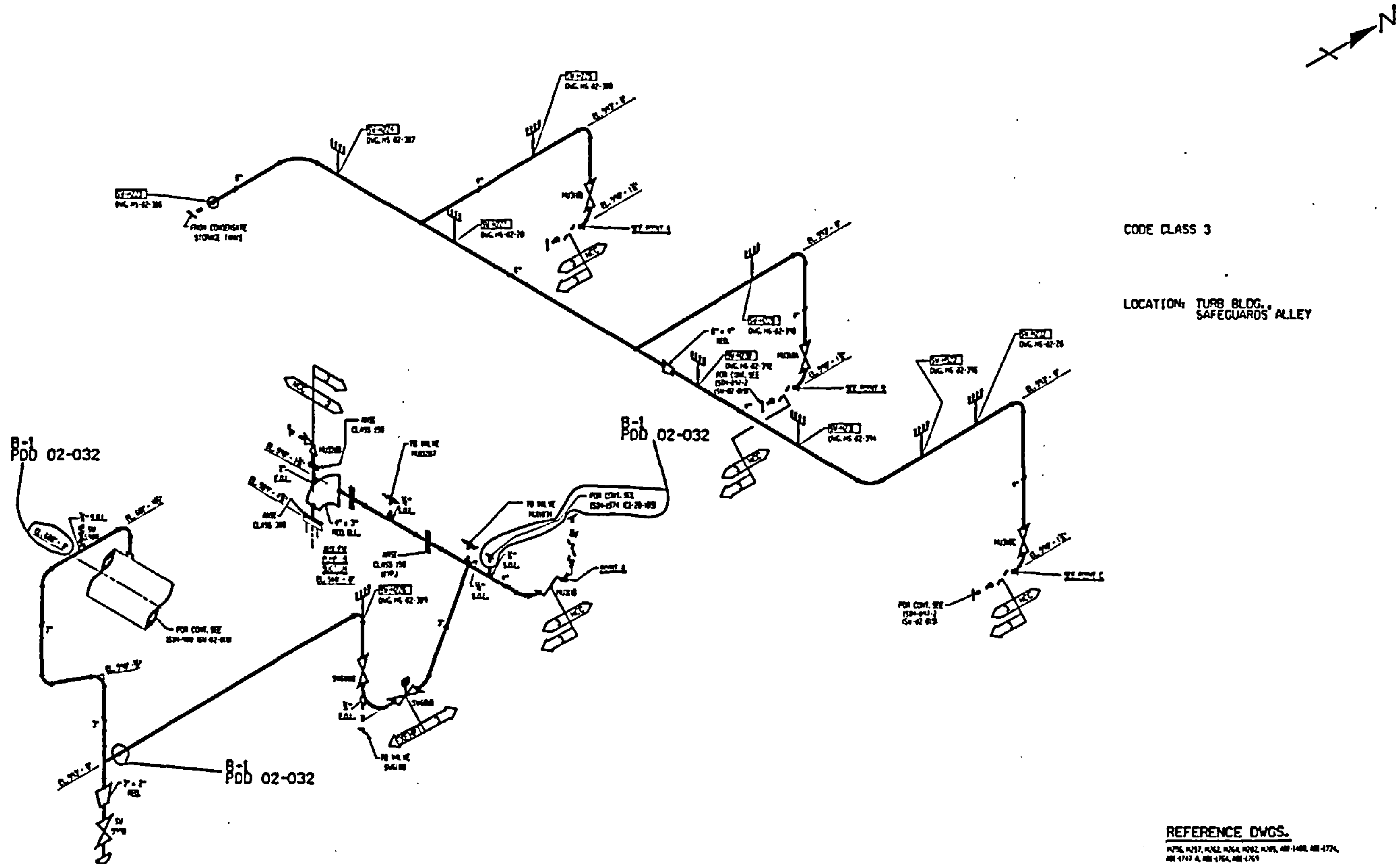
B-1
PDD 02-032
CODE CLASS 3
LOCATION: SCREENHOUSE
REFERENCE DWGS.
ISI ISOMETRIC
FROM SERVICE WATER PUMP DISCHARGE
TO SERVICE WATER STRAINERS INLET
WISCONSIN PUBLIC SERVICE CORP.
CADD



CODE CLASS 3
LOCATION: SCREENHOUSE
REFERENCE DWGS.
A-1
KAP 01-001639
NOTES:
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
CADD


ISIM-896
N
CODE CLASS 3
LOCATION: SCREENHOUSE
B-1
POD 02-032
B-1
POD 02-032
B-1
POD 02-032
EQUIPMENT ANCHOR
EQUIPMENT ANCHOR
REFERENCE DWGS.
ISI ISOMETRIC
SERVICE WATER - FROM 24" SUPPLY
HDR. TO TRAVELING SCREENS 1B1 & 1B2
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIM-896
C

1-268-WISI



CODE CLASS 3

LOCATION: TURB BLDG., SAFEGUARDS ALLEY

ISIM-897-1

REFERENCE DWGS.

NOTES:

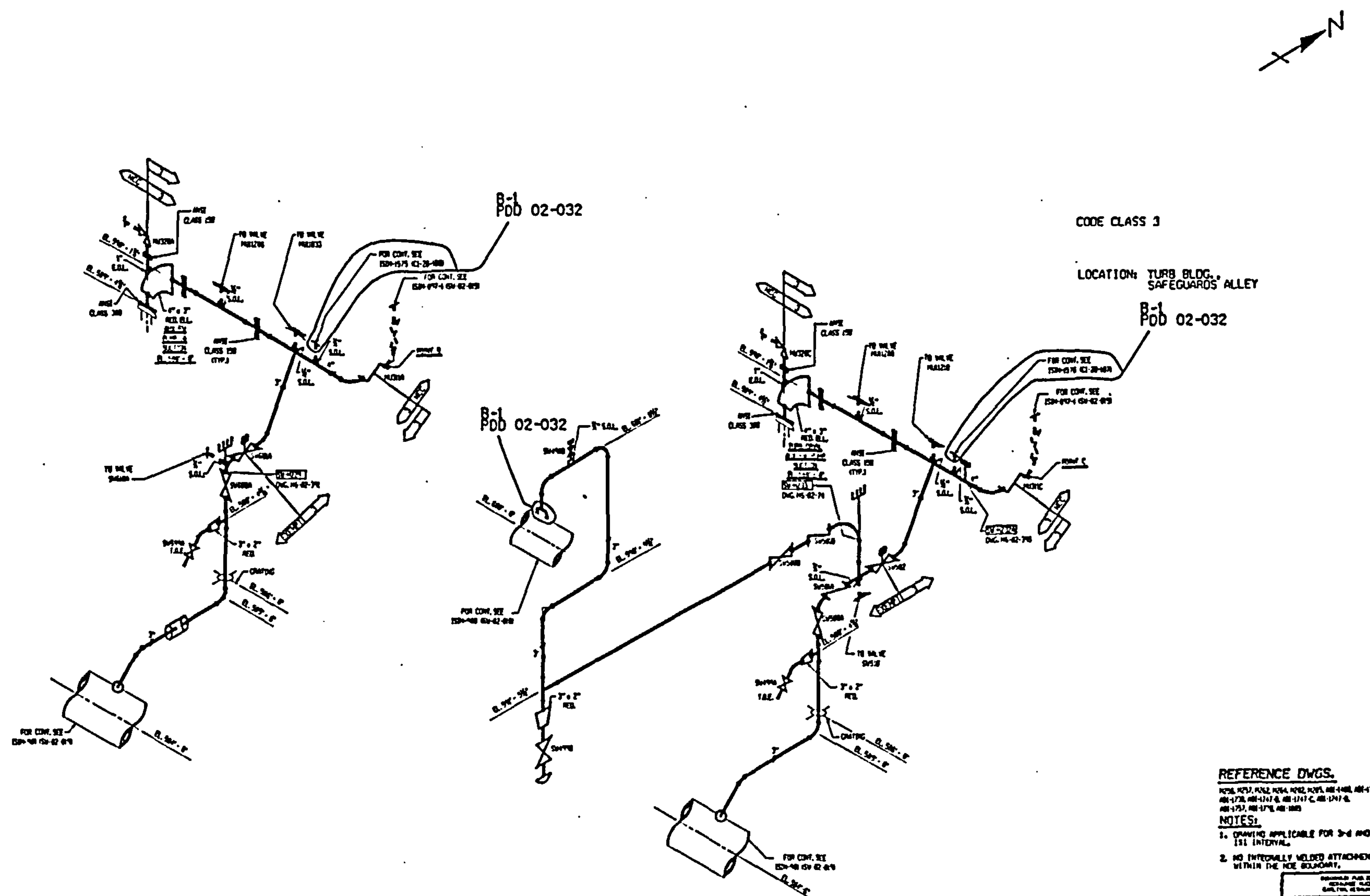
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. NO INTEGRALLY WELDED ATTACHMENTS WITHIN THE NDE BOUNDARY.

ISI ISOMETRIC
SERV. WTR. & FEEDWATER SUCT. TO AUX. FEEDWATER 1A, 1B, & TURB. DRVN. PUMPS

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-897-1 | C



REFERENCE DWGS.

NOTES:

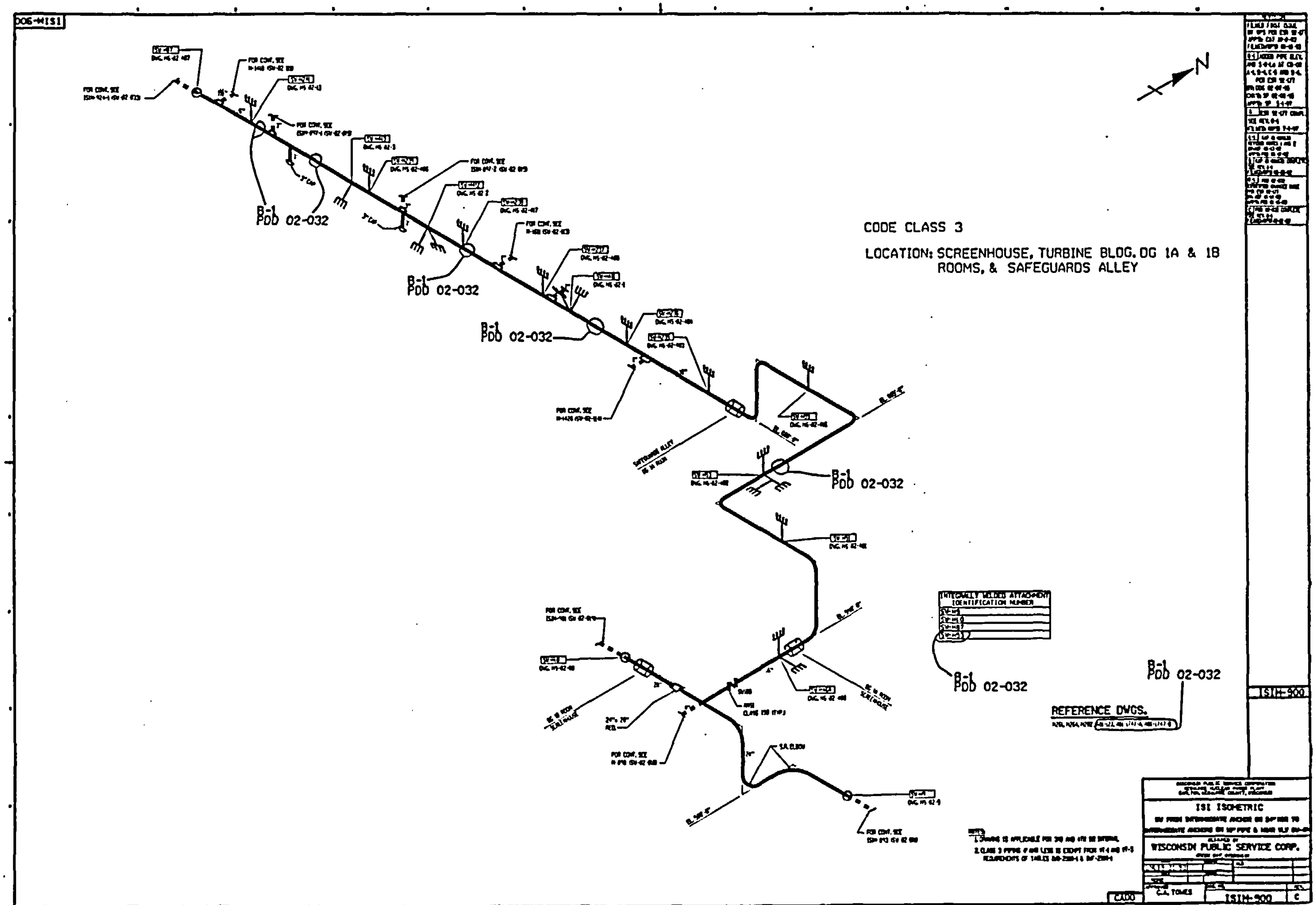
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. NO INTEGRALLY WELDED ATTACHMENTS WITHIN THE NDE BOUNDARY.

ISI ISOMETRIC
SERV. WTR. & FEEDWATER SUCT. TO AUX. FEEDWATER 1A, 1B, & TURB. DRVN. PUMPS

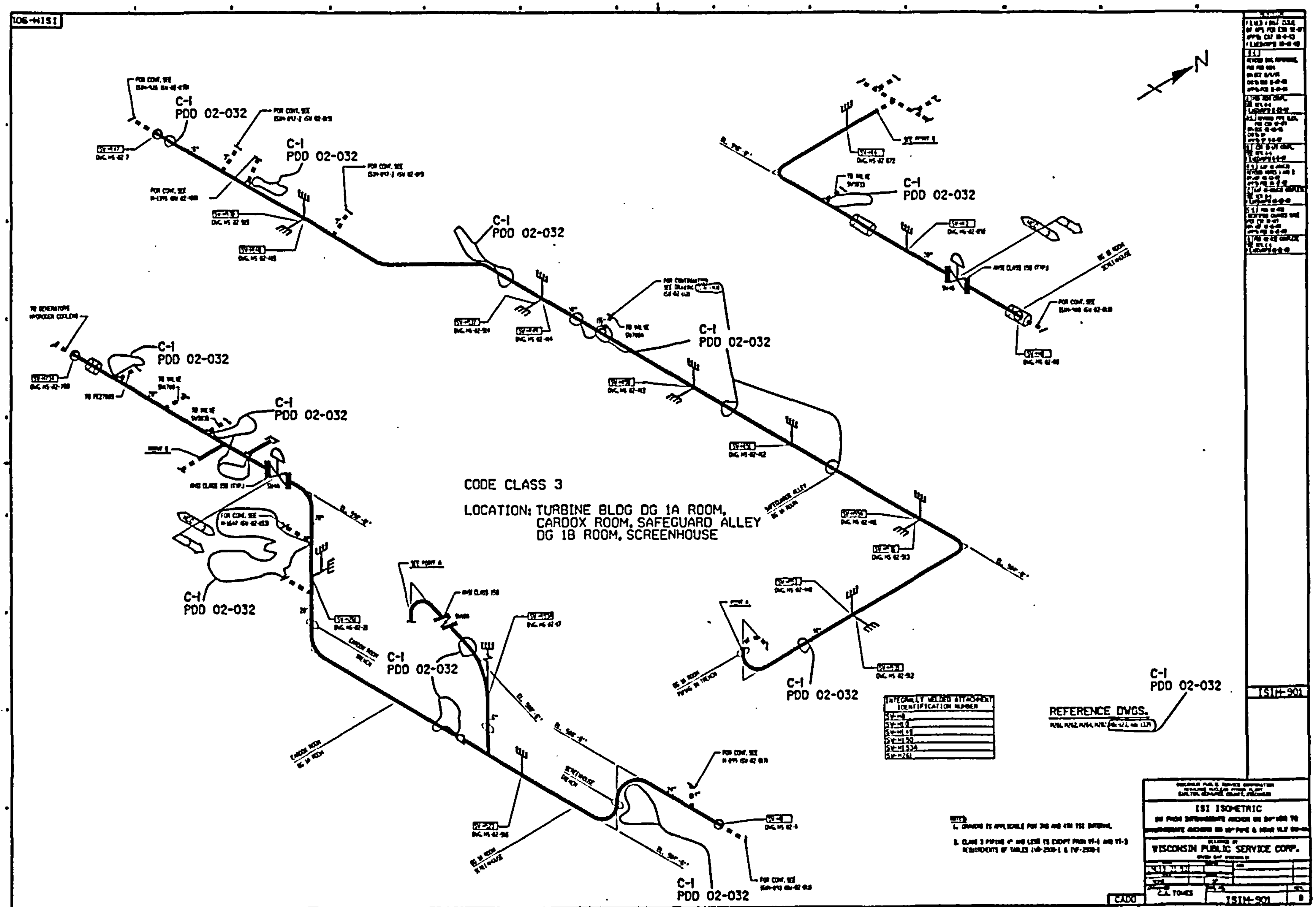
WISCONSIN PUBLIC SERVICE CORP.

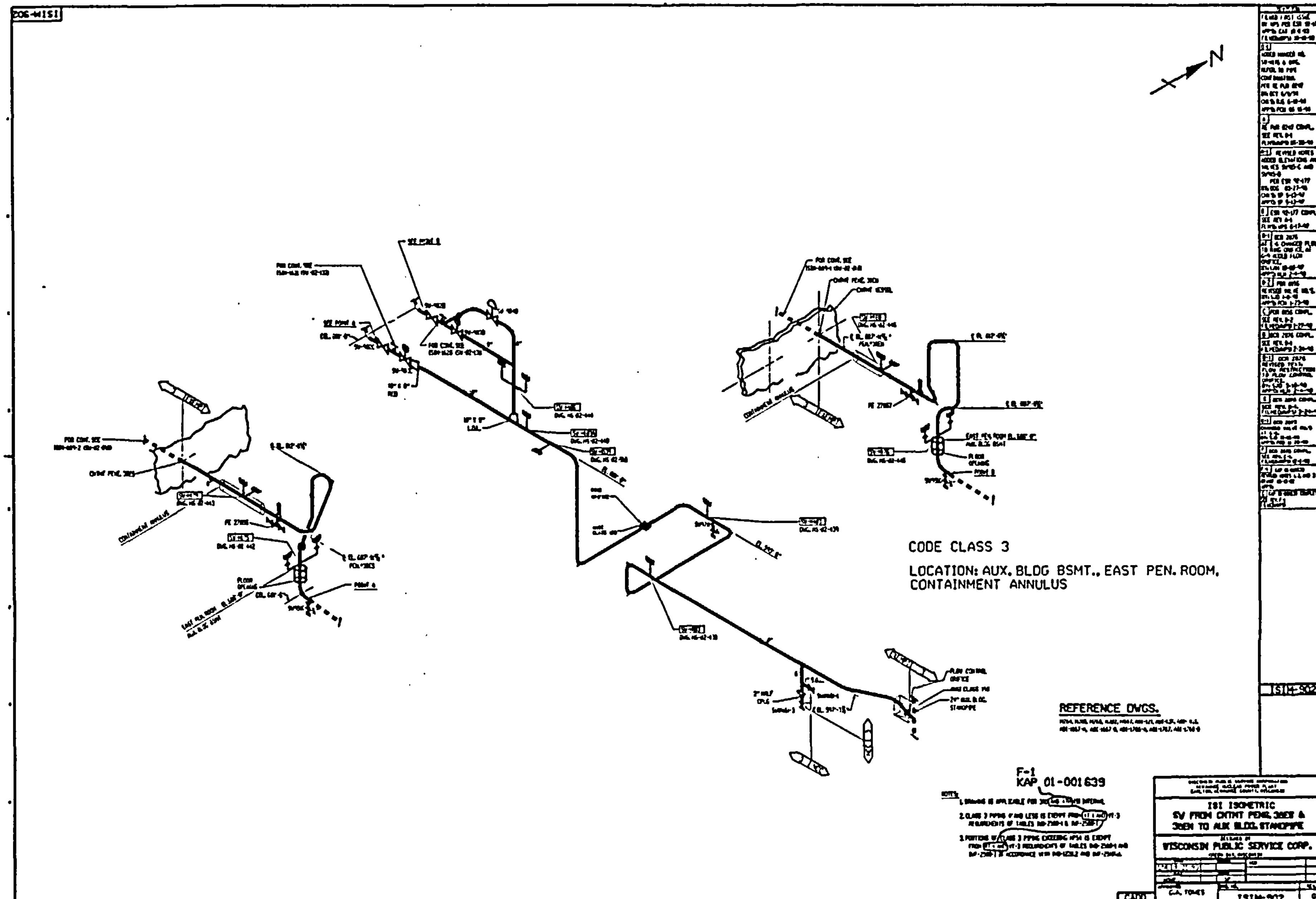
CADD

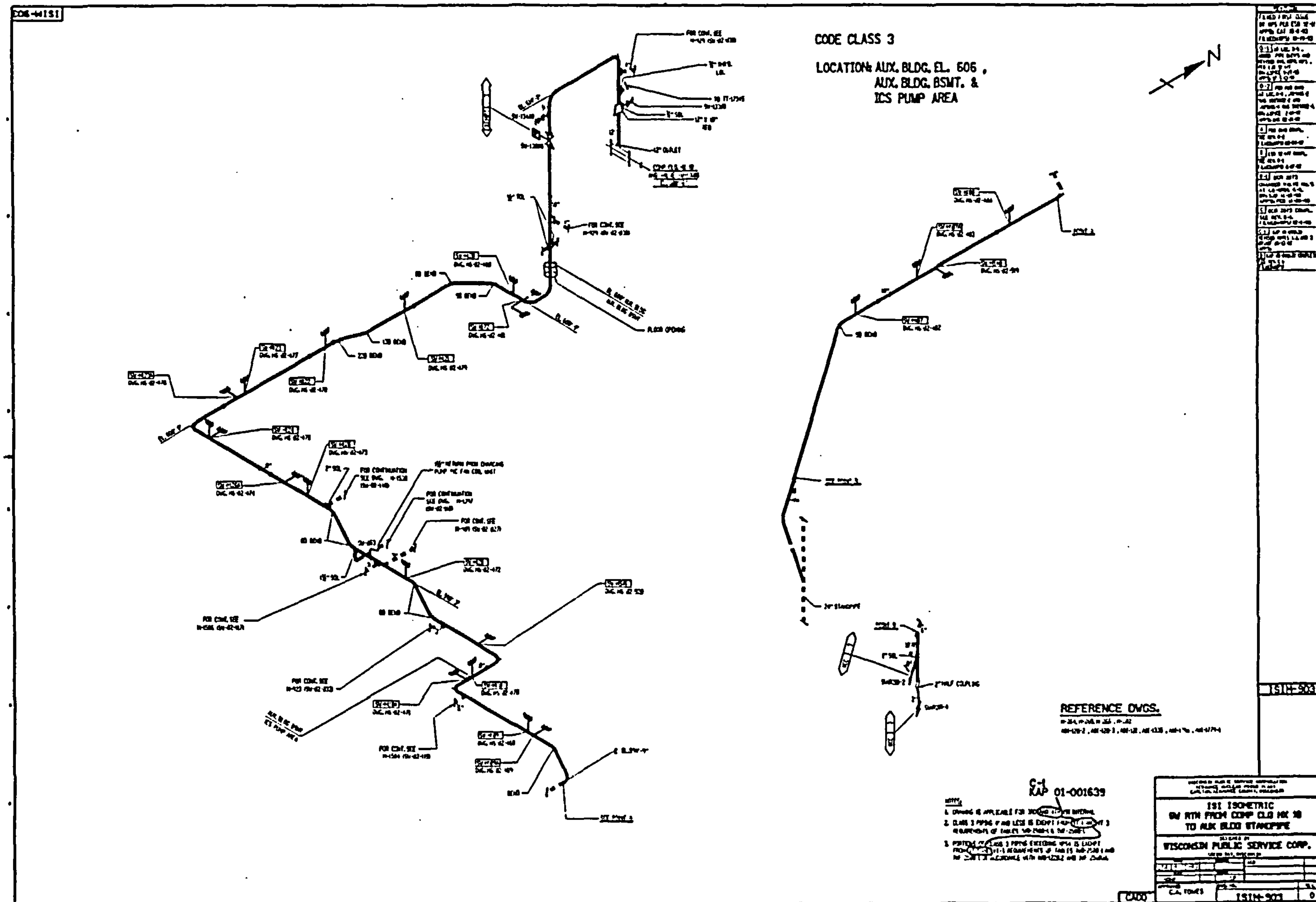
ISIM-897-2 C

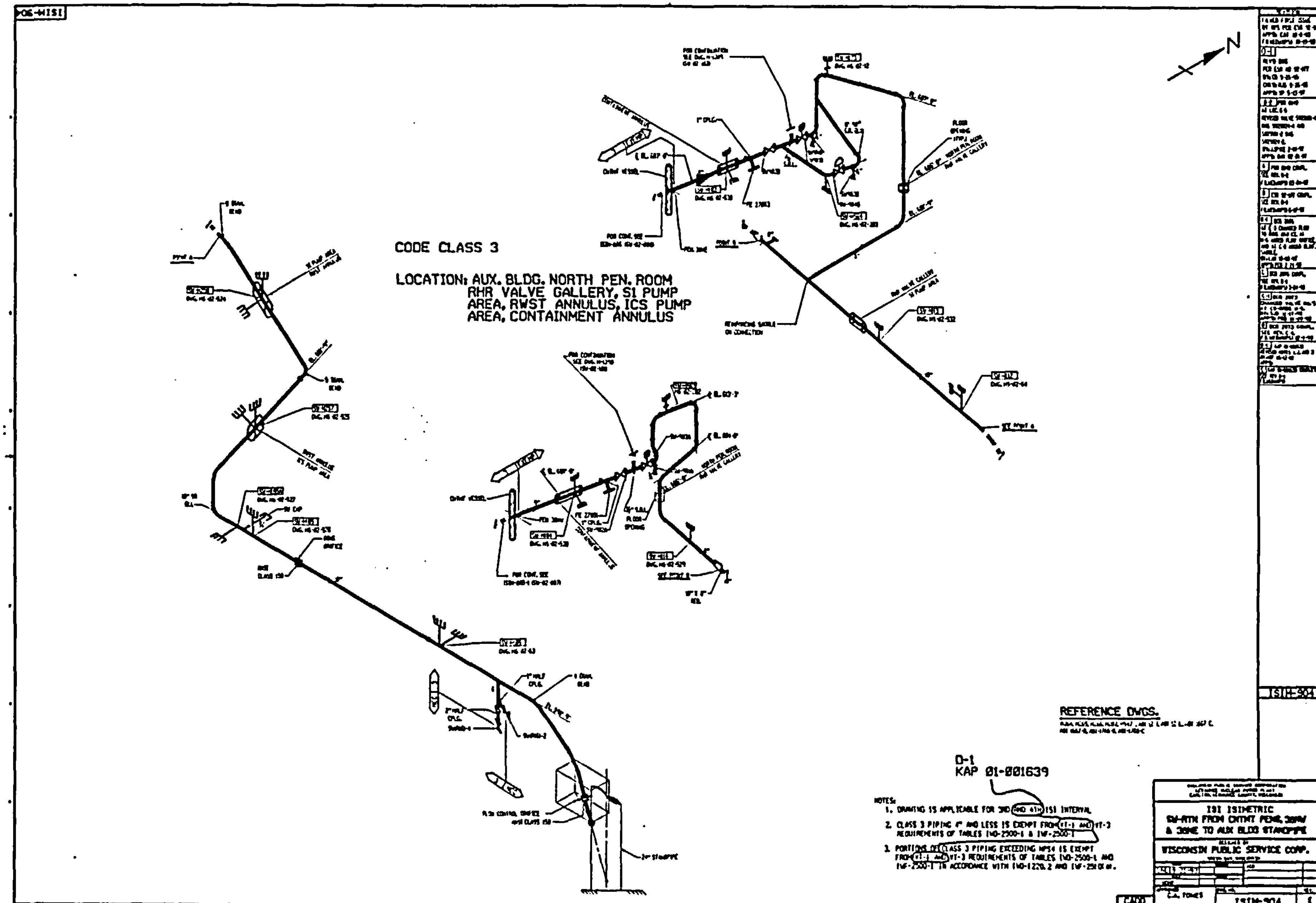


DOG-WIS1
B-1
PDD 02-032
CODE CLASS 3
LOCATION: SCREENHOUSE, TURBINE BLDG. DG 1A & 1B ROOMS, & SAFEGUARDS ALLEY
N
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIH-900

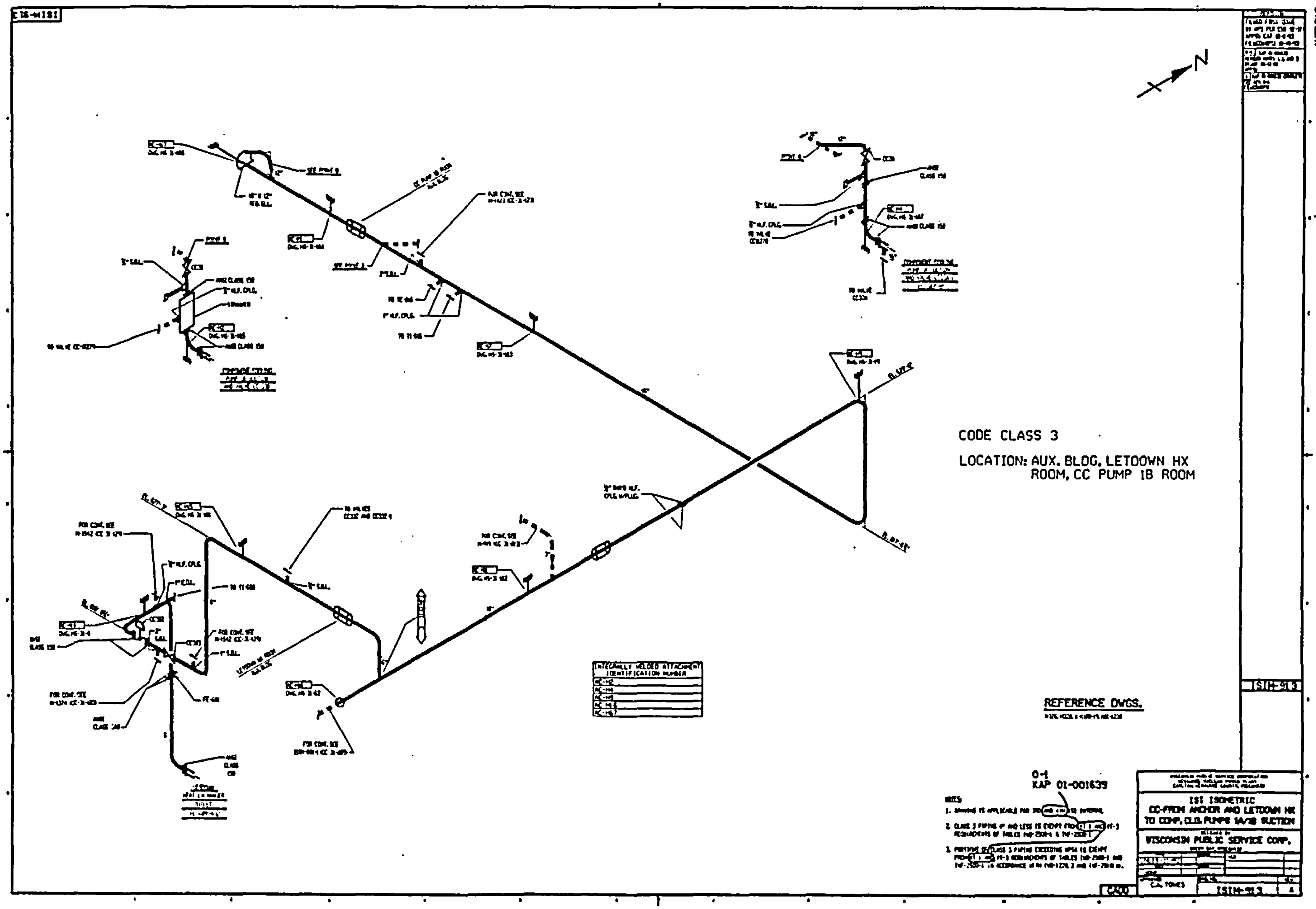

ISIM-901
C-I
PDD 02-032
CODE CLASS 3
LOCATION: TURBINE BLDG DG 1A ROOM,
CARDOX ROOM, SAFEGUARD ALLEY
DG 1B ROOM, SCREENHOUSE
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIM-901


COG-MISI
N
CODE CLASS 3
LOCATION: AUX. BLDG BSMT., EAST PEN. ROOM,
CONTAINMENT ANNULUS
REFERENCE DWGS.
F-1
KAP 01-001639
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
CADD
G.A. TOMES
ISIM-902
ISIM-902

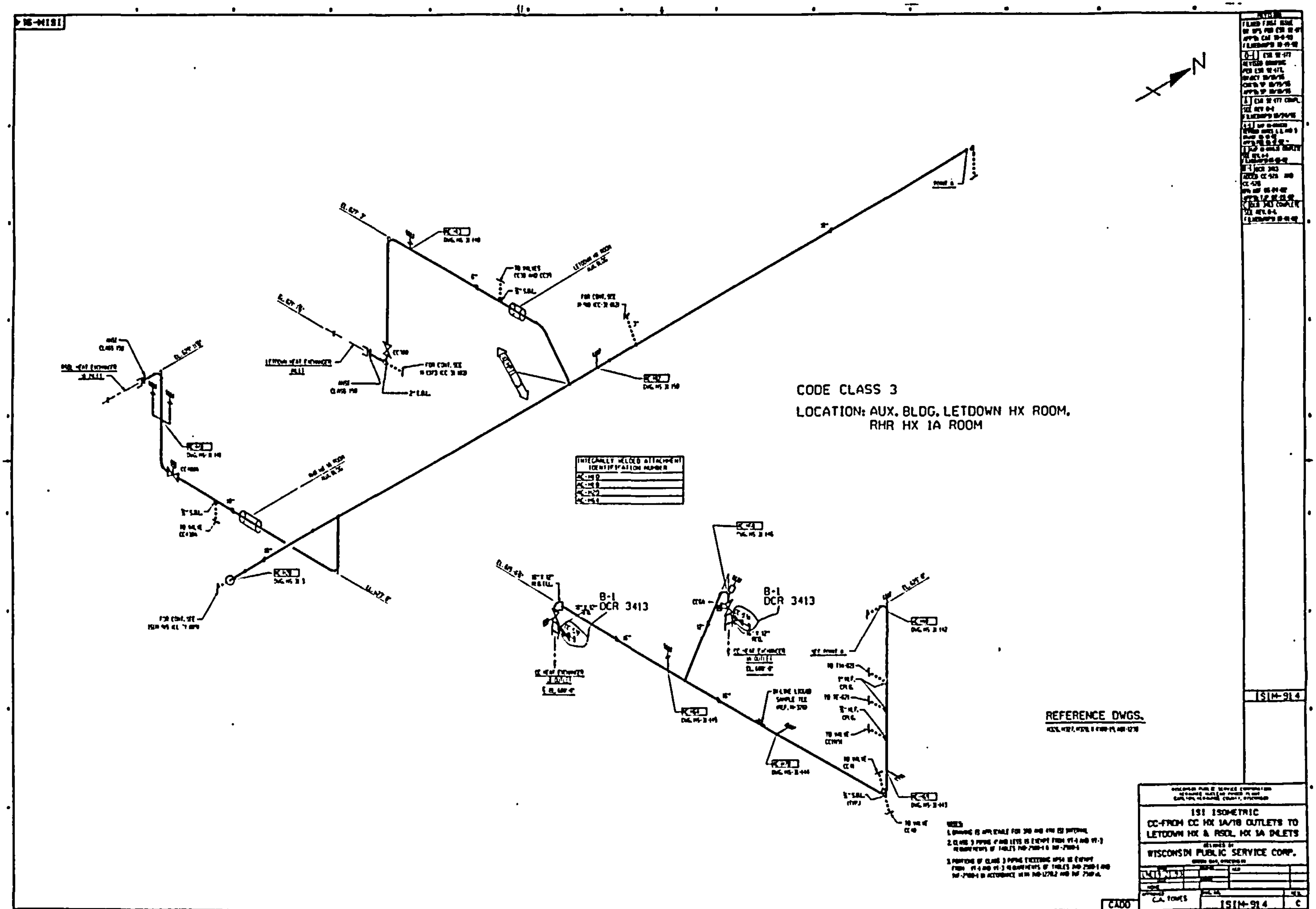

COE-WISI
CODE CLASS 3
LOCATION: AUX. BLDG. EL. 606 ,
AUX. BLDG. BSMT. &
ICS PUMP AREA
N
REFERENCE DWGS.
C-1
KAP 01-001639
ISI ISOMETRIC
SW RTN FROM COMP CLG HX 1B
TO AUX BLDG STANDPIPE
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIH-903
0

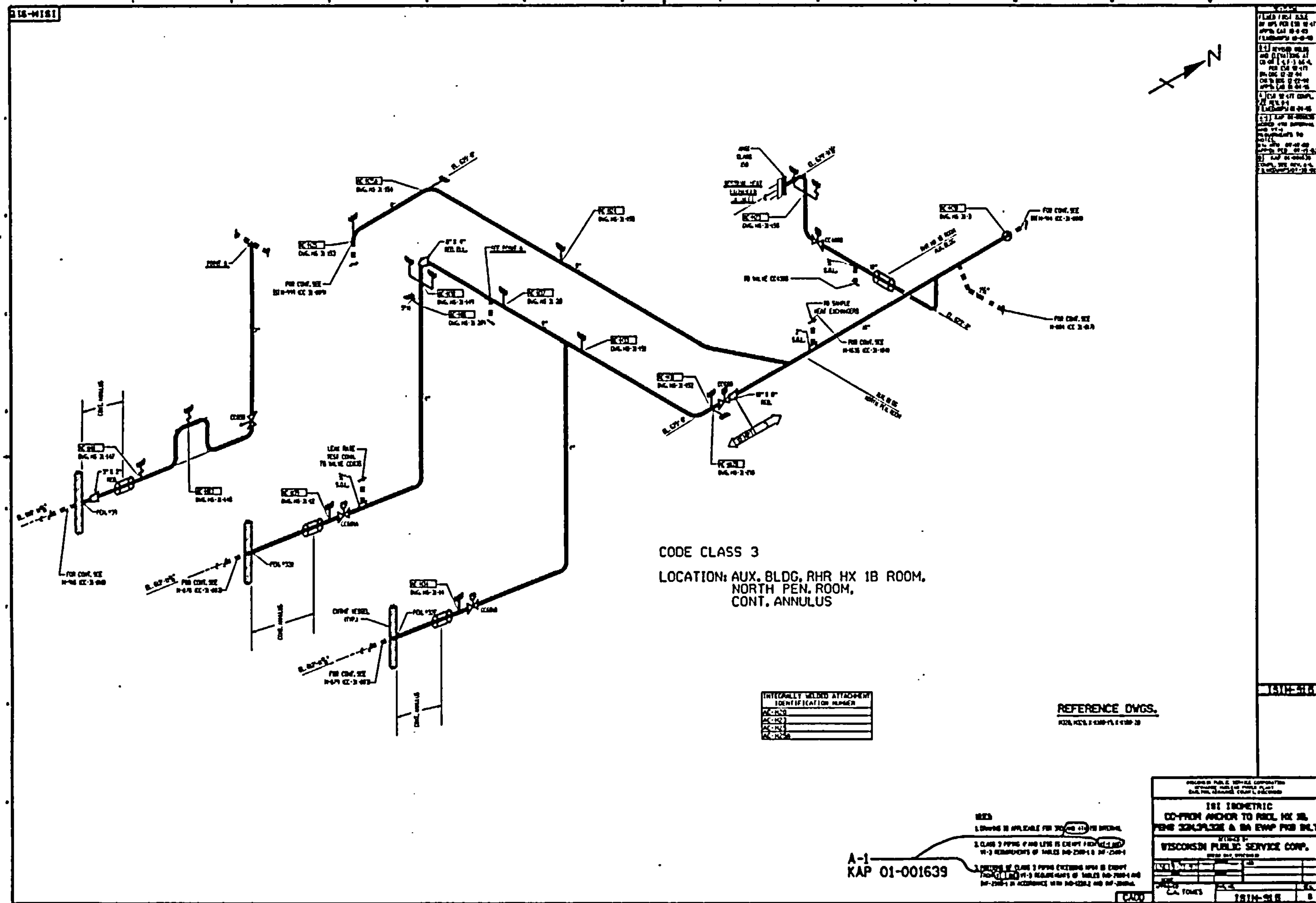


06-WISI
N
CODE CLASS 3
LOCATION: AUX. BLDG. NORTH PEN. ROOM
RHR VALVE GALLERY, SI PUMP
AREA, RWST ANNULUS, ICS PUMP
AREA, CONTAINMENT ANNULUS
REFERENCE DWGS.
D-1
KAP 01-001639
NOTES:
1. DRAWING IS APPLICABLE FOR 3RD AND 4TH ISI INTERVAL
2. CLASS 3 PIPING 4" AND LESS IS EXEMPT FROM VT-1 AND VT-3 REQUIREMENTS OF TABLES IWD-2500-1 & IWF-2500-1
3. PORTIONS OF CLASS 3 PIPING EXCEEDING NPS4 IS EXEMPT FROM VT-1 AND VT-3 REQUIREMENTS OF TABLES IWD-2500-1 AND IWF-2500-1 IN ACCORDANCE WITH IWD-1220.2 AND IWF-2510(a).
ISI ISOMETRIC
SW-RTN FROM CNTMT PENS. 36NW & 36NE TO AUX BLDG STANDPIPE
WISCONSIN PUBLIC SERVICE CORP.
CADD
C.A. FOMES
ISIM-904
ISIM-904

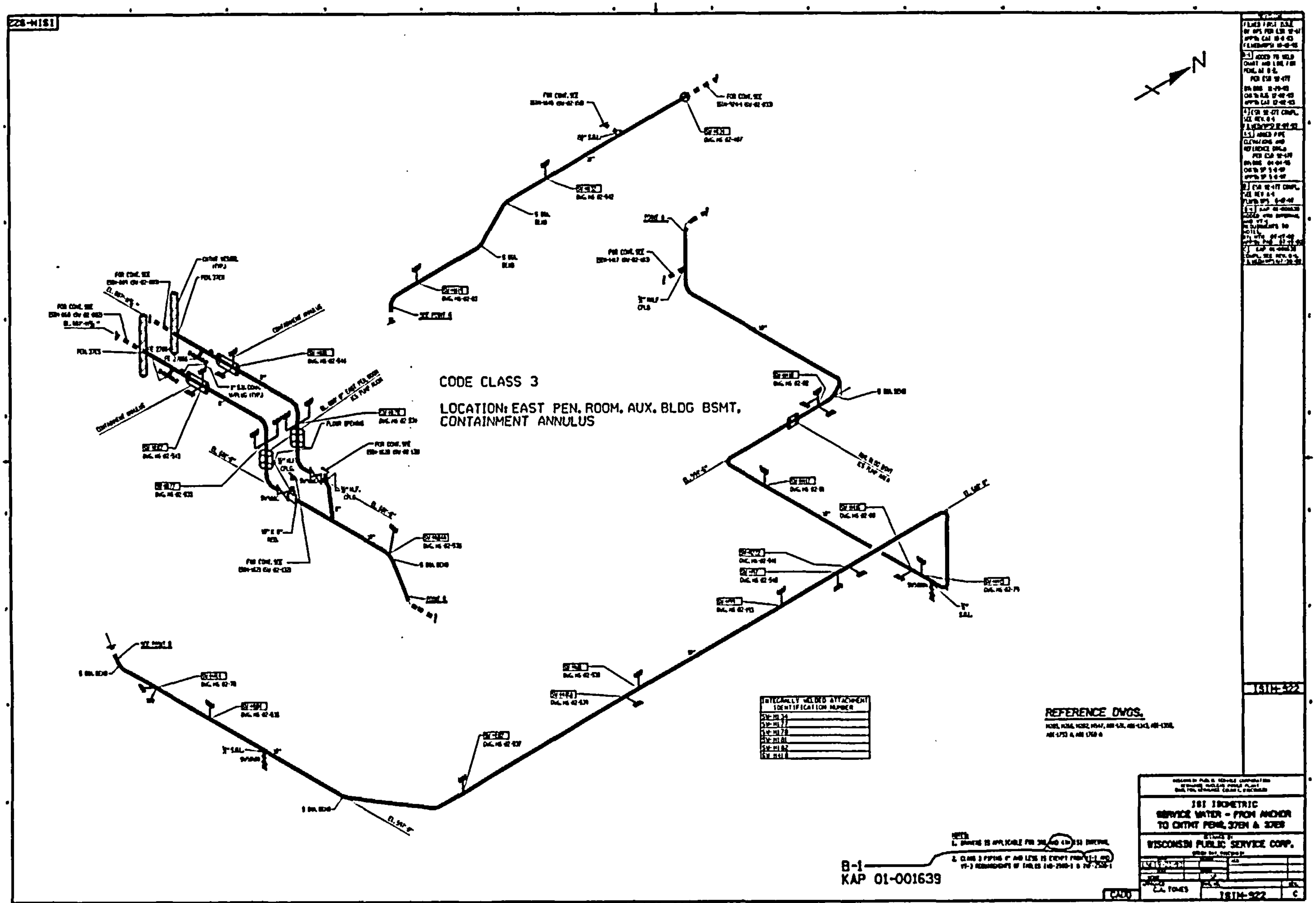


ISIH-913
N
CODE CLASS 3
LOCATION: AUX. BLDG. LETDOWN HX ROOM, CC PUMP 1B ROOM
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
0-1
KAP 01-001639
ISI ISOMETRIC
CC-FROM ANCHOR AND LETDOWN HX TO COMP. CLG. PUMPS 1A/1B SUCTION
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIH-913
A

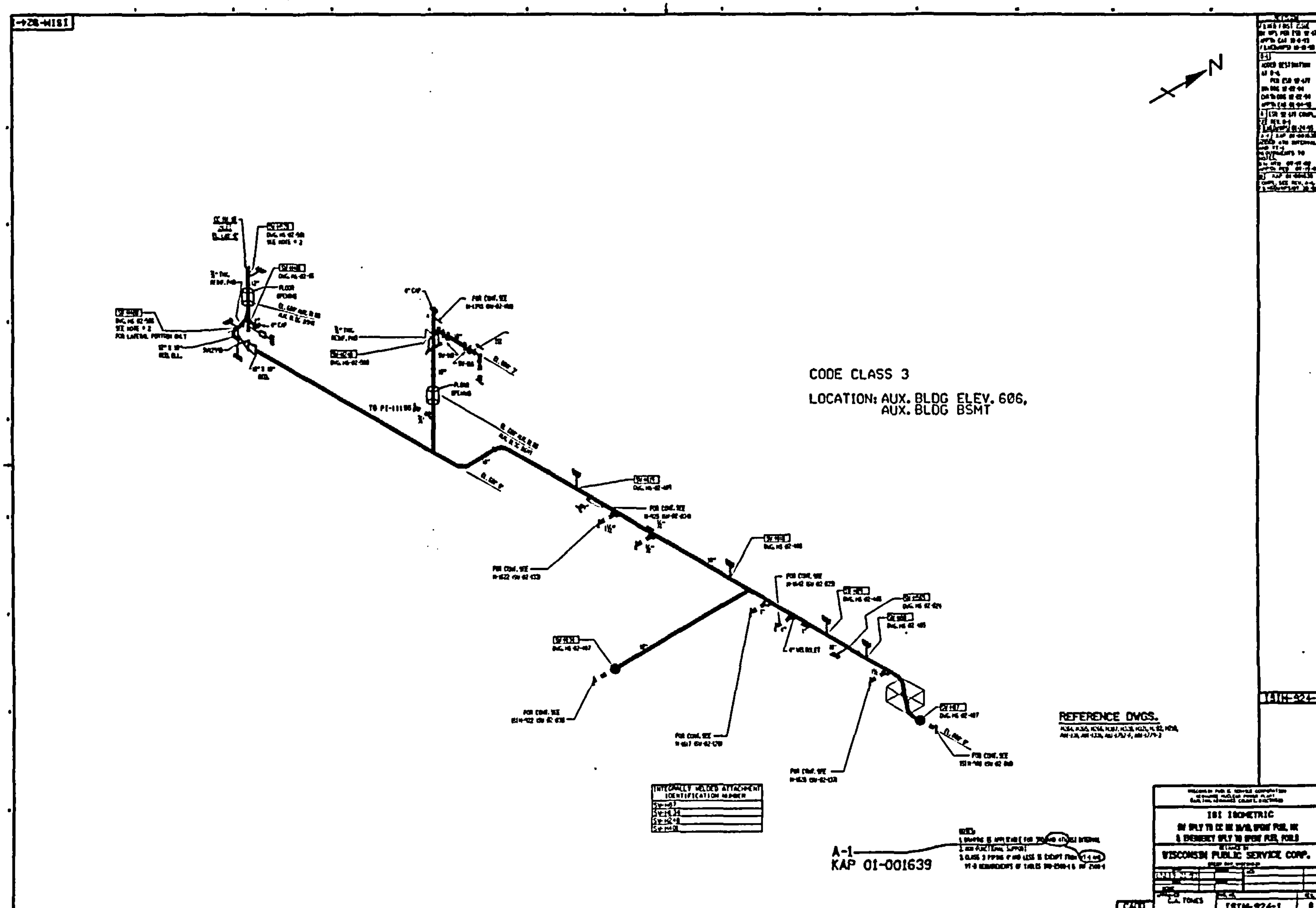

CODE CLASS 3
LOCATION: AUX. BLDG. LETDOWN HX ROOM,
RHR HX 1A ROOM
B-1
DCR 3413
B-1
DCR 3413
N
REFERENCE DWGS.
ISIM-914
ISI ISOMETRIC
CC-FROM CC HX 1A/1B OUTLETS TO
LETDOWN HX & RSDL HX 1A INLETS
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
CADD
ISIM-914
C

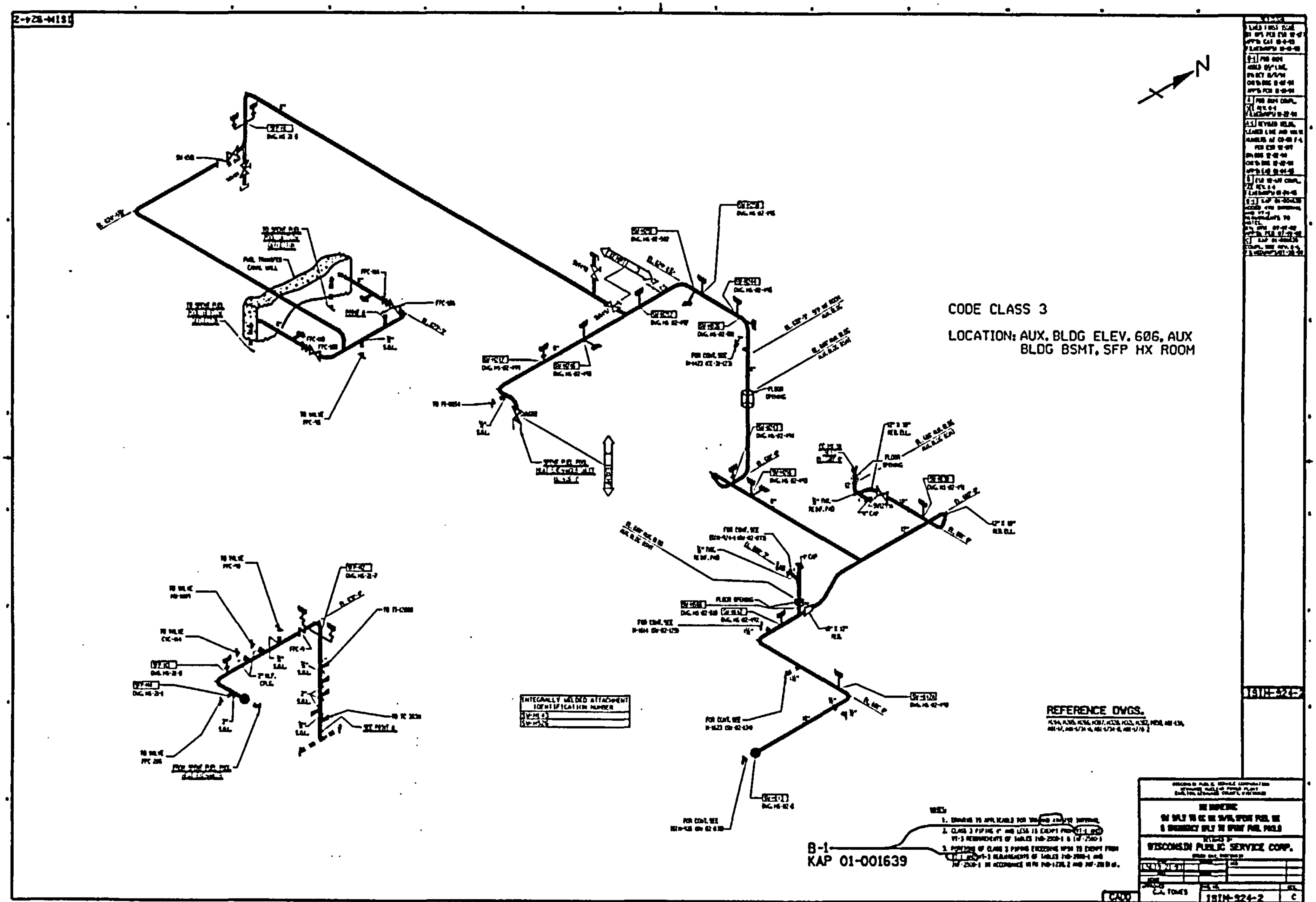


CODE CLASS 3
LOCATION: AUX. BLDG. RHR HX 1B ROOM.
NORTH PEN. ROOM.
CONT. ANNULUS
REFERENCE DWGS.
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
A-1
KAP 01-001639
C.A. TOMES
CADD

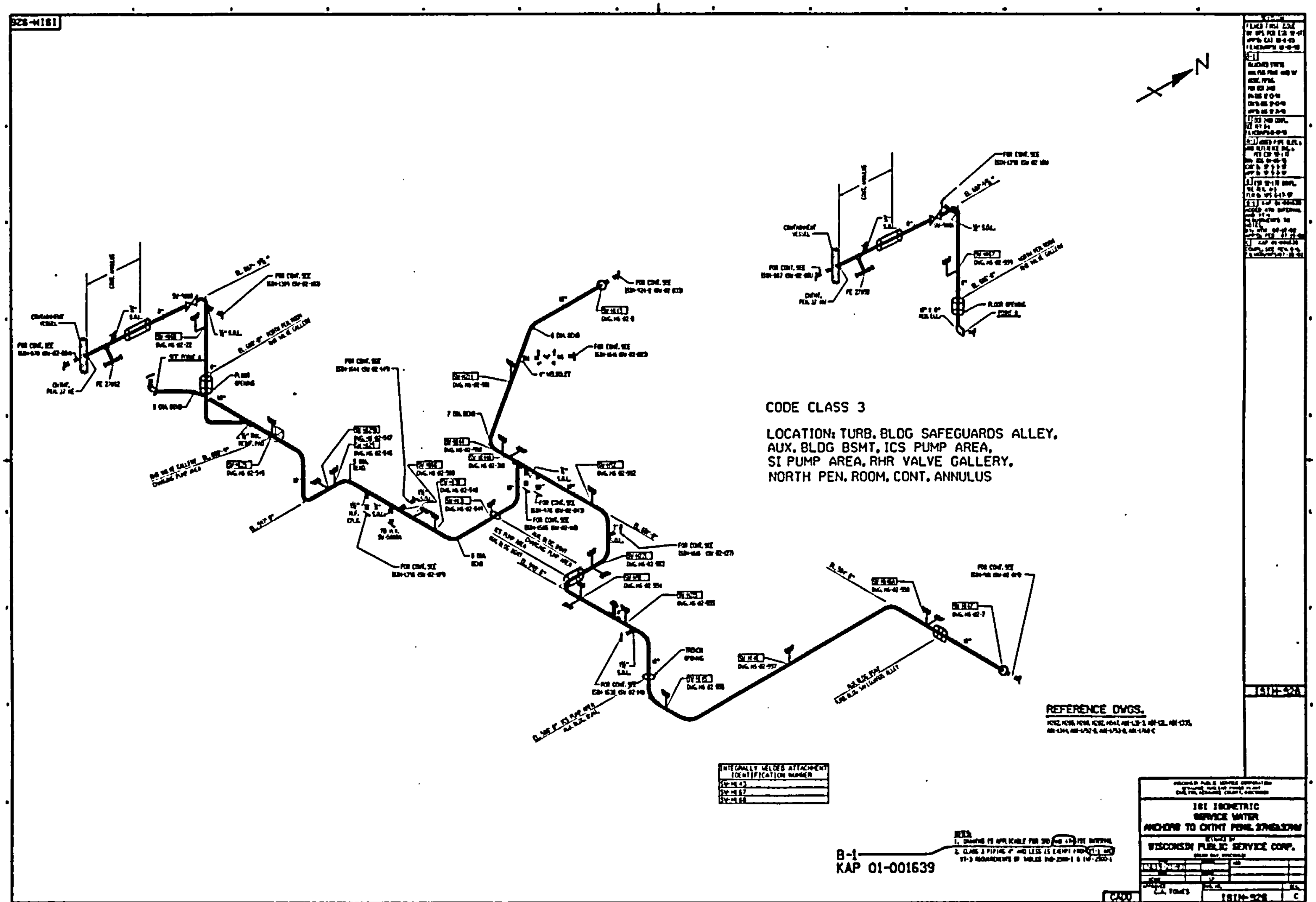


CODE CLASS 3
LOCATION: EAST PEN. ROOM, AUX. BLDG BSMT, CONTAINMENT ANNULUS
REFERENCE DWGS.
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
ISI ISOMETRIC
SERVICE WATER - FROM ANCHOR TO CNTMT PENS. 37EN & 37ES
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
ISIM-922
C
CADD
ISIM-922
B-1
KAP 01-001639
N


N
CODE CLASS 3
LOCATION: AUX. BLDG ELEV. 606,
AUX. BLDG BSMT
REFERENCE DWGS.
INTEGRALLY WELDED ATTACHMENT
IDENTIFICATION NUMBER
A-1
KAP 01-001639
ISI ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
ISIM-924-1
CADD



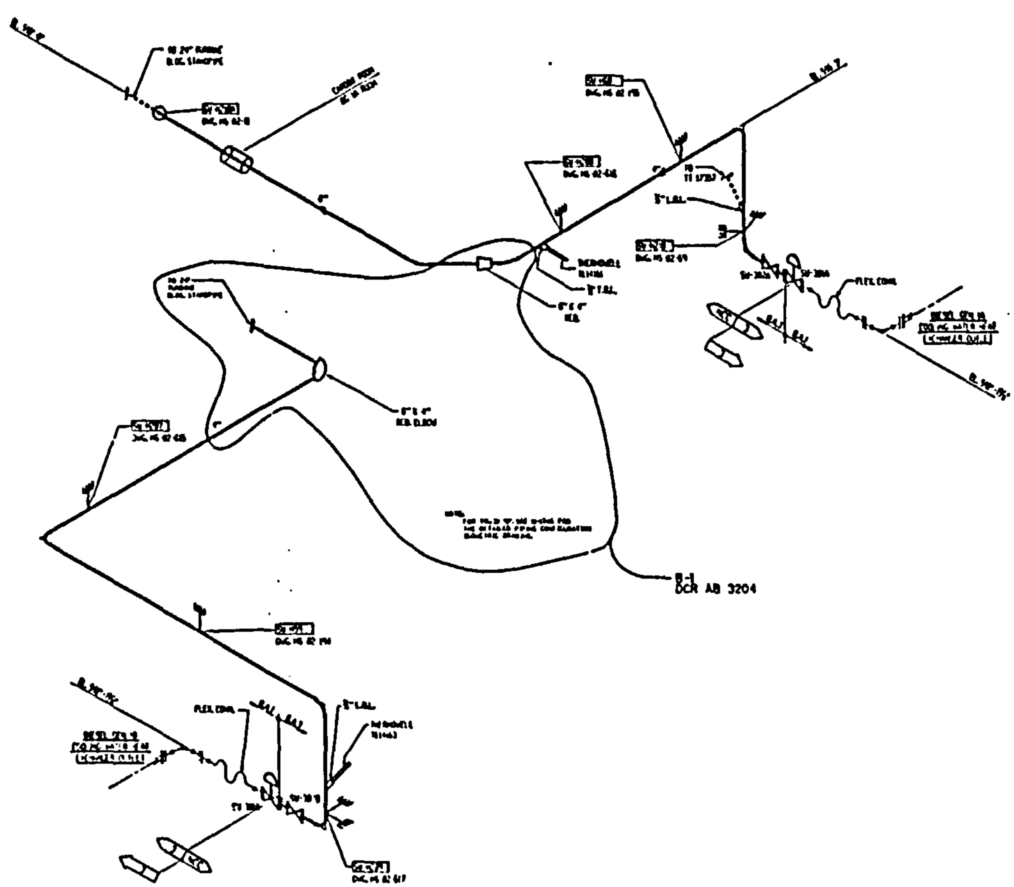
CODE CLASS 3
LOCATION: AUX. BLDG ELEV. 606, AUX BLDG BSMT, SFP HX ROOM
REFERENCE DWGS.
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
B-1
KAP 01-001639
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
ISIH-924-2
CADD
N


ISIH-92B
N
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.
B-1
KAP 01-001639
ISI ISOMETRIC
SERVICE WATER
WISCONSIN PUBLIC SERVICE CORP.
C.A. TOMES
ISIH-92B
C
CADD

ISIH-932

CODE CLASS 3

LOCATION: TURB. BLDG. BSMT. EL. 586 ,
DG 1A & 1B ROOMS ,
CARDOX ROOM .



REFERENCE DWGS.

ISI ISOMETRIC
SW-FROM FLEX CONNS ON DIESEL
GEN 1A & 1B CW HXS TO ANCHOR

WISCONSIN PUBLIC SERVICE CORP.

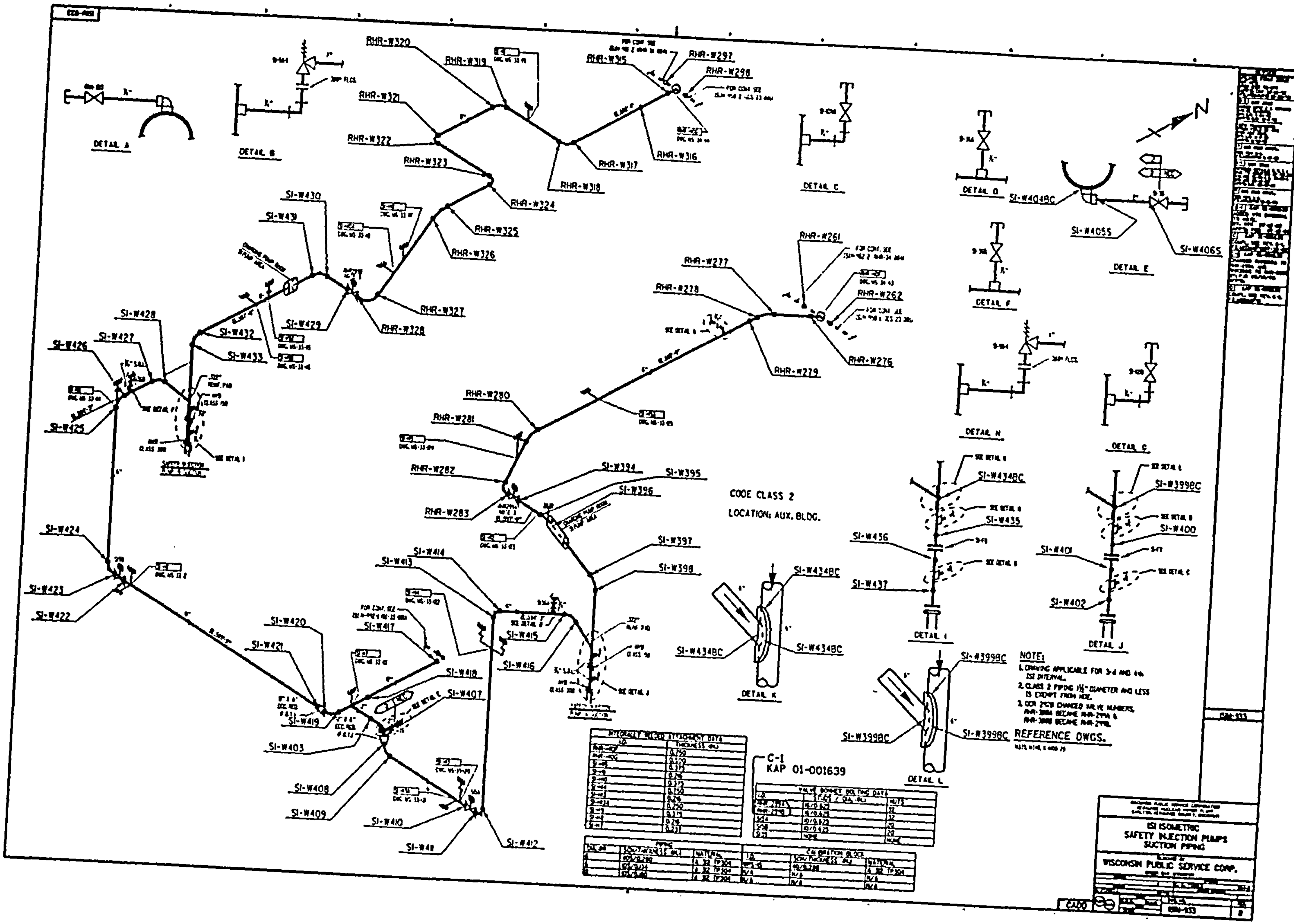
CADD

C.A. JONES

ISIH-932

C

ISIH-932



DETAIL A
DETAIL B
DETAIL C
DETAIL D
DETAIL E
DETAIL F
DETAIL G
DETAIL H
DETAIL I
DETAIL J
DETAIL K
DETAIL L
N
RHR-W320
RHR-W319
RHR-W315
RHR-W297
RHR-W298
RHR-W321
RHR-W322
RHR-W323
RHR-W317
RHR-W316
RHR-W318
RHR-W324
RHR-W325
RHR-W326
RHR-W327
RHR-W328
RHR-W261
RHR-W277
RHR-W278
RHR-W262
RHR-W276
RHR-W279
RHR-W280
RHR-W281
RHR-W282
RHR-W283
SI-W430
SI-W431
SI-W429
SI-W428
SI-W432
SI-W433
SI-W427
SI-W426
SI-W425
SI-W424
SI-W423
SI-W422
SI-W420
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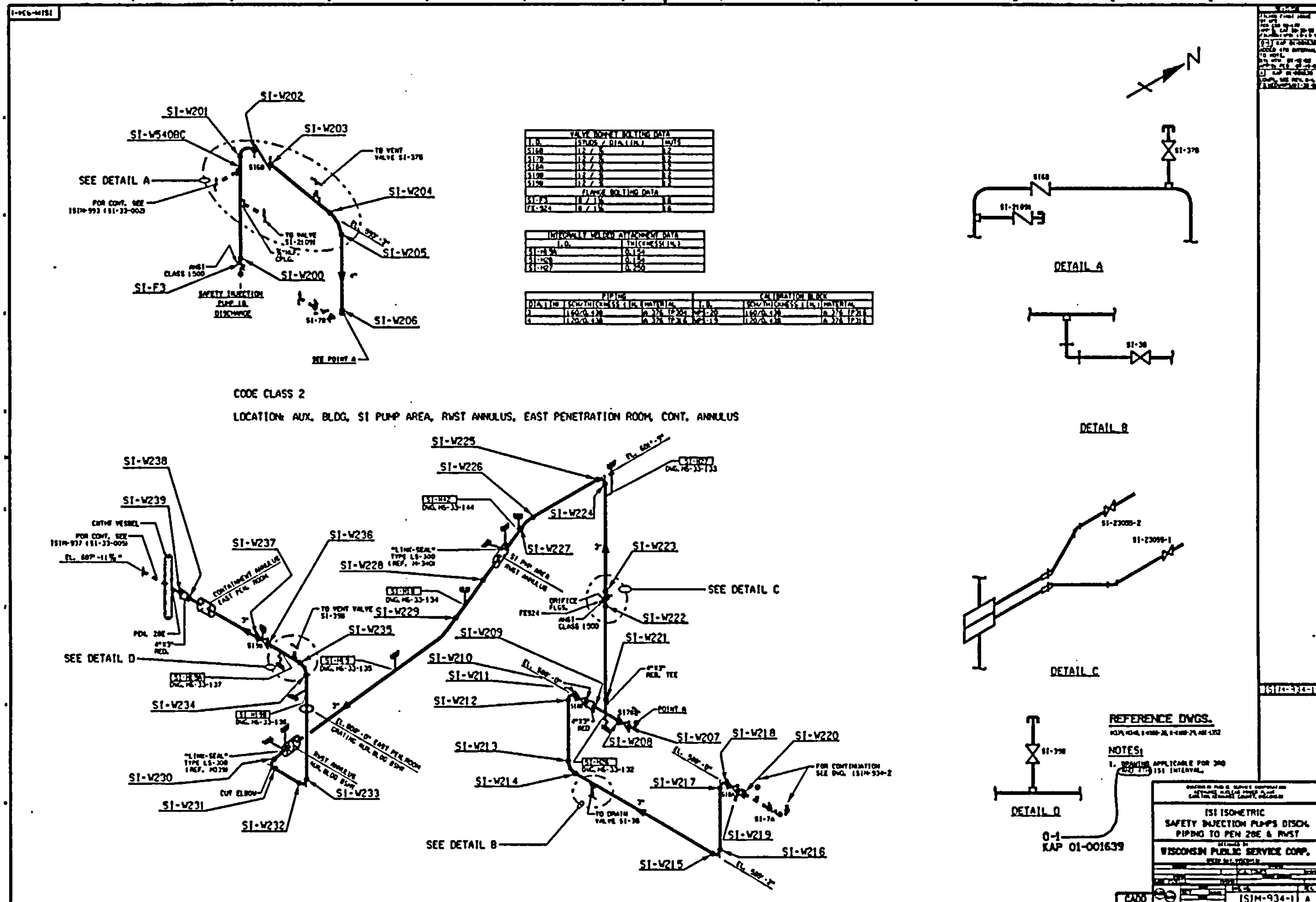
SI-W403
SI-W408
SI-W409
SI-W410
SI-W411
SI-W412
SI-W413
SI-W414
SI-W415
SI-W416
SI-W417
SI-W418
SI-W407
SI-W394
SI-W395
SI-W396
SI-W397
SI-W398
SI-W404BC
SI-W405S
SI-W406S
SI-W434BC
SI-W435
SI-W436
SI-W437
SI-W399BC
SI-W400
SI-W401
SI-W402
CODE CLASS 2
LOCATION: AUX. BLDG.
C-I
KAP 01-001639
NOTE:
REFERENCE DWGS.
ISI ISOMETRIC
SAFETY INJECTION PUMPS
SUCTION PIPING
WISCONSIN PUBLIC SERVICE CORP.
ISM-533



CODE CLASS 2

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

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA.(IN.)	NUTS
SI68	12 / ¾	12
SI70	12 / ¾	12
SI6A	12 / ¾	12
SI9B	12 / ¾	12
SI9A	12 / ¾	12
FLANGE BOLTING DATA		
SI-F3	8 / 1⅛	16
FE-924	8 / 1⅛	16

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS(IN.)
SI-H13A	0.154
SI-H26	0.154
SI-H27	0.250

PIPING			CALIBRATION BLOCK		
DIA.(IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
3	160/0.438	A 376 TP304	NPS-20	160/0.438	A 376 TP316
4	120/0.438	A 376 TP316	NPS-13	120/0.438	A 376 TP316

REFERENCE DWGS.

NOTES:

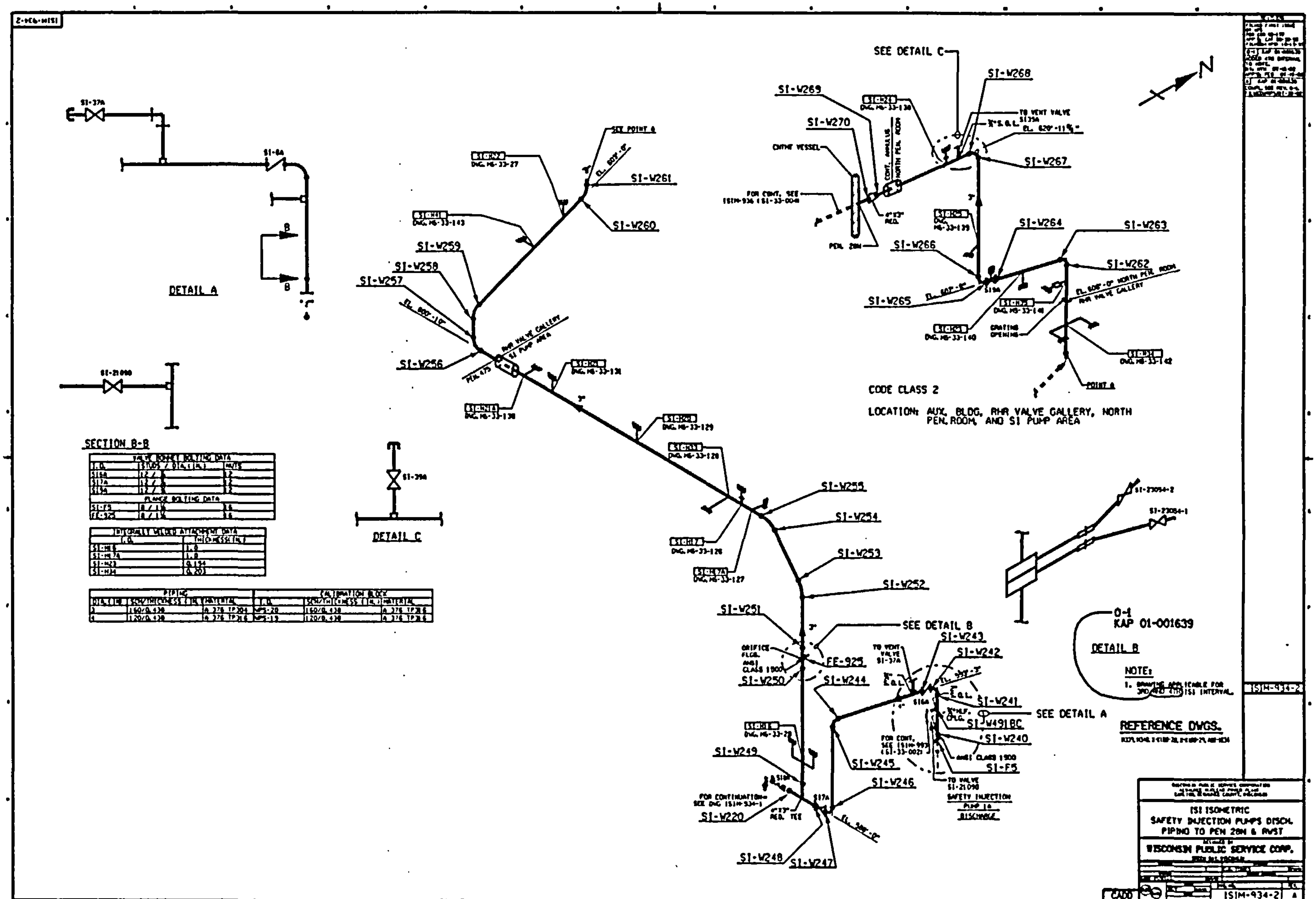
1. DRAWING APPLICABLE FOR 3RD ISI INTERVAL.

0-1
KAP 01-001639

ISI ISOMETRIC
SAFETY INJECTION PUMPS DISCH.
PIPING TO PEN 28E & RWST

WISCONSIN PUBLIC SERVICE CORP.

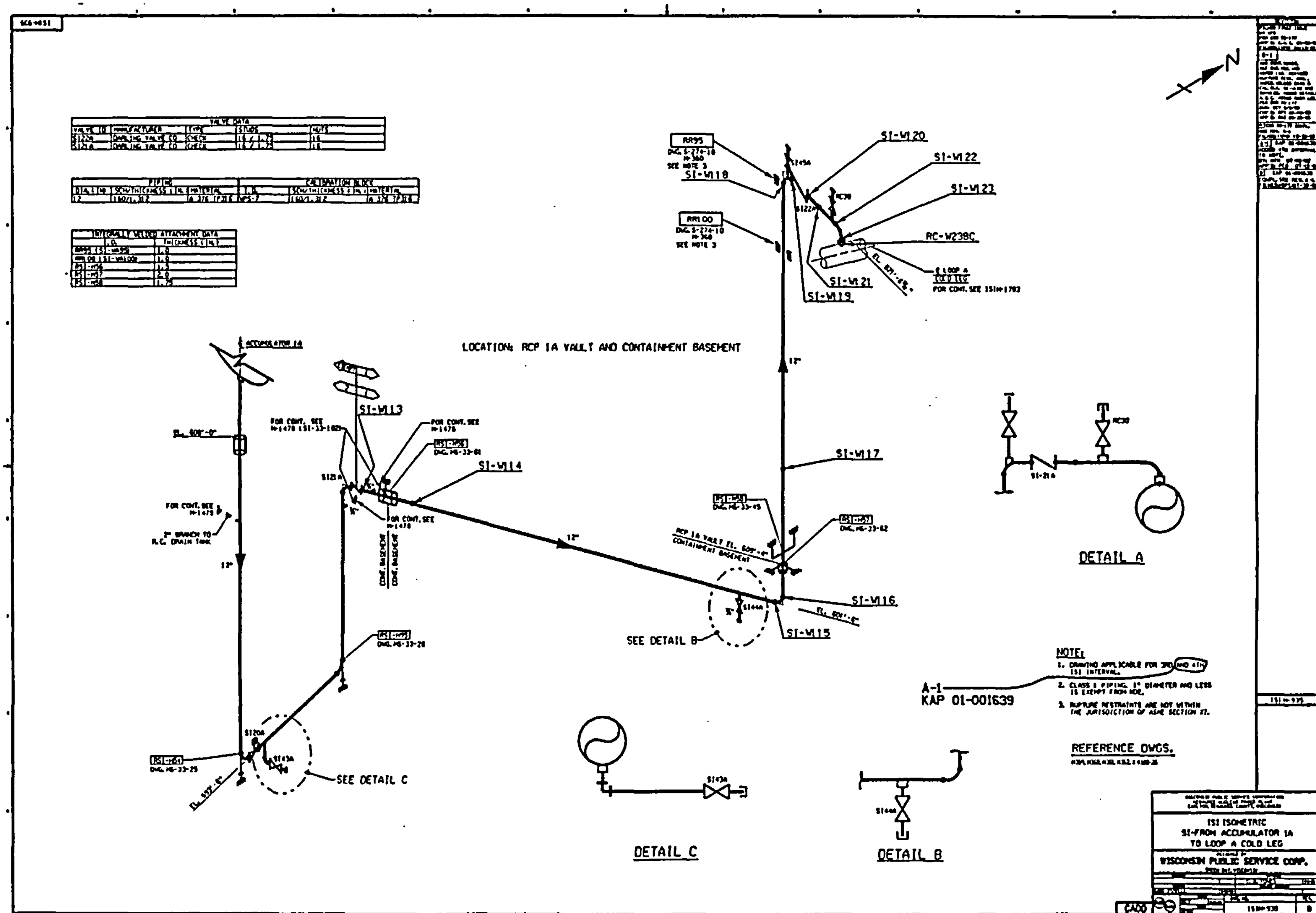
ISIM-934-1 A



VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
SI6A	12 / [illegible]	12
SI7A	12 / [illegible]	12
SI39A	12 / [illegible]	12
FLANGE BOLTING DATA		
SI-F5	8 / 1[illegible]	16
FE-925	8 / 1[illegible]	16

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
SI-H16	1.0
SI-H17A	1.0
SI-H23	0.154
SI-H34	0.203

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
3	160/0.438	A 376 TP304	NPS-20	160/0.438	A 376 TP316
4	120/0.438	A 376 TP316	NPS-19	120/0.438	A 376 TP316



VALVE DATA				
VALVE ID	MANUFACTURER	TYPE	STUDS	NUTS
S120A	DARLING VALVE CO	CHECK	16 / 1.75	16
S121A	DARLING VALVE CO	CHECK	16 / 1.75	16

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
12	160/1.312	A 376 TP316	PS-7	160/1.312	A 376 TP316

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RR95 (SI-W95)	1.0
RR100 (SI-W100)	1.0
RSI-H56	1.5
RSI-H57	2.0
RSI-H58	1.75

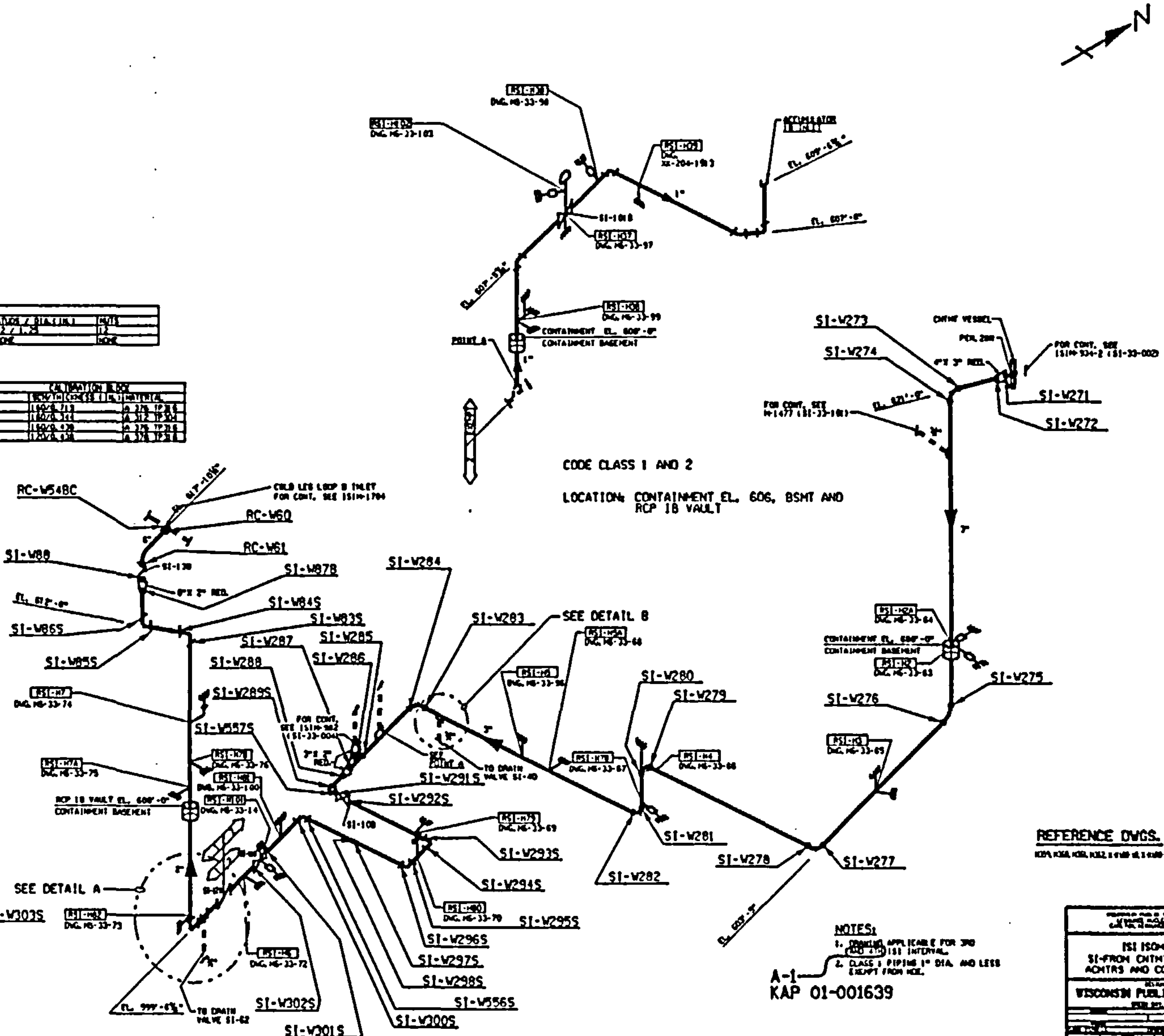
ISI-936

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
SI-11[illegible]	NONE	NONE
SI-108	NONE	NONE

VALVE DATA				
I.D.	MANUFACTURER	TYPE	STUDS / DIA. (IN.)	NUTS
SI-13B	VELAN VALVE CO.	CHECK	12 / 1.25	12
SI-12B	ROCKWELL	CHECK	NONE	NONE

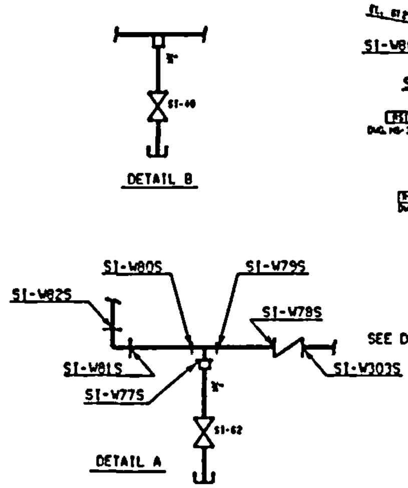
PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
8	160/0.719	A 376 TP316	WPS-17	160/0.719	A 376 TP316
2	160/0.344	A 376 TP304	WPS-21	160/0.344	A 312 TP304
3	160/0.438	A 376 TP304	WPS-20	160/0.438	A 376 TP316
6	120/0.432	A 376 TP316	WPS-13	120/0.432	A 376 TP316

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RSI-H7	0.875
RSI-H5A	0.375
RSI-H4	0.250
RSI-H36	0.500
RSI-H38	0.113
RSI-H39	0.750



CODE CLASS 1 AND 2

LOCATION: CONTAINMENT EL. 606, BSMT AND RCP 1B VAULT



DETAIL B

DETAIL A

REFERENCE DWGS.

NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 1 PIPING 1" DIA. AND LESS EXEMPT FROM NDE.

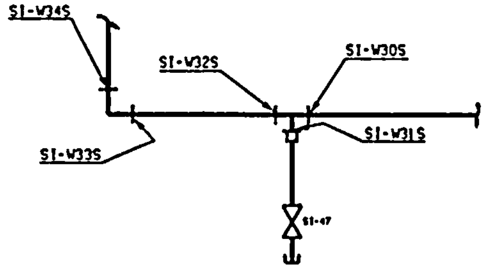
A-1
KAP 01-001639

ISI ISOMETRIC
SI-FROM CNTMT PEN. 29N TO ACMTRS AND COLD LEG LOOPS

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISI-936 | B



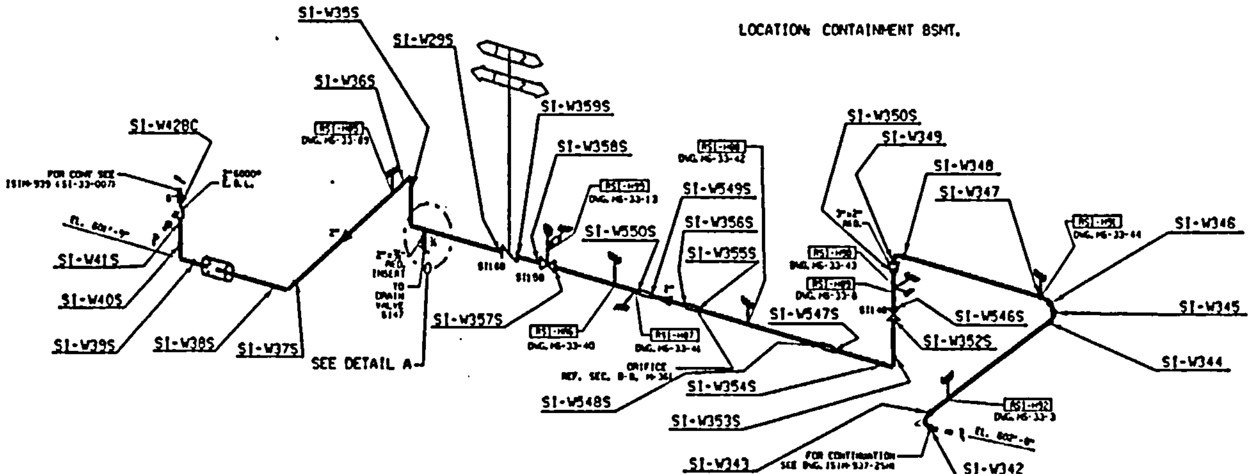
DETAIL A

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
2	160/0.344	A 376 TP304	NPS-21	160/0.344	A 312 TP304
3	160/0.438	A 376 TP304	NPS-20	160/0.438	A 376 TP316

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN)	NUTS
SI-148	NONE	NONE
SI-158	12 / 0.750	12
SI-168	NONE	NONE

N

LOCATION: CONTAINMENT BSMT.



REFERENCE DWGS.

A-1
DCR 01-001639

NOTES:

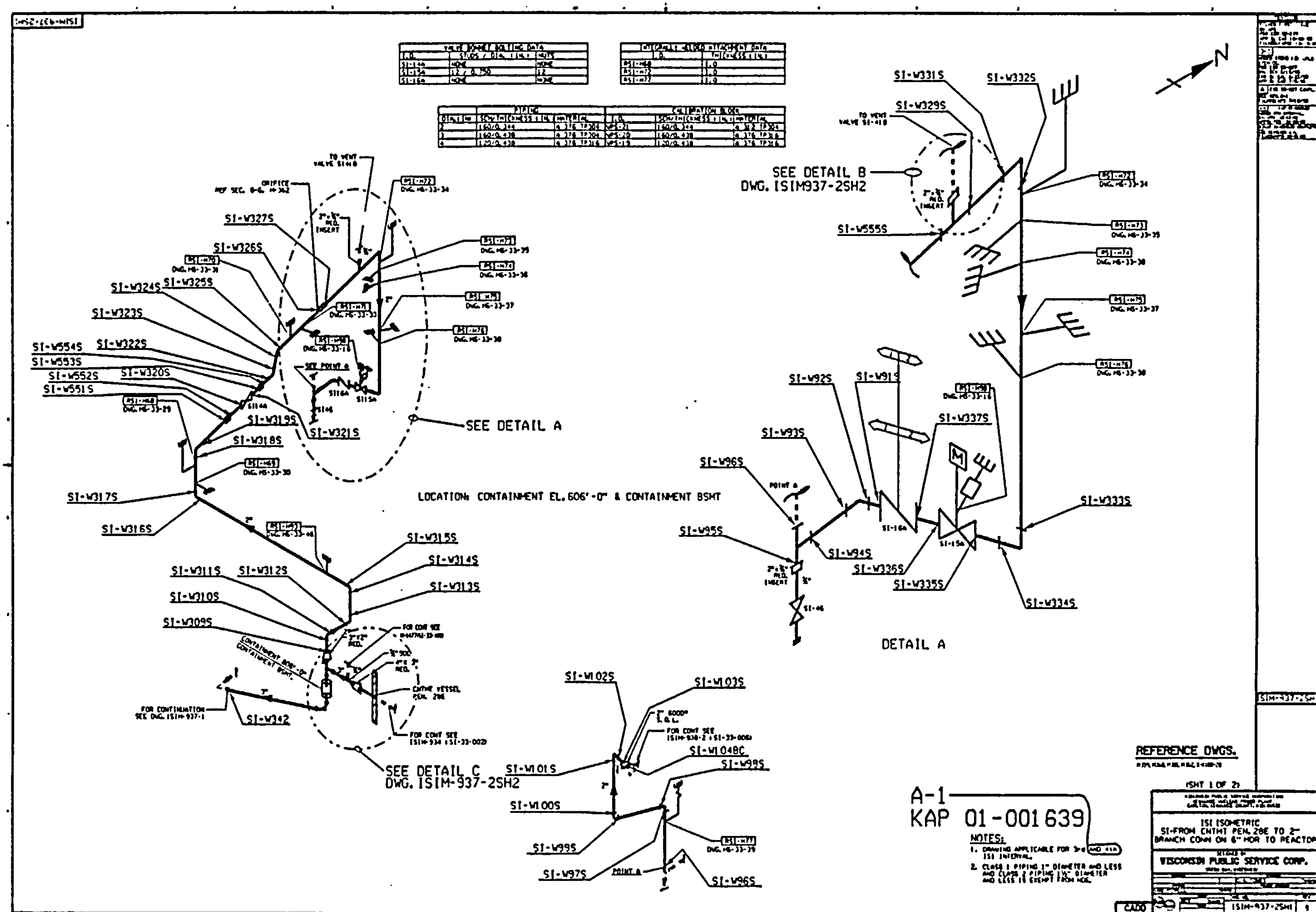
1. DRAWING APPLICABLE FOR 3rd ISI INTERVAL.
2. CLASS 1 PIPING 1" DIAMETER AND LESS AND CLASS 2 PIPING 1½" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
SI-FROM CNTMT PEN. 28E TO 2" BRANCH CONN ON 6" HDR TO REACTOR

WISCONSIN PUBLIC SERVICE CORP.

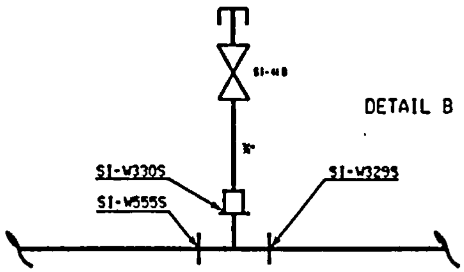
CADD

ISIM-937-1 | 8

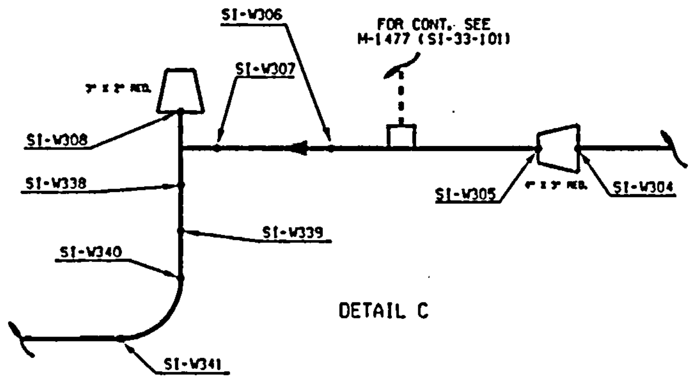


ISIM-937-2SH1
SI-W331S
SI-W332S
SI-W329S
SEE DETAIL B
DWG. ISIM937-2SH2
SI-W555S
SI-W327S
SI-W326S
SI-W324S
SI-W325S
SI-W323S
SI-W554S
SI-W322S
SI-W553S
SI-W552S
SI-W320S
SI-W551S
SI-W319S
SI-W321S
SEE DETAIL A
SI-W318S
SI-W317S
SI-W316S
LOCATION: CONTAINMENT EL. 606'-0" & CONTAINMENT BSMT
SI-W92S
SI-W91S
SI-W337S
SI-W93S
SI-W96S
SI-W333S
SI-W95S
SI-W94S
SI-W336S
SI-W335S
SI-W334S
DETAIL A
SI-W315S
SI-W314S
SI-W313S
SI-W311S
SI-W312S
SI-W310S
SI-W309S
SI-W342
SEE DETAIL C
DWG. ISIM-937-2SH2
SI-W102S
SI-W103S
SI-W104BC
SI-W101S
SI-W99S
SI-W100S
SI-W99S
SI-W97S
SI-W96S
REFERENCE DWGS.
(SHT 1 OF 2)
A-1
KAP 01-001639
NOTES:
ISI ISOMETRIC
SI-FROM CNTMT PEN. 28E TO 2" BRANCH CONN ON 6" HDR TO REACTOR
WISCONSIN PUBLIC SERVICE CORP.
ISIM-937-2SH1

ISIM-937-2SH2



DETAIL B



DETAIL C

NOTES:
1. DRAWING APPLICABLE FOR 3rd (4th ISI) ISI INTERVAL.

A-1
KAP 01-001639

(SHT 2 OF 2)

ISI ISOMETRIC
SI-FROM CNTMT PEN. 26E TO 2" BRANCH CONN ON 6" HDR TO REACTOR

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-937-2SH2

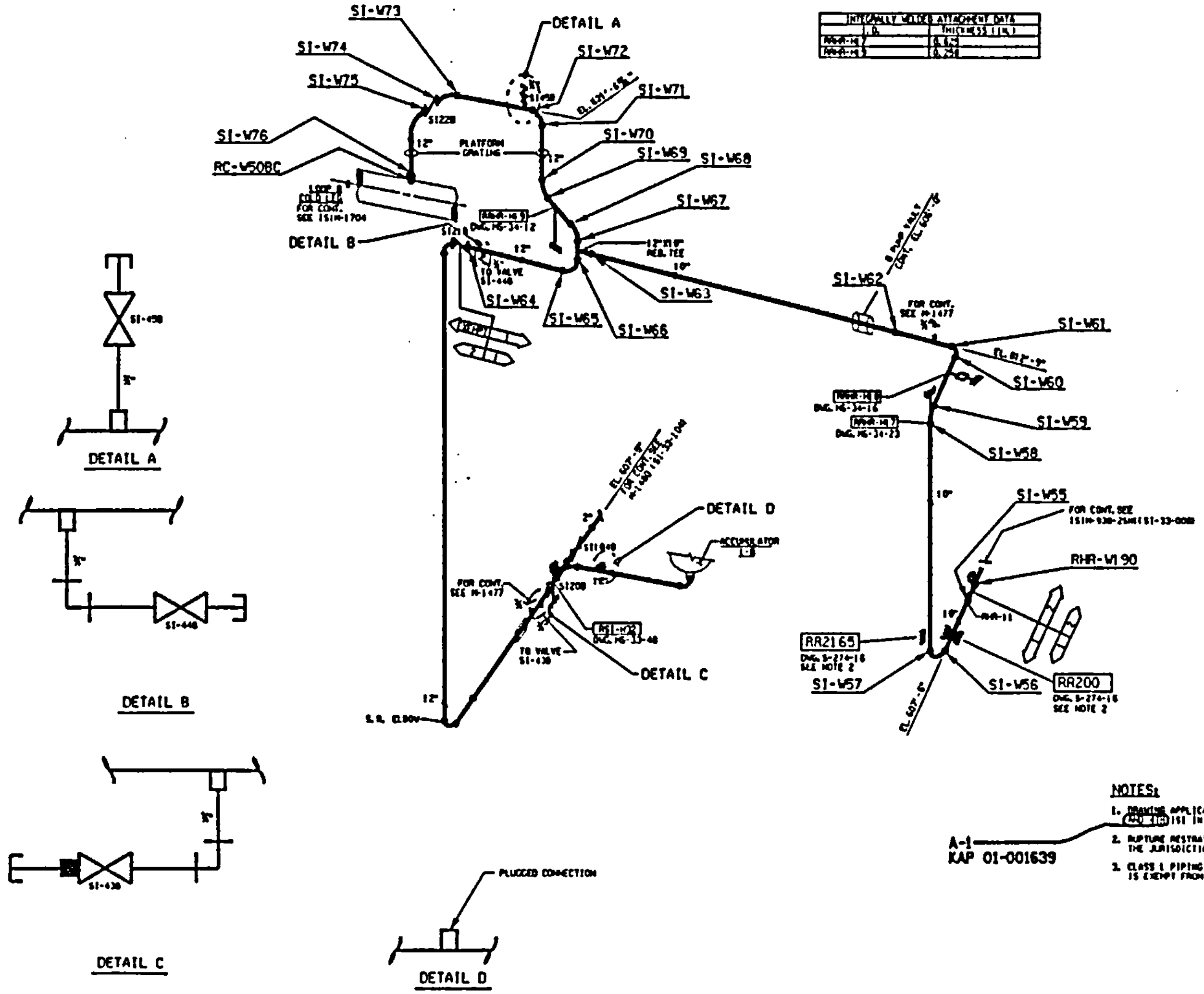
1-RCG-W9SI

PIPING			CALIBRATION BLOCK		
DIA.(IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
12	160/1.312	A 376 TP316	WPS-7	160/1.312	A 376 TP316
10	140/1.00	A 376 TP316	WPS-10	140/1.00	A 312 TP304

VALVE BONNET BOLTING DATA				
I.D.	MANUFACTURER	TYPE	STUDS / DIA. (IN.)	NUTS
RHR-11	DARLING VALVE CO.	GATE	16 / 1.875	32
SI-21B	DARLING VALVE CO.	CHECK	16 / 1.875	16
SI-22B	DARLING VALVE CO.	CHECK	16 / 1.875	16

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H17	0.625
RHR-H13	0.250

LOCATION: CONTAINMENT, EL. 606'-0"
"B" PMP VAULT



N

REFERENCE DWGS.

A-1
KAP 01-001639

NOTES:

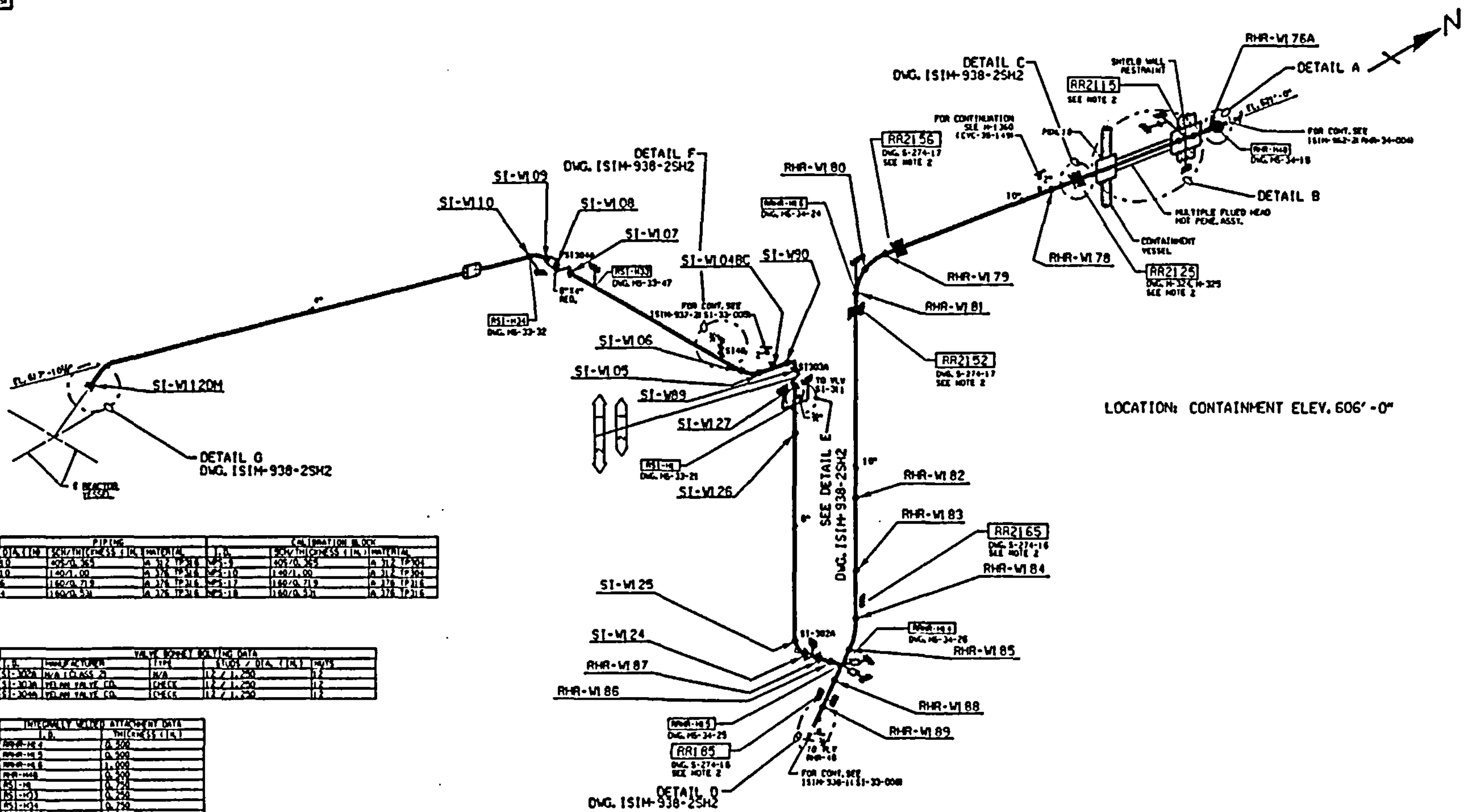
1. DRAWING APPLICABLE FOR 3RD ISI INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
3. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
SI-FROM CNTMT PENJO TO REACTOR
FROM ACMTR 1B TO LOOP B COLD LEG

WISCONSIN PUBLIC SERVICE CORP.

CADD

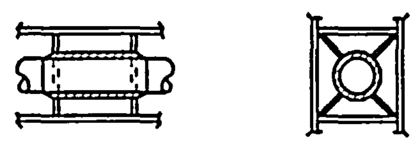
ISM-938-1 | 0



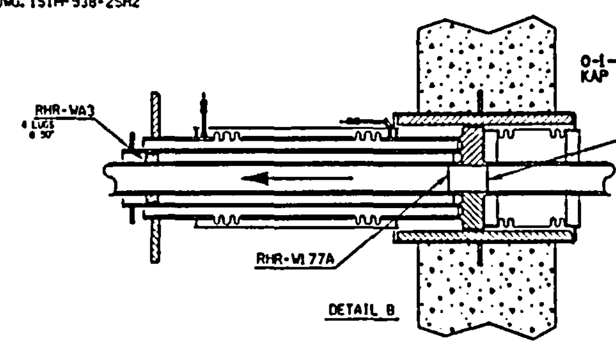
PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
10	40S/0.365	A 312 TP316	WPS-9	40S/0.365	A 312 TP304
10	140/1.00	A 376 TP316	WPS-10	140/1.00	A 312 TP304
6	160/0.719	A 376 TP316	WPS-17	160/0.719	A 376 TP316
4	160/0.531	A 376 TP316	WPS-18	160/0.531	A 376 TP316

VALVE BONNET BOLTING DATA				
I.D.	MANUFACTURER	TYPE	STUDS / DIA. (IN)	NUTS
SI-302A	N/A (CLASS 2)	N/A	12 / 1.250	12
SI-303A	VELAN VALVE CO.	CHECK	12 / 1.250	12
SI-304A	VELAN VALVE CO.	CHECK	12 / 1.250	12

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
RHR-H14	0.500
RHR-H15	0.500
RHR-H16	1.000
RHR-H40	0.500
RSI-H1	0.750
RSI-H33	0.250
RSI-H34	0.750
RR2125 RHR-WA125	0.500
RHR-WA3	1.000



DETAIL A



DETAIL B

O-1
KAP 01-001639

REFERENCE DWGS.

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 NDE.

(SHT 1 OF 2)

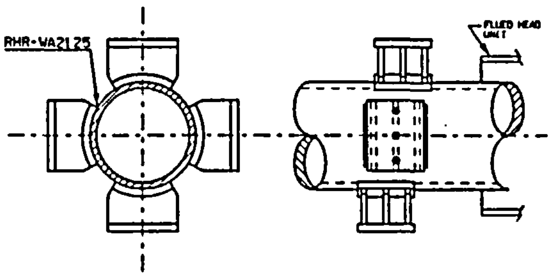
ISI ISOMETRIC
SI-FROM CNTMT PENJO TO REACTOR FROM ACMTR IB TO LOOP B COLD LEG

WISCONSIN PUBLIC SERVICE CORP.

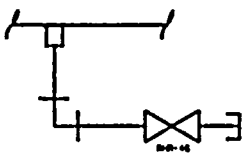
CADD

ISM-938-2SH

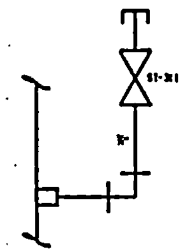
ISW-938-2SH2



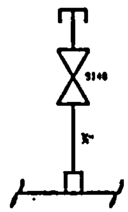
DETAIL C



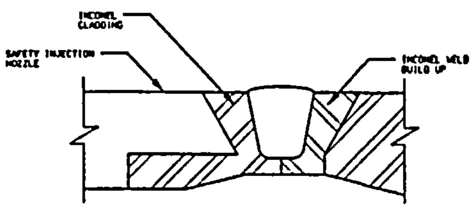
DETAIL D



DETAIL E



DETAIL F



DETAIL G

NOTES:

1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

0-1
KAP 01-001639

ISW-938-2SH2

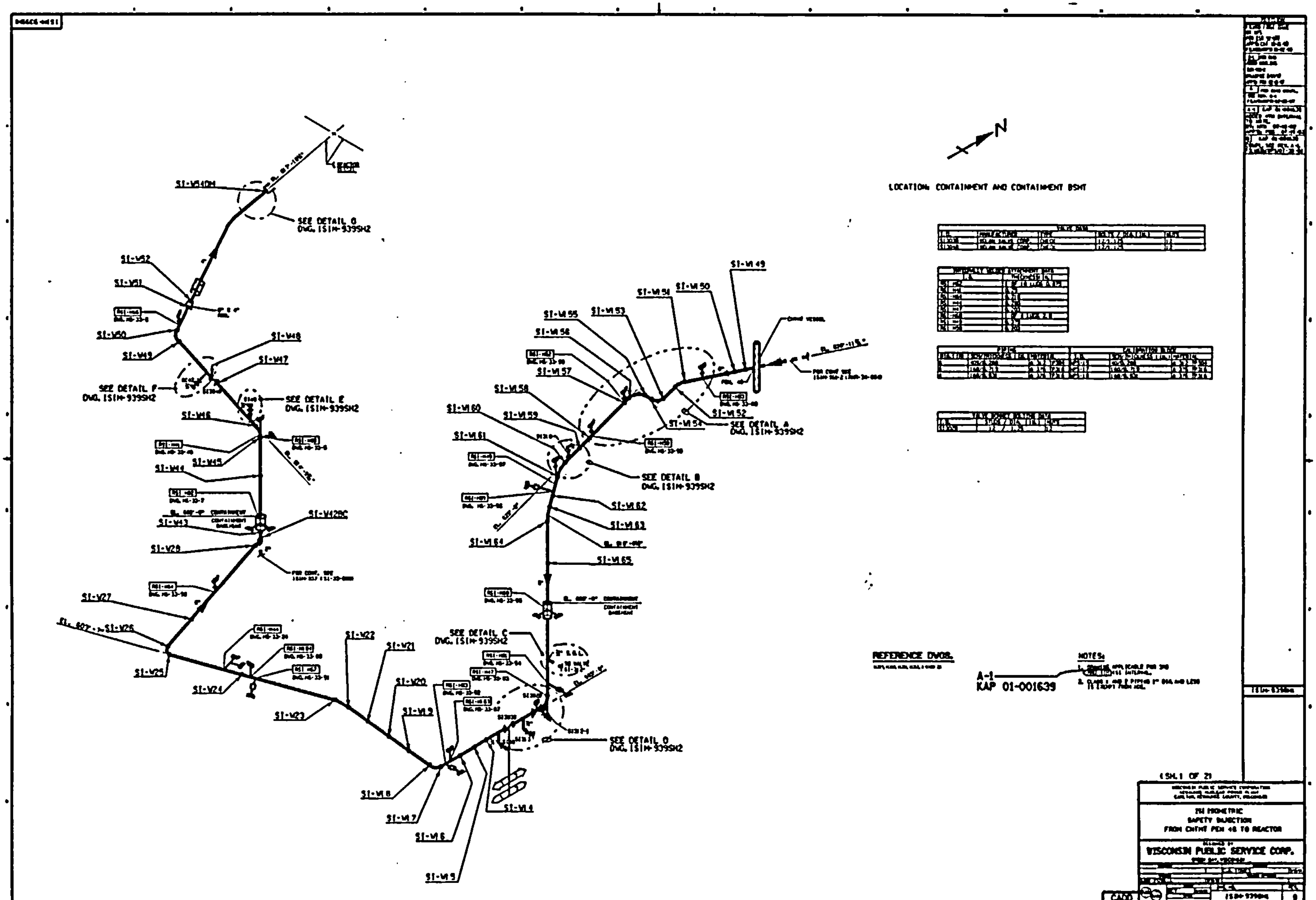
(SHT 2 OF 2)

ISI DETAILS
SI-FROM CNTMT PEN10 TO REACTOR
FROM ACMTR 1B TO LOOP B COLD LEG

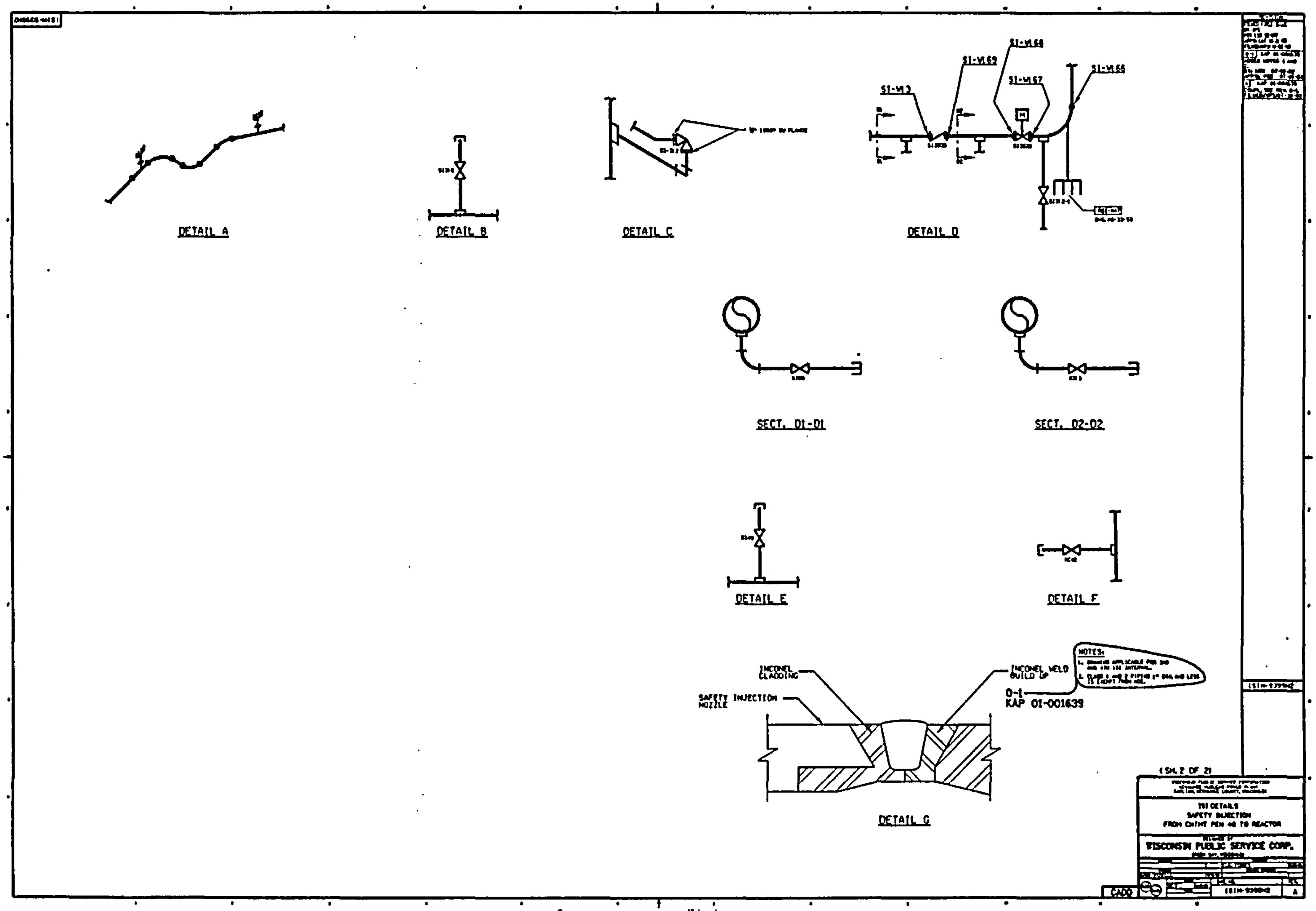
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISW-938-2SH2 A



SI-V540M
SEE DETAIL G DWG. ISIH-939SH2
SI-V52
SI-V51
SI-V50
SI-V49
SI-V48
SI-V47
SEE DETAIL F DWG. ISIH-939SH2
SEE DETAIL E DWG. ISIH-939SH2
SI-V46
SI-V45
SI-V44
SI-V43
SI-V420C
SI-V28
SI-V27
SI-V26
SI-V25
SI-V24
SI-V23
SI-V22
SI-V21
SI-V20
SI-V19
SI-V18
SI-V17
SI-V16
SI-V15
SI-V14
SEE DETAIL C DWG. ISIH-939SH2
SEE DETAIL D DWG. ISIH-939SH2
SI-V149
SI-V150
SI-V151
SI-V152
SI-V153
SI-V154
SI-V155
SI-V156
SI-V157
SI-V158
SI-V159
SI-V160
SI-V161
SI-V162
SI-V163
SI-V164
SI-V165
SEE DETAIL A DWG. ISIH-939SH2
SEE DETAIL B DWG. ISIH-939SH2
N
LOCATION: CONTAINMENT AND CONTAINMENT BSMT
REFERENCE DWGS.
NOTES:
A-1 KAP 01-001639
(SH.1 OF 2)
ISI ISOMETRIC SAFETY INJECTION FROM CNTMT PEN 46 TO REACTOR
WISCONSIN PUBLIC SERVICE CORP.
CADD

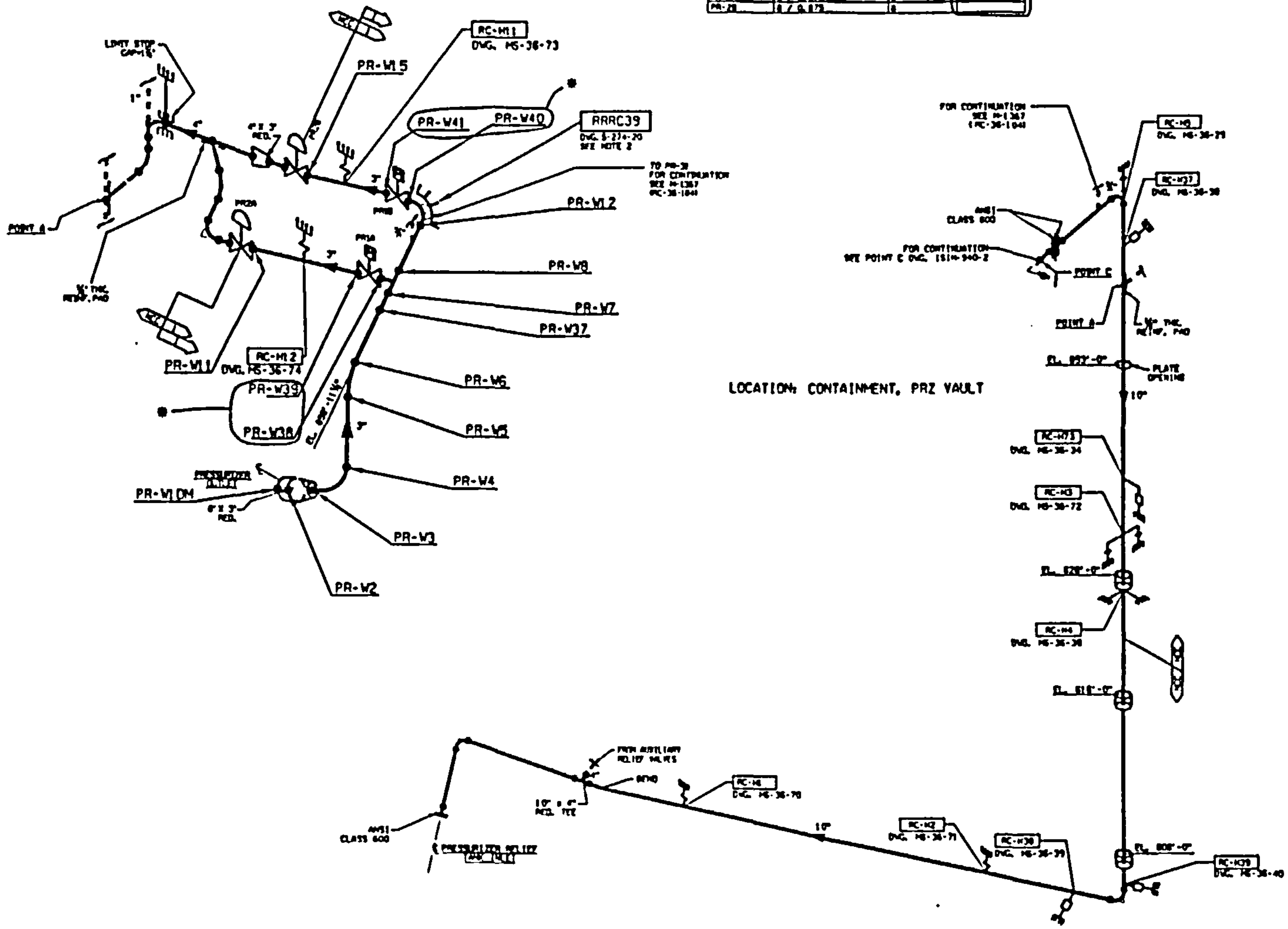


S1-V13
S1-V169
S1-V168
S1-V167
S1-V166
DETAIL A
DETAIL B
DETAIL C
DETAIL D
SECT. D1-D1
SECT. D2-D2
DETAIL E
DETAIL F
INCONEL CLADDING
SAFETY INJECTION NOZZLE
INCONEL WELD BUILD UP
O-1
KAP 01-001639
NOTES:
DETAIL G
(SH. 2 OF 2)
ISI DETAILS
SAFETY INJECTION
FROM CNTMT PEN 46 TO REACTOR
WISCONSIN PUBLIC SERVICE CORP.
CADD
A

PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6 X 3 RED.	160/0.719	A 304 TP316	PPS-17	160/0.719	A 376 TP316
3	160/0.438	A 376 TP304	PPS-20	160/0.438	A 376 TP316

VALVE BONNET BOLTING DATA			
I.D.	STUDS / DIA (IN)	NUTS	WASHERS
PR-1A	8 / 1.25	8	8
PR-1B	8 / 1.25	8	8
PR-2A	8 / 0.875	8	
PR-2B	8 / 0.875	8	

A-1 *
KAP 01-001639



LOCATION: CONTAINMENT, PRZ VAULT

REFERENCE DWGS.

NOTES:

1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
3. CLASS 1 PIPING 1" DIA. & LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
REACTOR COOLANT- FROM PRESSURIZER TO PRESSURIZER RELIEF TANK

WISCONSIN PUBLIC SERVICE CORP.

ISIM-940-1 | 0

CADD

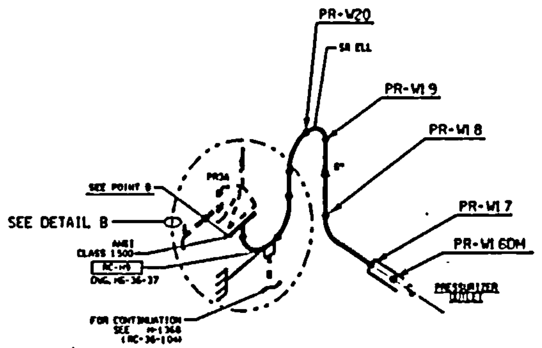
Z-OHS-WISI

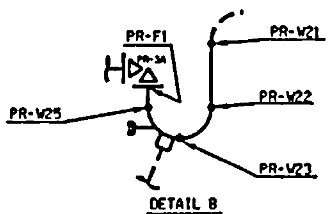
PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6	160/0.719	A 376 TP316	WPS-17	160/0.719	A 376 TP316

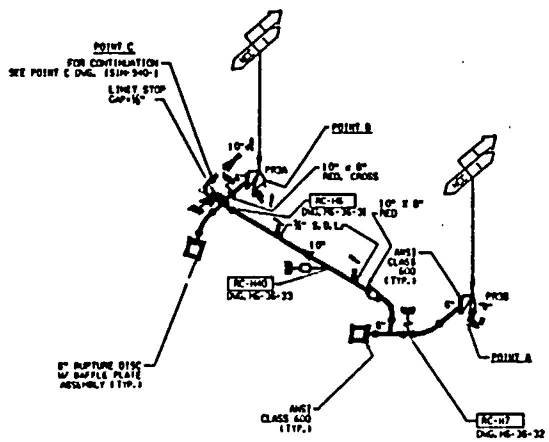
INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
RC-H8	0.375
RC-H9	0.375

VALVE DATA				
I.D.	BOLTS / DIA (IN)	NUTS	MANUFACTURER	TYPE
PR-3A	8 /	8	CROSBY	RELIEF
PR-3B	8 /	8	CROSBY	RELIEF

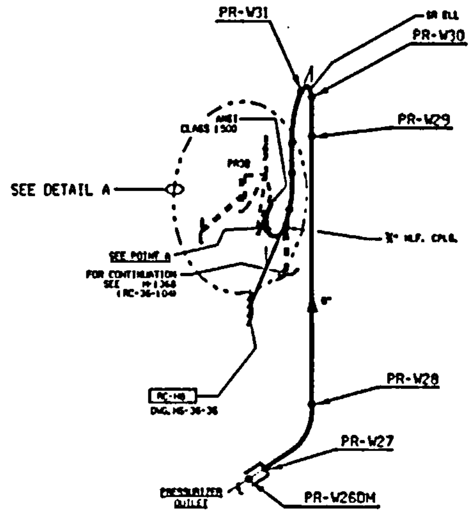
FLANGE BOLTING DATA		
I.D.	STUDS / DIA (IN)	NUTS
PR-F1	12 / 1.375	24
PR-F2	12 / 1.375	24

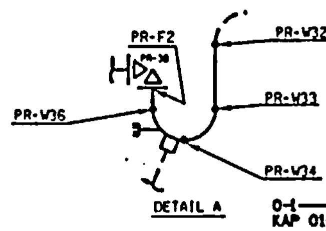






LOCATION: CONTAINMENT, PRZ VAULT





REFERENCE DWGS.

NOTES:

1. DRAWING APPLICABLE FOR 3rd ISI INTERVAL.
2. CLASS 1 PIPING 1" DIA. & LESS IS EXEMPT FROM NDE.

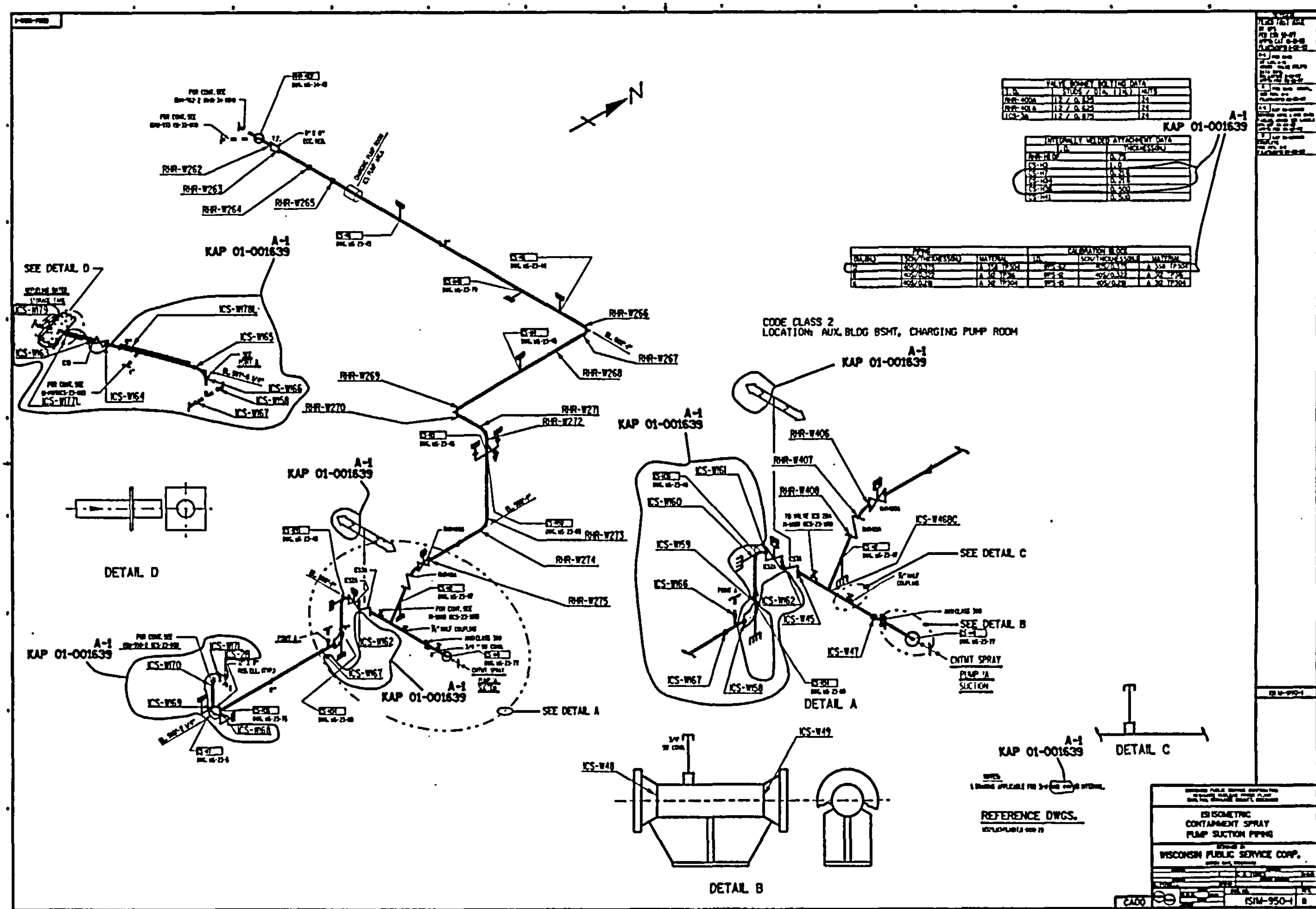
0-1
KAP 01-001639

ISI ISOMETRIC
REACTOR COOLANT- FROM PRESSURIZER TO PRESSURIZER RELIEF TANK

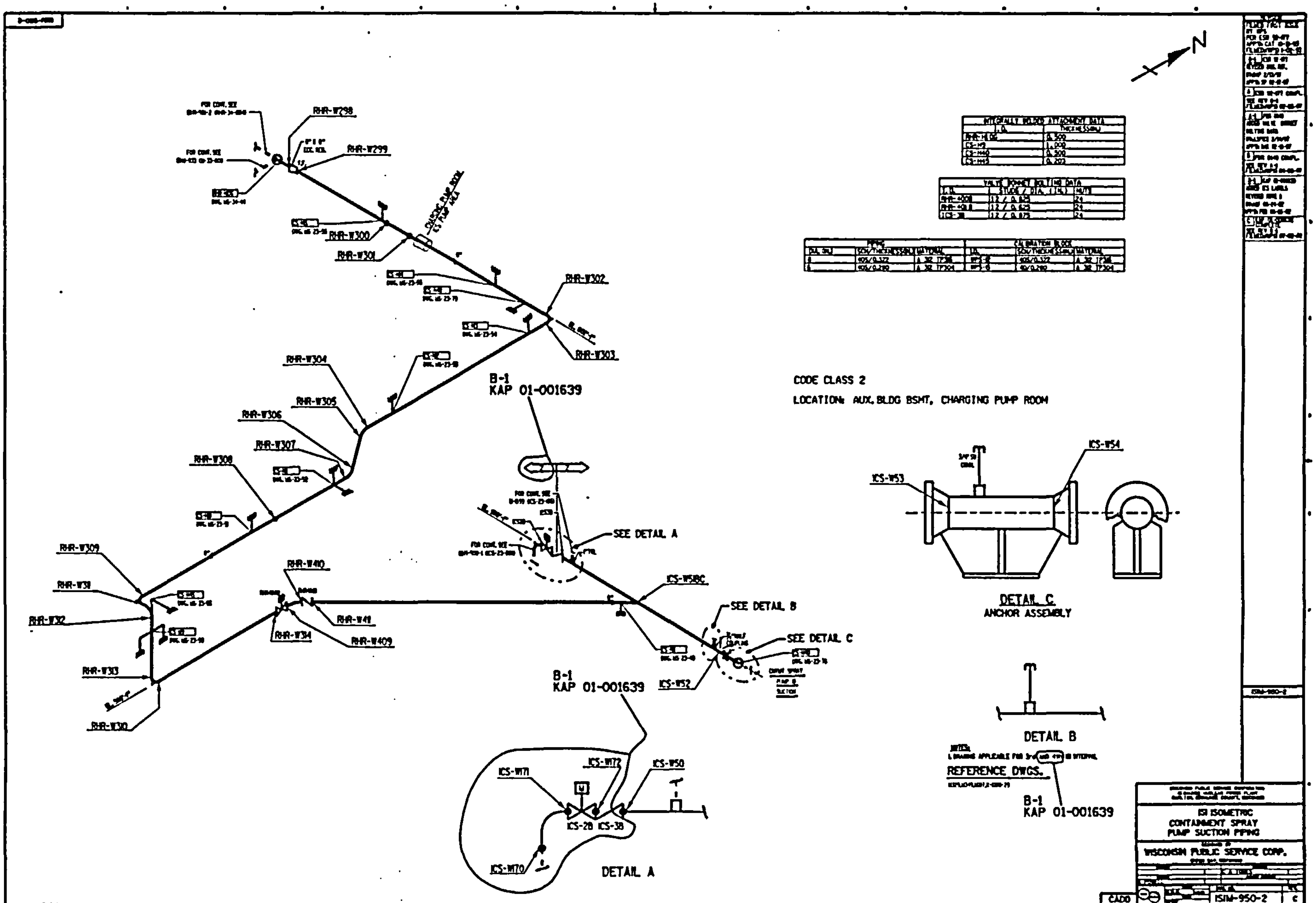
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-940-2 | A



CODE CLASS 2
LOCATION: AUX. BLDG BSMT, CHARGING PUMP ROOM
A-1
KAP 01-001639
SEE DETAIL D
ICS-W79
ICS-W78L
ICS-W65
ICS-W66
ICS-W58
ICS-W57
ICS-W64
ICS-W77L
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
DETAIL D
ICS-W71
ICS-W70
ICS-W69
ICS-W68
ICS-W62
ICS-W67
SEE DETAIL A
ICS-W61
ICS-W60
ICS-W59
ICS-W66
ICS-W67
ICS-W58
ICS-W62
ICS-W45
DETAIL A
RHR-W406
RHR-W407
RHR-W408
ICS-W468C
SEE DETAIL C
SEE DETAIL B
ICS-W47
CNTMT SPRAY
PUMP 1A
SUCTION
ICS-W48
ICS-W49
DETAIL B
DETAIL C
REFERENCE DWGS.
ISI ISOMETRIC
CONTAINMENT SPRAY
PUMP SUCTION PIPING
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISIM-950-1



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS(IN)
RHR-H106	0.500
CS-H9	1.000
CS-H40	0.500
CS-H45	0.203

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN)	NUTS
RHR-400B	12 / 0.625	24
RHR-401B	12 / 0.625	24
ICS-3B	12 / 0.875	24

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS(IN)	MATERIAL	I.D.	SCH/THICKNESS(IN)	MATERIAL
8	40S/0.322	A 312 TP316	WPS-8	40S/0.322	A 312 TP316
6	40S/0.280	A 312 TP304	WPS-6	40/0.280	A 312 TP304

CODE CLASS 2

LOCATION: AUX. BLDG BSMT, CHARGING PUMP ROOM

NOTES:

REFERENCE DWGS.

B-1
KAP 01-001639

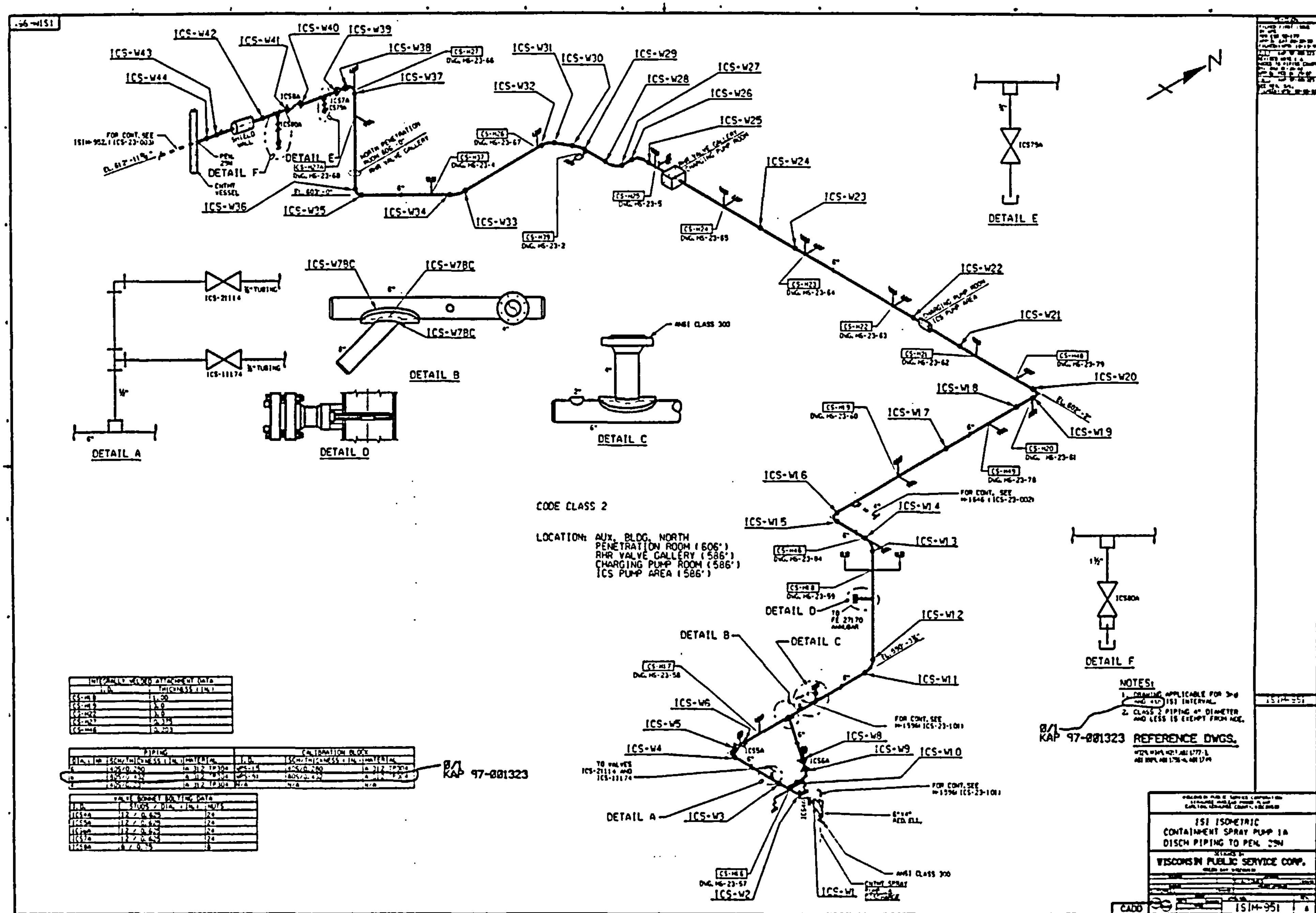
ISI ISOMETRIC
CONTAINMENT SPRAY
PUMP SUCTION PIPING

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-950-2

C



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
ICS-H18	1.00
ICS-H19	1.0
ICS-H22	1.0
ICS-H27	0.375
ICS-H46	0.203

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6	40S/0.280	A 312 TP304	WCS-15	40S/0.280	A 312 TP304
10	40S/0.432	A 312 TP304	WCS-51	40S/0.432	A 312 TP304
4	40S/[illegible]	A 312 TP304	N/A	N/A	N/A

Ø/1
KAP 97-001323

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN)	NUTS
ICS4A	12 / 0.625	24
ICS5A	12 / 0.625	24
ICS6A	12 / 0.625	24
ICS7A	12 / 0.625	24
ICS8A	6 / 0.75	8

NOTES:

1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

Ø/1
KAP 97-001323

REFERENCE DWGS.

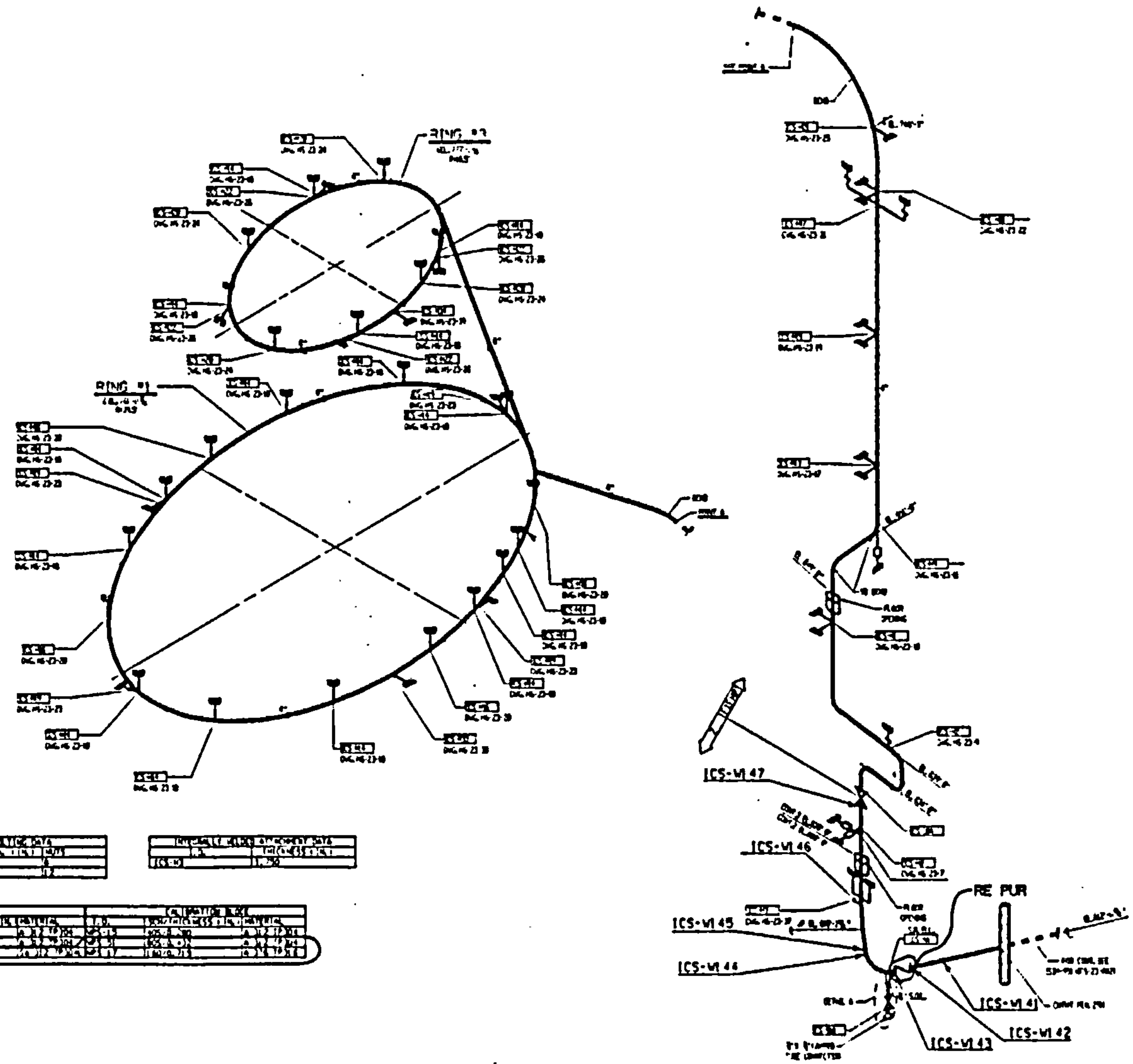
ISI ISOMETRIC
CONTAINMENT SPRAY PUMP 1A
DISCH PIPING TO PEN. 29N

WISCONSIN PUBLIC SERVICE CORP.

CADD

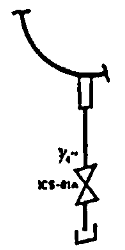
ISIM-951

ISM-952



CODE CLASS 2

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



DETAIL A

VALVE BODY BOLTING DATA		
I.D.	SIZE / DIA (IN)	NUTS
ICS-81	[illegible]	[illegible]
ICS-81A	[illegible]	[illegible]

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
ICS-H	[illegible]

PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

A-1
KAP 81-001639

REFERENCE DWGS.

A-1
KAP 81-001639

NOTES:

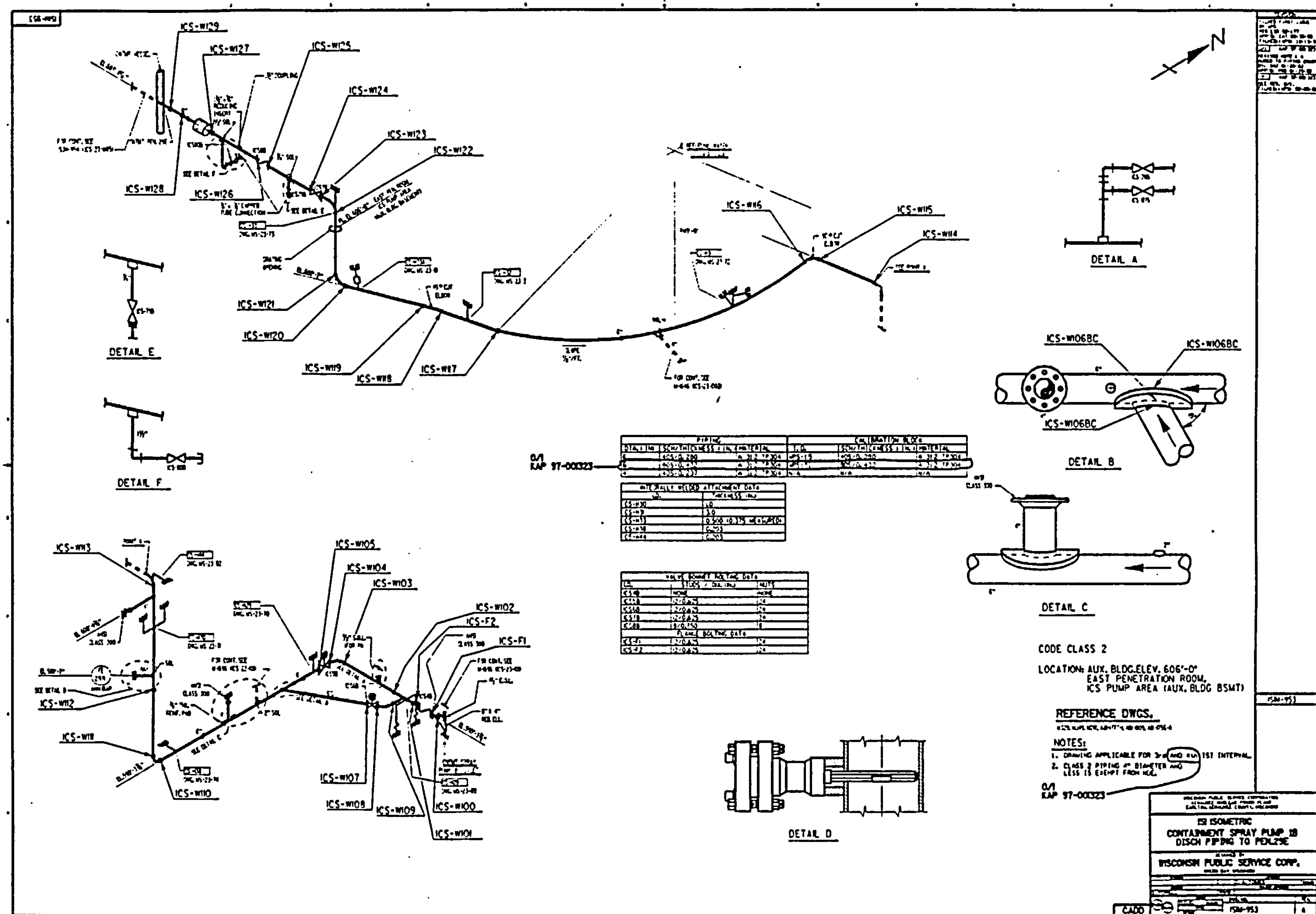
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
CNTMT SPRAY FROM CNTMT
PEN 25N TO RING HEADERS 1 & 3

WISCONSIN PUBLIC SERVICE CORP.

ISM-952

ISM-952 | 8



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6	40S/0.280	A 312 TP304	WPS-19	40S/0.280	A 312 TP304
6	[illegible]	A 312 TP304	[illegible]	80S/0.432	A 312 TP304
4	40S/0.237	A 312 TP304	N/A	N/A	N/A

O/I
KAP 97-001323

INTEGRALLY WELDED ATTACHMENT DATA	
NO.	THICKNESS (IN)
ICS-H30	1.0
ICS-H3[illegible]	3.0
ICS-H31	0.500 (0.375 MEASURED)
ICS-H38	0.203
ICS-H44	0.203

VALVE BONNET BOLTING DATA		
VAL.	STUDS / DIA. (IN)	NUTS
ICS-40	NONE	NONE
ICS-58	12/0.625	24
ICS-60	12/0.625	24
ICS-51	12/0.625	24
ICS-88	8/0.750	8
FLANGE BOLTING DATA		
ICS-F1	12/0.625	24
ICS-F2	12/0.625	24

CODE CLASS 2

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

REFERENCE DWGS.

NOTES:

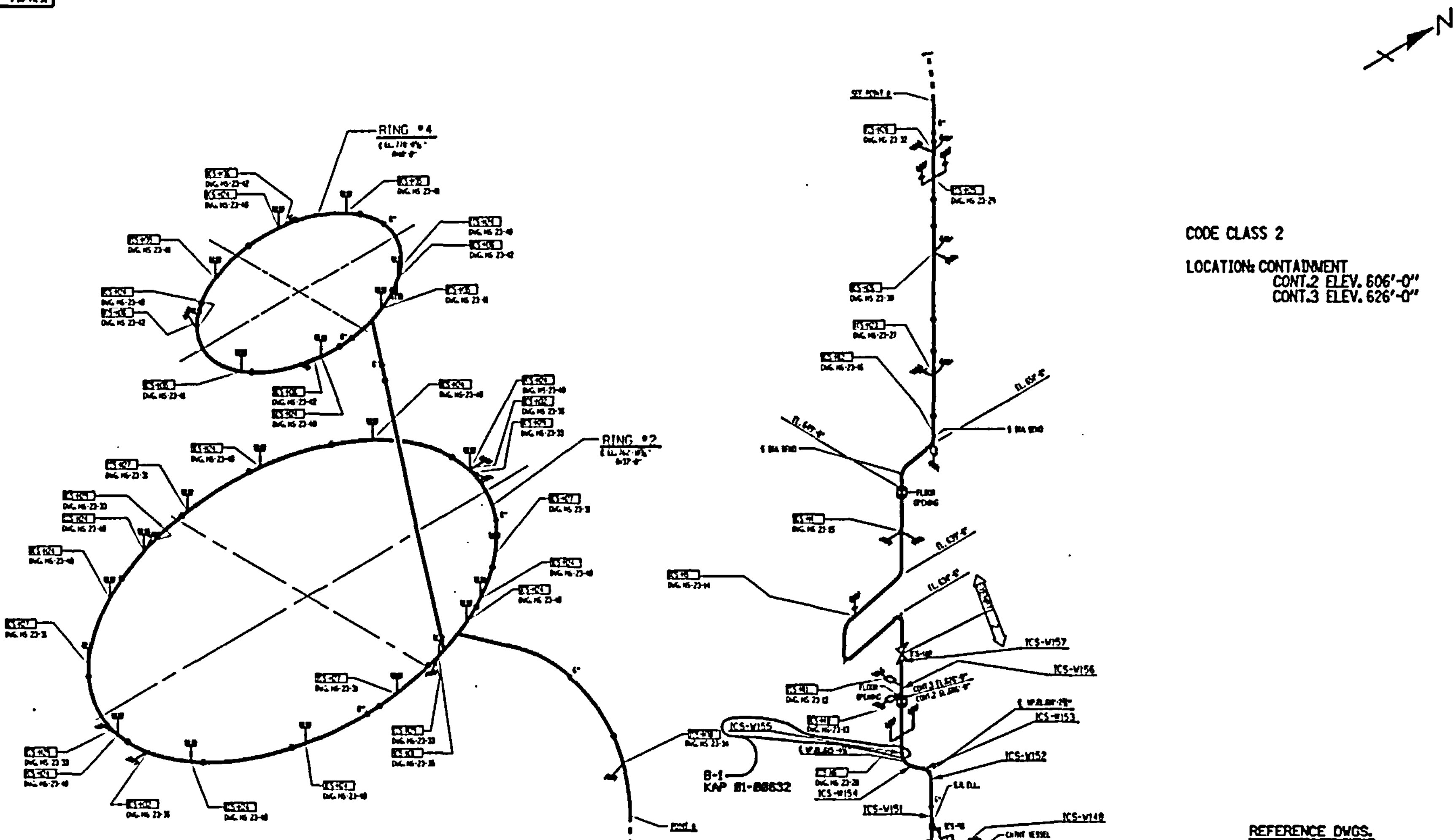
1. DRAWING APPLICABLE FOR 3rd AND 4th 1ST INTERVAL
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

O/I
KAP 97-001323

ISI ISOMETRIC
CONTAINMENT SPRAY PUMP 1B
DISCH PIPING TO PEN.25E

WISCONSIN PUBLIC SERVICE CORP.

ISM-953



CODE CLASS 2

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

REFERENCE DWGS.

NOTES
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM ICE.

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
ICS-H6	1.0

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
ICS-90	8/0.75	8
ICS-108	12/0.75	12

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
6	40S/0.280	A 312 TP304	WPS-15	40S/0.280	A 312 TP304
6	80S/0.432	A 312 TP304	WPS-51	80S/0.432	A 312 TP304
6	160/0.719	SA 312 TP304L	WPS-17	160/0.719	A 376 TP316

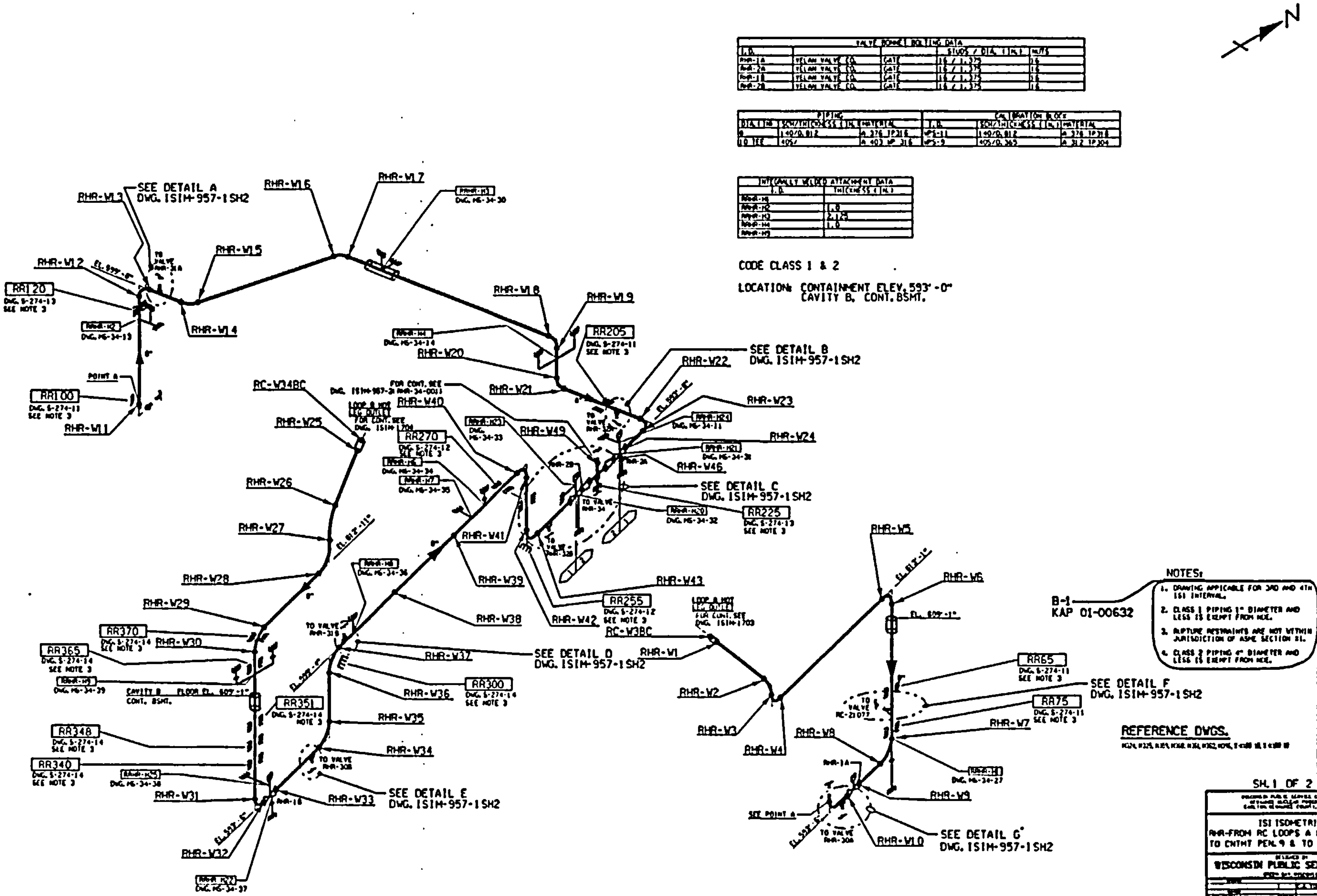
ISI ISOMETRIC
CNTMT SPRAY FROM CNTMT
PEN 29E TO RING HEADERS 2 & 4

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISI-954

C



VALVE BONNET BOLTING DATA				
I.D.			STUDS / DIA. (IN.)	NUTS
RHR-1A	VELAN VALVE CO.	GATE	16 / 1.375	16
RHR-2A	VELAN VALVE CO.	GATE	16 / 1.375	16
RHR-1B	VELAN VALVE CO.	GATE	16 / 1.375	16
RHR-2B	VELAN VALVE CO.	GATE	16 / 1.375	16

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
8	140/0.812	A 376 TP316	WPS-11	140/0.812	A 376 TP316
10 TEE	40S/	A 403 WP 316	WPS-9	40S/0.365	A 312 TP304

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H1	
RHR-H2	1.0
RHR-H3	2.125
RHR-H4	1.0
RHR-H5	

CODE CLASS 1 & 2

LOCATION: CONTAINMENT ELEV. 593'-0"
CAVITY B. CONT. BSMT.

B-1
KAP 01-00632

NOTES:

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

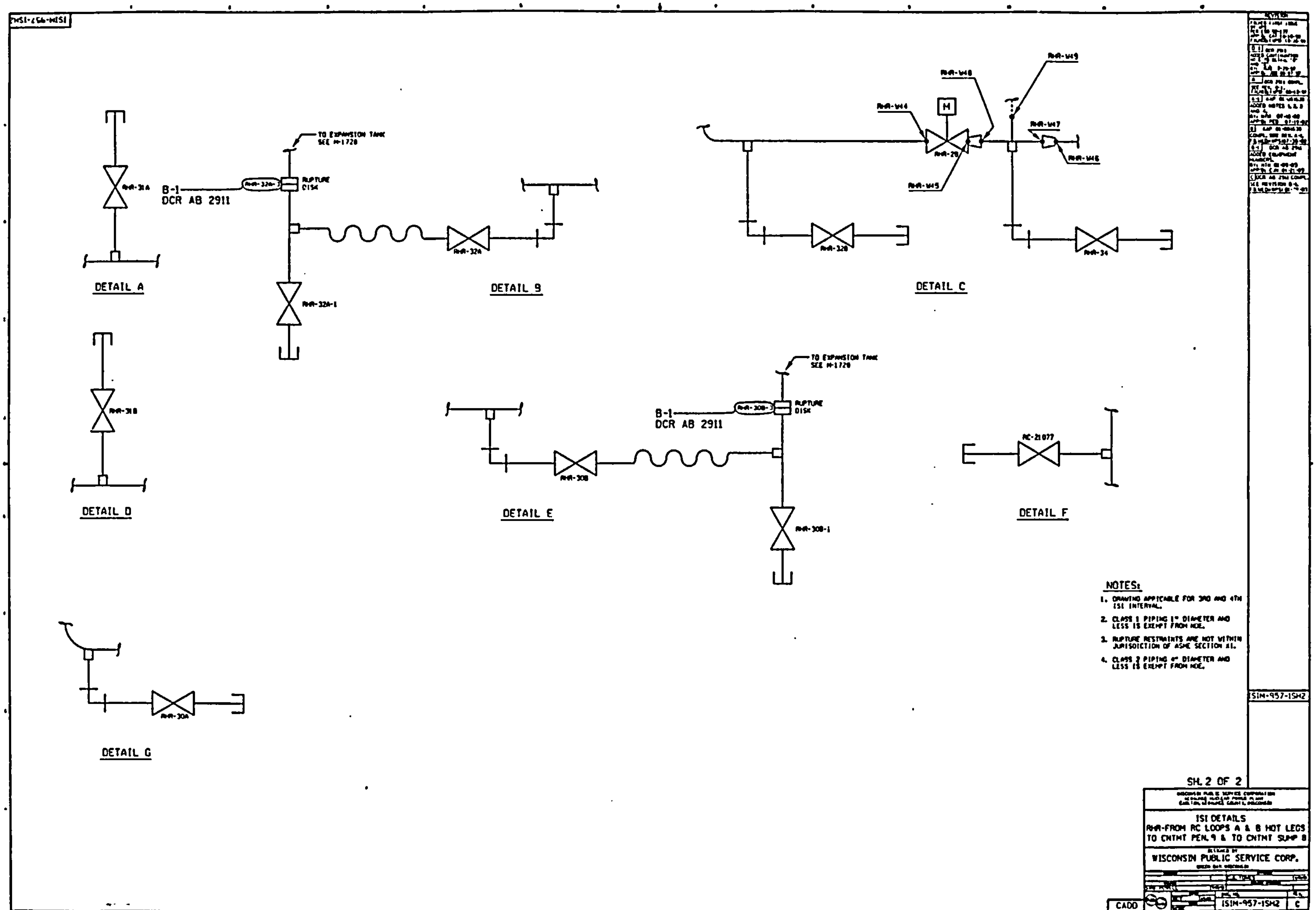
SH. 1 OF 2

ISI ISOMETRIC
RHR-FROM RC LOOPS A & B HOT LEGS
TO CNTMT PEN. 9 & TO CNTMT SUMP B

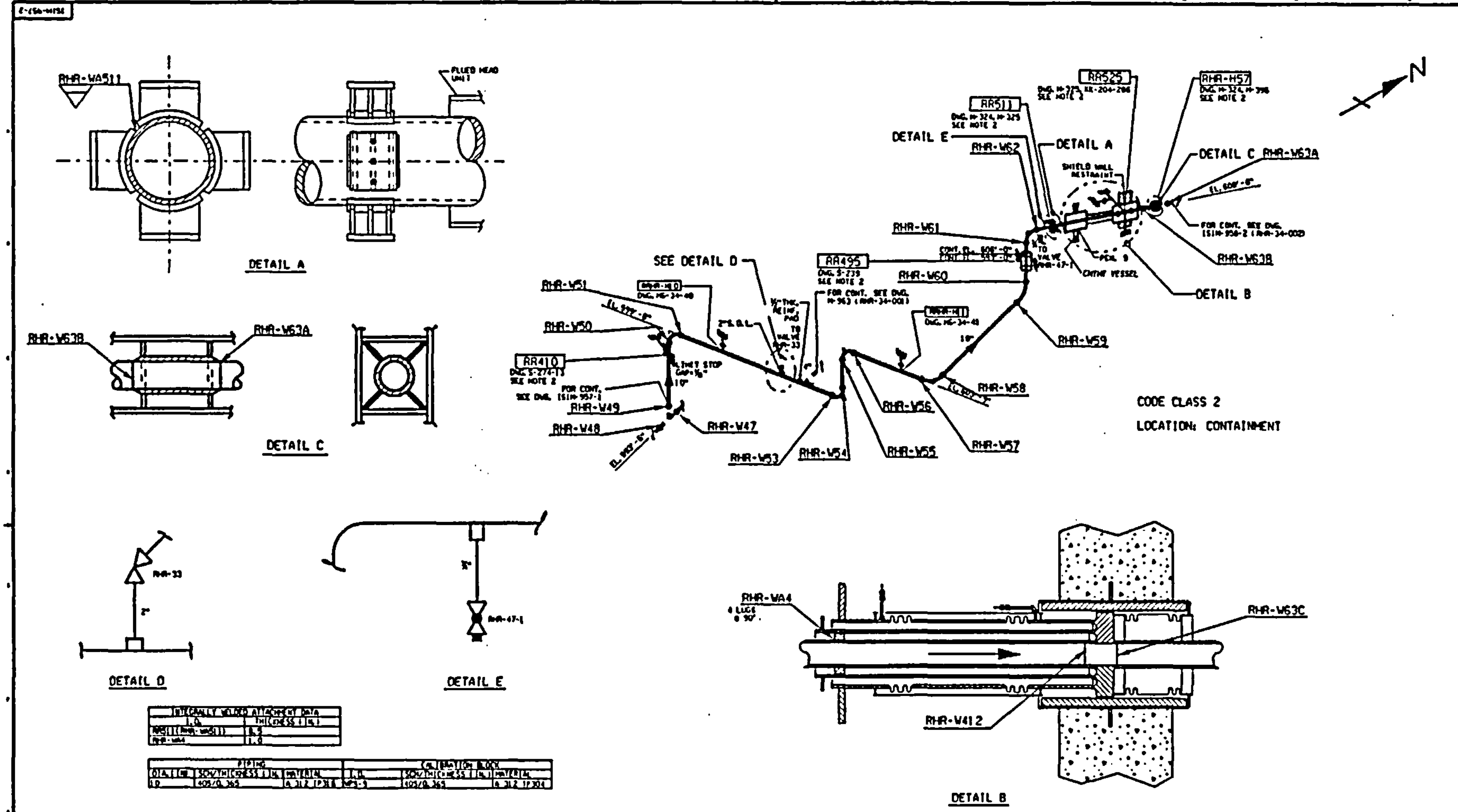
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-957-ISH1 | C



ISI-256-MISI
B-1
DCR AB 2911
RUPTURE DISK
DETAIL A
DETAIL B
DETAIL C
DETAIL D
DETAIL E
DETAIL F
DETAIL G
M
NOTES:
1. DRAWING APPICABLE FOR 3RD AND 4TH ISI INTERVAL.
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.
ISIM-957-ISH2
SH. 2 OF 2
ISI DETAILS
RHR-FROM RC LOOPS A & B HOT LEGS TO CNTMT PEN. 9 & TO CNTMT SUMP B
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISIM-957-ISH2
C



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (in.)
RR511 (RHR-WA511)	1.5
RHR-WA4	1.0

PIPING			CALIBRATION BLOCK		
DIA. (in.)	SCH/THICKNESS (in.)	MATERIAL	I.D.	SCH/THICKNESS (in.)	MATERIAL
10	40S/0.365	A 312 TP316	NPS-9	40S/0.365	A 312 TP304

ISIM-957-2

REFERENCE DWGS.

0-1
KAP 01-001639

NOTES:

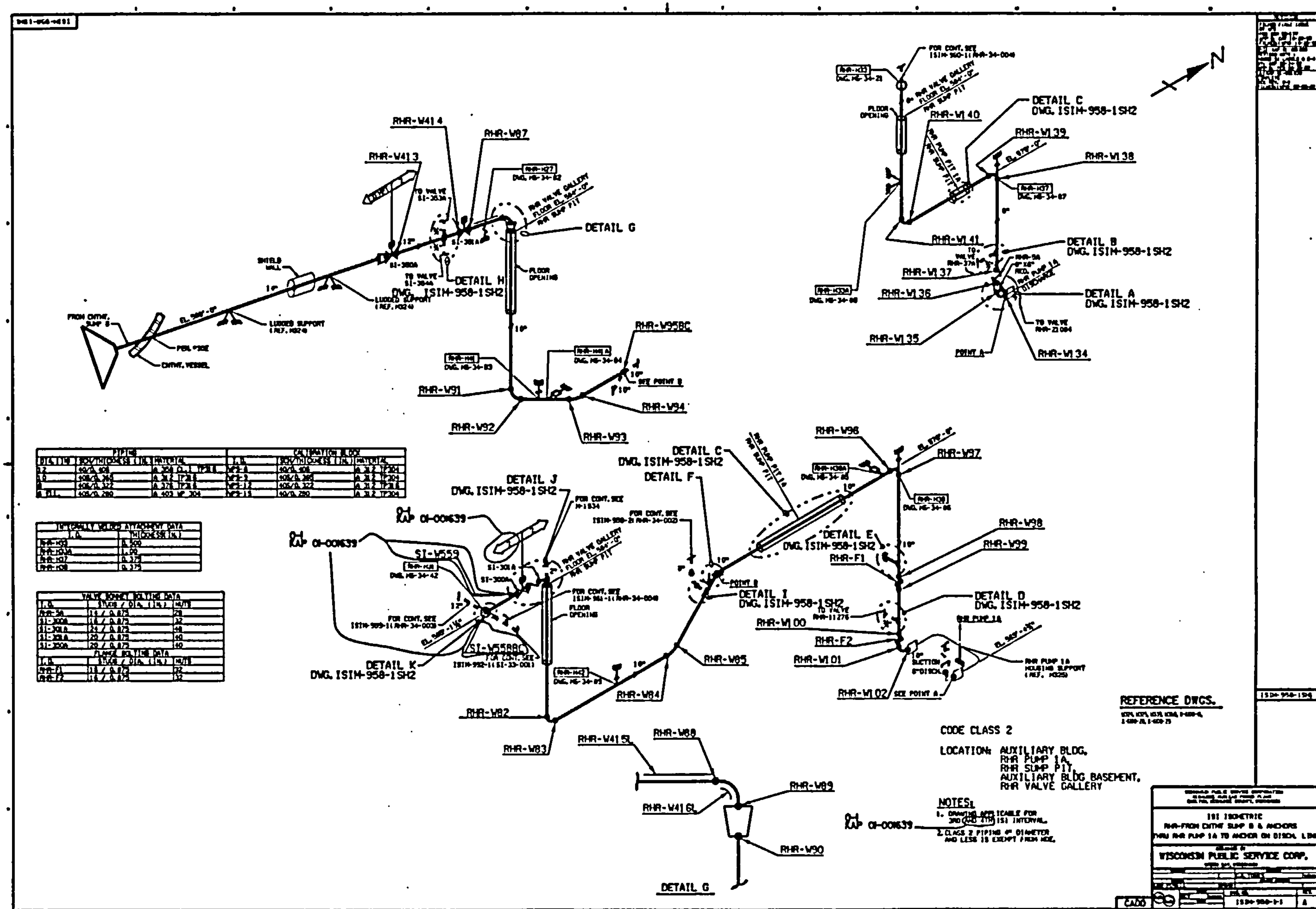
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
3. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
RHR-FROM RC LOOPS A & B HOT LEGS TO CNTMT PEN.9 & TO CNTMT SUMP B

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-957-2 | A



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
12	40/0.406	A 358 CL.1 TP316	NPS-8	40/0.406	A 312 TP304
10	40S/0.365	A 312 TP316	NPS-9	40S/0.365	A 312 TP304
8	40S/0.322	A 376 TP316	NPS-12	40S/0.322	A 312 TP316
8 ELL.	40S/0.280	A 403 WP 304	NPS-15	40/0.280	A 312 TP304

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H33	0.500
RHR-H33A	1.00
RHR-H37	0.375
RHR-H38	0.375

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
RHR-5A	16 / 0.875	28
SI-300A	16 / 0.875	32
SI-301A	24 / 0.875	48
SI-351A	20 / 0.875	40
SI-350A	20 / 0.875	40
FLANGE BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
RHR-F1	16 / 0.875	32
RHR-F2	16 / 0.875	32

CODE CLASS 2

LOCATION: AUXILIARY BLDG,
RHR PUMP 1A,
RHR SUMP PIT,
AUXILIARY BLDG BASEMENT,
RHR VALVE GALLERY

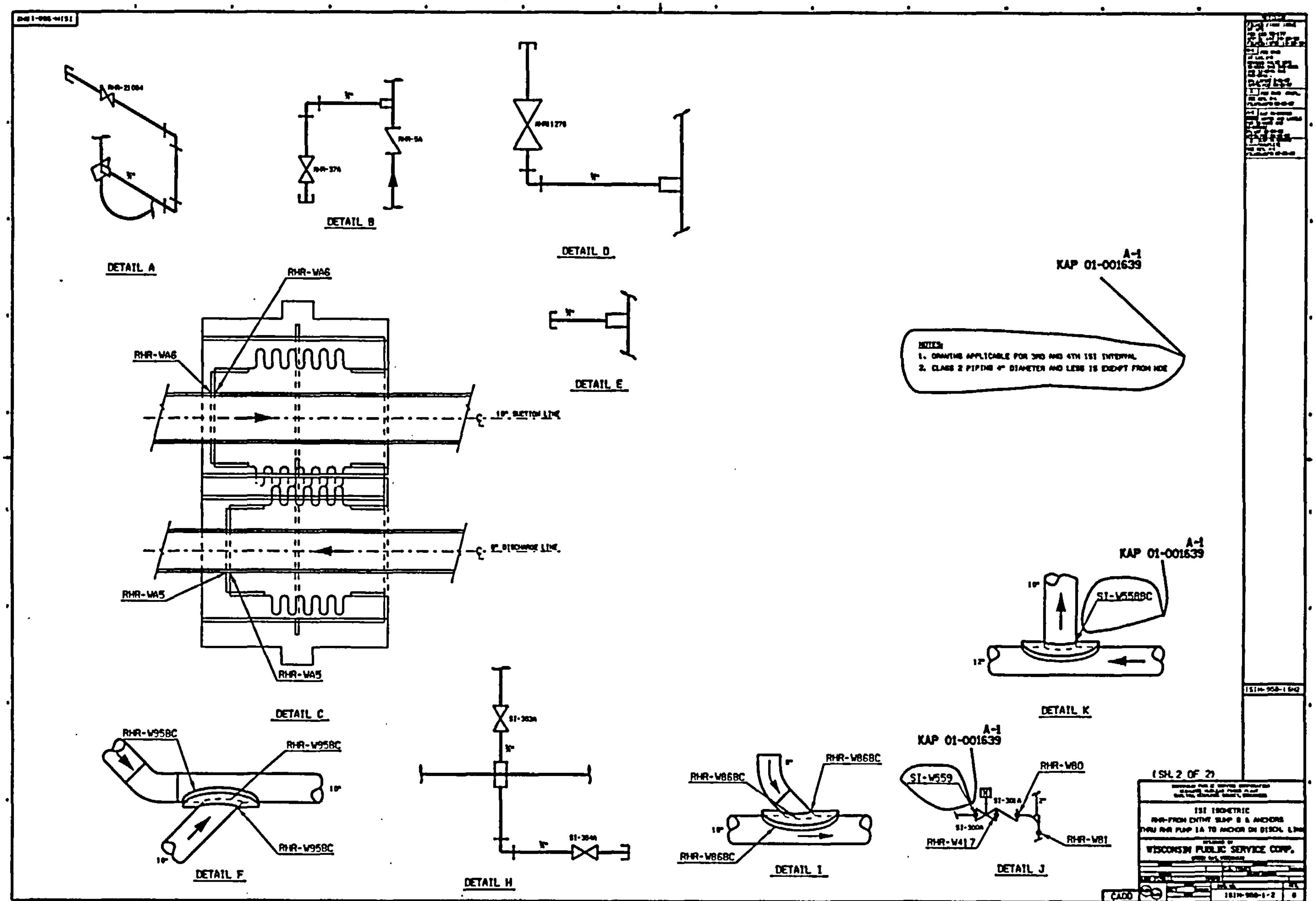
REFERENCE DWGS.

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

CI-001639

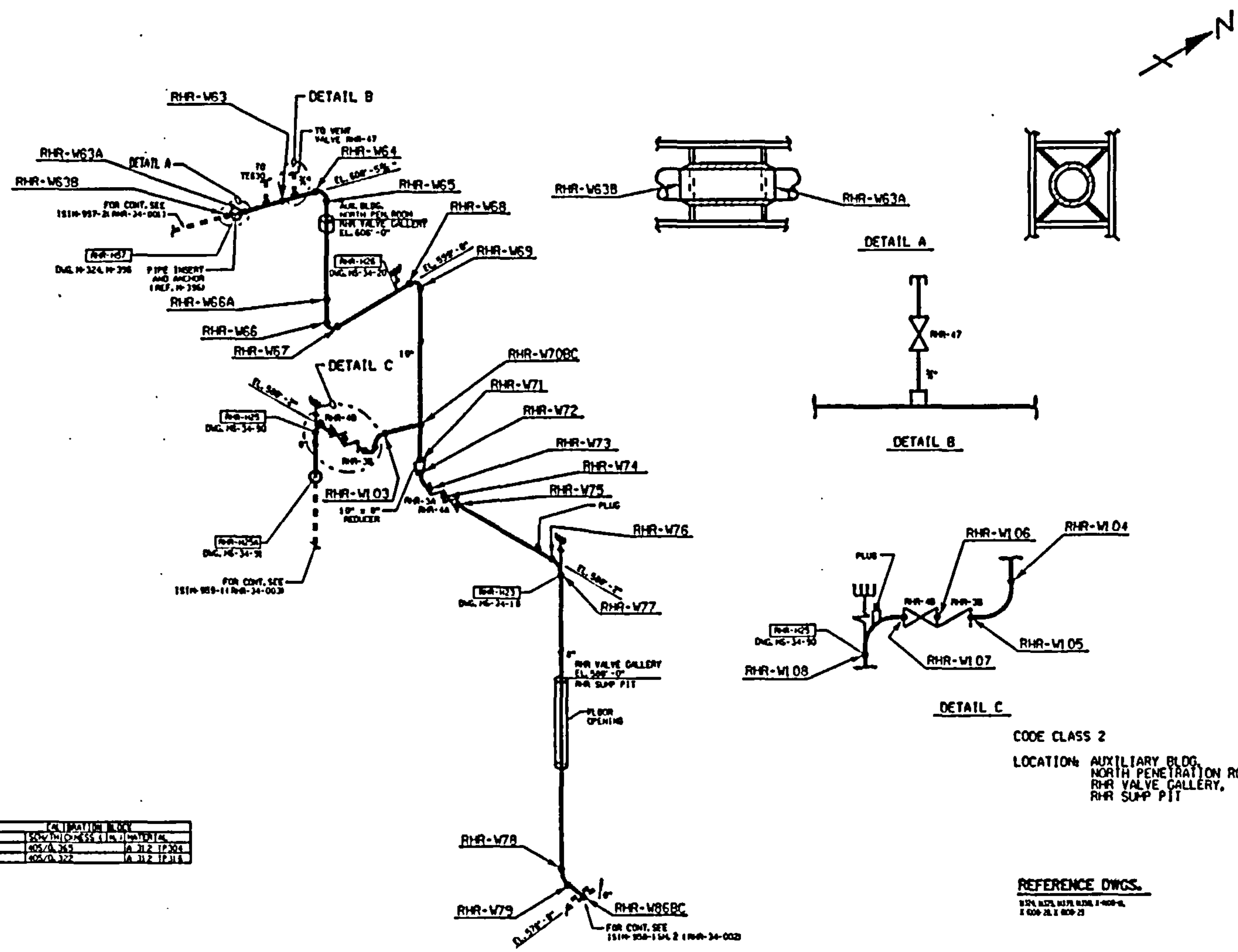
ISI ISOMETRIC
RHR-FROM CNTMT SUMP B & ANCHORS THRU RHR PUMP 1A TO ANCHOR ON DISCH. LINE

WISCONSIN PUBLIC SERVICE CORP.



DETAIL A
DETAIL B
DETAIL D
DETAIL E
RHR-WA6
RHR-WA6
RHR-WA5
RHR-WA5
DETAIL C
A-1
KAP 01-001639
NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE
A-1
KAP 01-001639
SI-W558BC
DETAIL K
RHR-W95BC
RHR-W95BC
RHR-W95BC
DETAIL F
DETAIL H
RHR-W86BC
RHR-W86BC
RHR-W86BC
DETAIL I
A-1
KAP 01-001639
SI-W559
RHR-W80
RHR-W81
RHR-W417
DETAIL J
(SH. 2 OF 2)
ISI ISOMETRIC
RHR-FROM CNTMT SUMP B & ANCHORS
THRU RHR PUMP 1A TO ANCHOR ON DISCH. LINE
WISCONSIN PUBLIC SERVICE CORP.
CADD

ISI-958-2



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H23	0.750
RHR-H25	0.133
RHR-H25A	0.375
RHR-H67	0.500

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
RHR-3A	16 / 0.875	28
RHR-3B	16 / 0.875	28
RHR-4A	16 / 0.750	32
RHR-4B	16 / 0.750	32

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
10	40S/0.365	A 312 TP316	WPS-9	40S/0.365	A 312 TP304
8	40S/0.322	A 376 TP316	WPS-12	40S/0.322	A 312 TP316

CODE CLASS 2

LOCATION: AUXILIARY BLDG.
NORTH PENETRATION ROOM
RHR VALVE GALLERY,
RHR SUMP PIT

REFERENCE DWGS.

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

A-1
KAP 01-001639

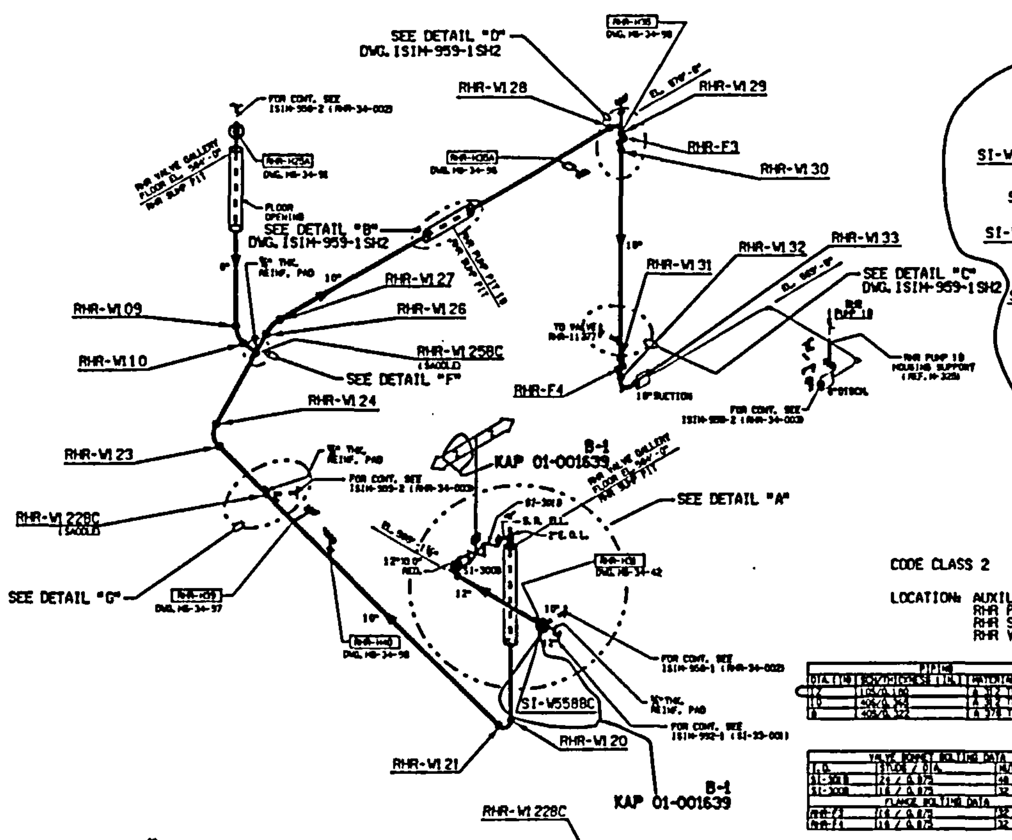
ISI ISOMETRIC
RHR-FROM CNTMT SUMP B & ANCHORS THRU RHR PUMP 1A TO ANCHOR ON DISCH. LINE

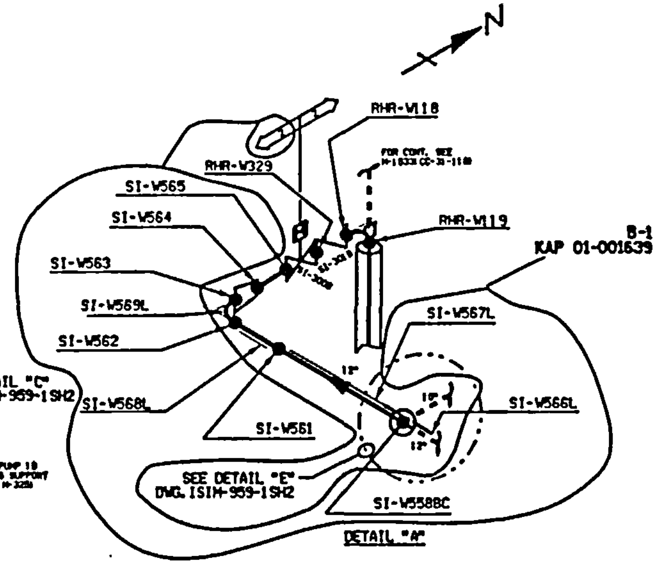
WISCONSIN PUBLIC SERVICE CORP.

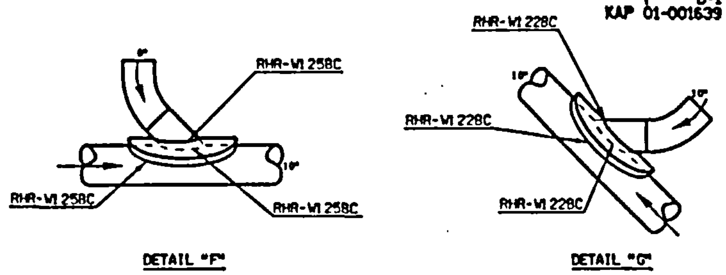
CADD

ISI-958-2

1-4-656-R152







CODE CLASS 2

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

B-1
KAP 01-001639

PIPING			CALIBRATION BLOCK		
DIA (IN)	NOM/THICKNESS (IN)	MATERIAL	I.D.	NOM/THICKNESS (IN)	MATERIAL
12	10S/0.180	A 312 TP304	N/A	N/A	N/A
10	40S/0.365	A 312 TP316	VPS-5	40S/0.365	A 312 TP304
8	40S/0.322	A 376 TP316	VPS-12	40S/0.322	A 312 TP316

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA.	NUTS
SI-301B	24 / 0.875	48
SI-300B	16 / 0.875	32
FLANGE BOLTING DATA		
RHR-F3	16 / 0.875	32
RHR-F4	16 / 0.875	32

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H25A	0.5
RHR-H35	0.375
RHR-H62	0.375

REFERENCE DWGS.

NOTES:

1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

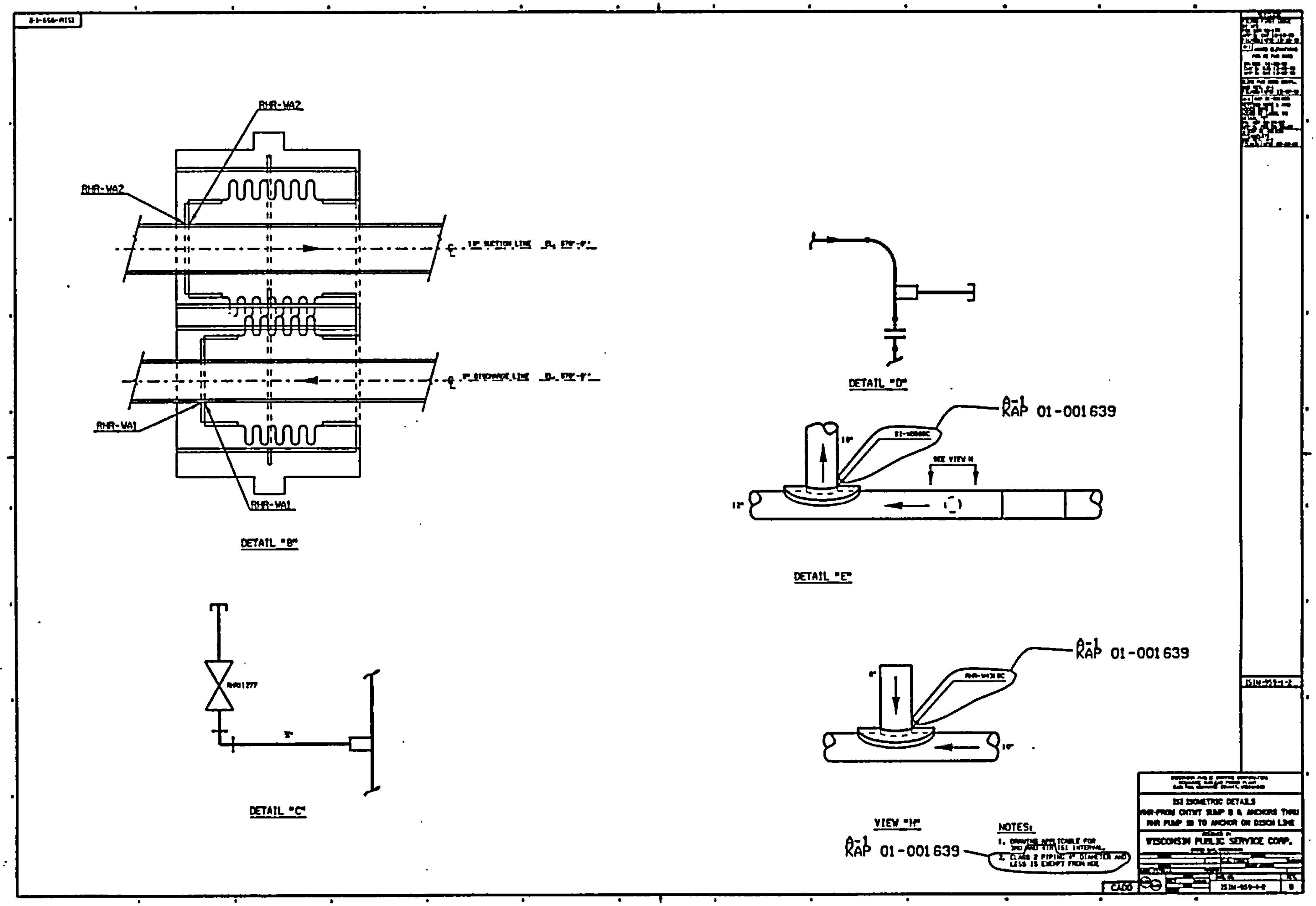
B-1
KAP 01-001639

ISI ISOMETRIC
RHR-FROM CNTMT SUMP B & ANCHORS THRU RHR PUMP 1B TO ANCHOR ON DISCH LINE

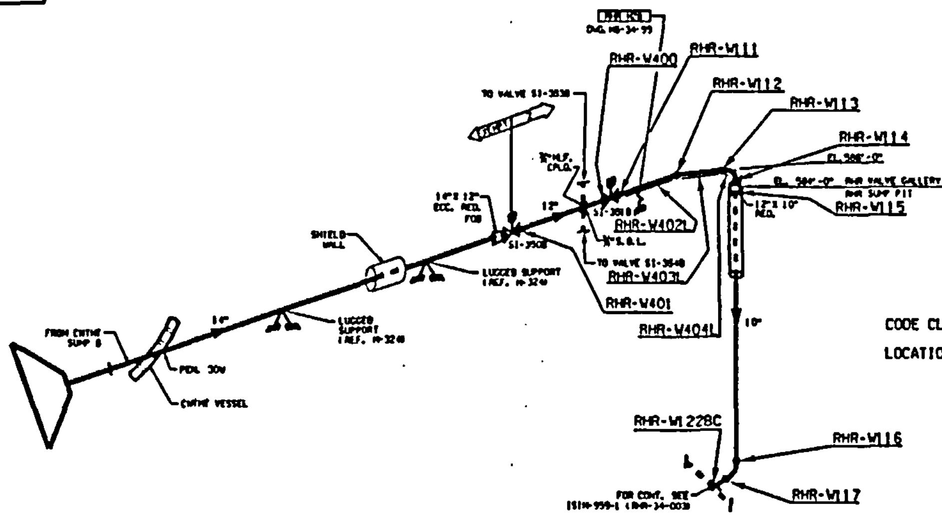
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-959-1-1 | C

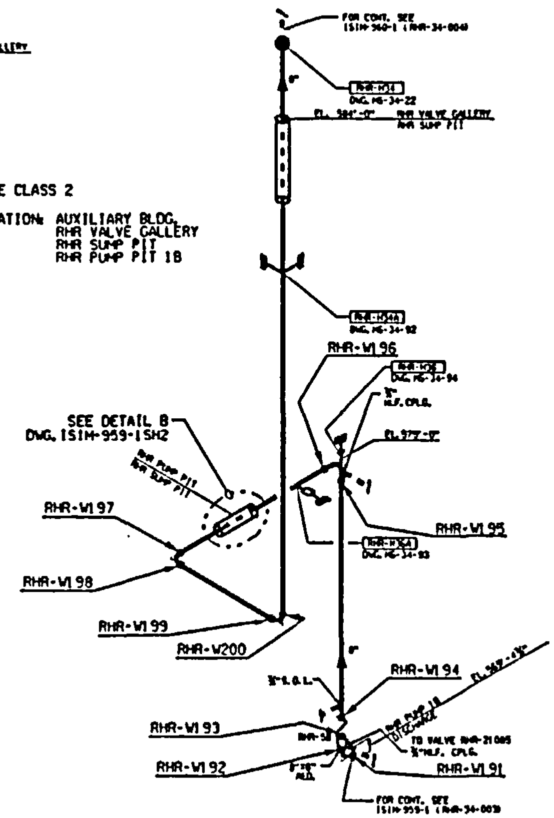

RHR-WA2
RHR-WA2
RHR-WA1
RHR-WA1
DETAIL "B"
DETAIL "C"
DETAIL "D"
A-1
RAP 01-001639
12"
DETAIL "E"
A-1
RAP 01-001639
10"
VIEW "H"
A-1
RAP 01-001639
NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE
ISI ISOMETRIC DETAILS
RHR-FROM CNTMT SUMP B & ANCHORS THRU RHR PUMP 1B TO ANCHOR ON DISCH LINE
WISCONSIN PUBLIC SERVICE CORP.
CADD

Z-656-MES1



CODE CLASS 2

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



PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
12	40/0.406	A 358 CL 1 TP316	NPS-8	40/0.406	A 312 TP304
10	40S/0.365	A 312 T316	NPS-9	40S/0.365	A 312 TP304
8	40S/0.322	A 376 T316	NPS-12	40S/0.322	A 312 TP316
6 ELL.	40S/0.280	A 403 WP 304	NPS-15	40/0.280	A 312 TP304

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA (IN)	NUTS
RHR-5B	16 / 0.875	20
SI-351B	20 / 0.875	40
SI-350B	20 / 0.875	40

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
RHR-H34	0.5
RHR-H34A	1.0
RHR-H36	0.375
RHR-W4	0.375

REFERENCE DWGS.

NOTE:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.

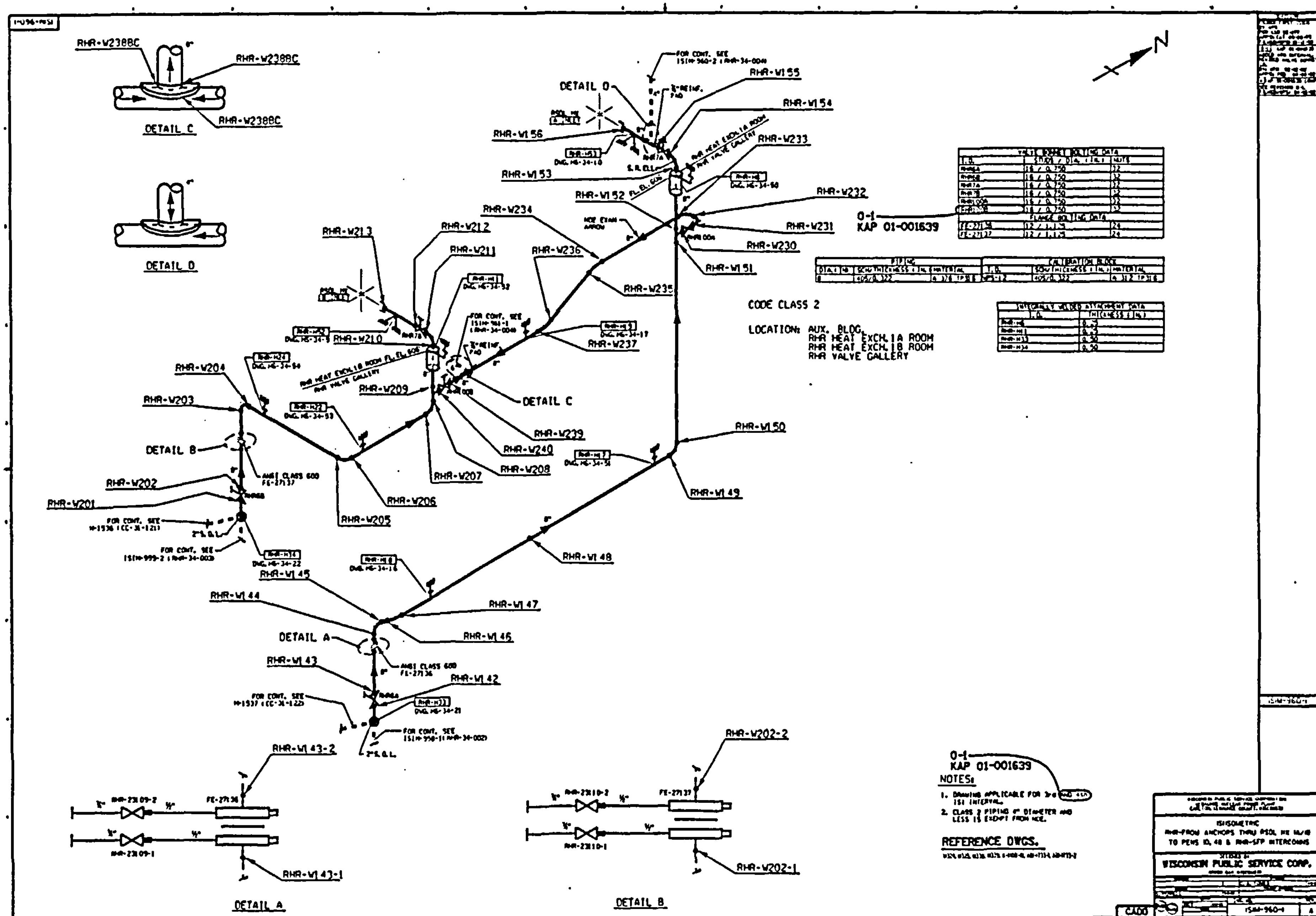
0-1
KAP-01-001639

ISI ISOMETRIC
RHR-FROM CNTMT SUMP B & ANCHORS THRU RHR PUMP 1B TO ANCHOR ON DISCH LINE

WISCONSIN PUBLIC SERVICE CORP.

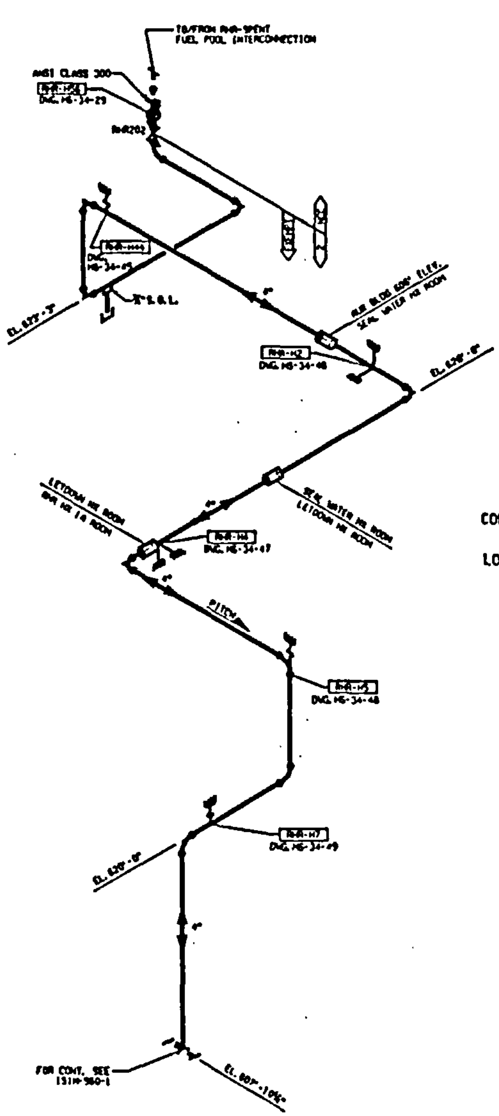
CADD

ISIM-959-2



DETAIL C
DETAIL D
DETAIL A
DETAIL B
RHR-W238BC
RHR-W155
RHR-W154
RHR-W156
RHR-W153
RHR-W152
RHR-W233
RHR-W232
RHR-W231
RHR-W230
RHR-W151
RHR-W234
RHR-W236
RHR-W235
RHR-W237
RHR-W213
RHR-W212
RHR-W211
RHR-W210
RHR-W209
RHR-W204
RHR-W203
RHR-W202
RHR-W201
RHR-W205
RHR-W206
RHR-W207
RHR-W208
RHR-W239
RHR-W240
RHR-W150
RHR-W149
RHR-W148
RHR-W147
RHR-W146
RHR-W145
RHR-W144
RHR-W143
RHR-W142
RHR-W143-2
RHR-W143-1
RHR-W202-2
RHR-W202-1
RHR HEAT EXCH. 1A ROOM
RHR VALVE GALLERY
RHR HEAT EXCH. 1B ROOM FL. EL. 606
0-1
KAP 01-001639
CODE CLASS 2
LOCATION: AUX. BLDG.
RHR HEAT EXCH. 1A ROOM
RHR HEAT EXCH. 1B ROOM
RHR VALVE GALLERY
0-1
KAP 01-001639
NOTES:
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
REFERENCE DWGS.
ISOMETRIC
TO PENS 10, 48 & RHR-SFP INTERCONNS
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISM-960-1
A

Z-096-MPS



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)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
4	40S/0.237	A 312 TP304	N/A	N/A	N/A

0-1
KAP 01-001639

NOTES:

1. DRAWING APPLICABLE FOR 3rd (2ND 4TH) ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

REFERENCE DWGS.

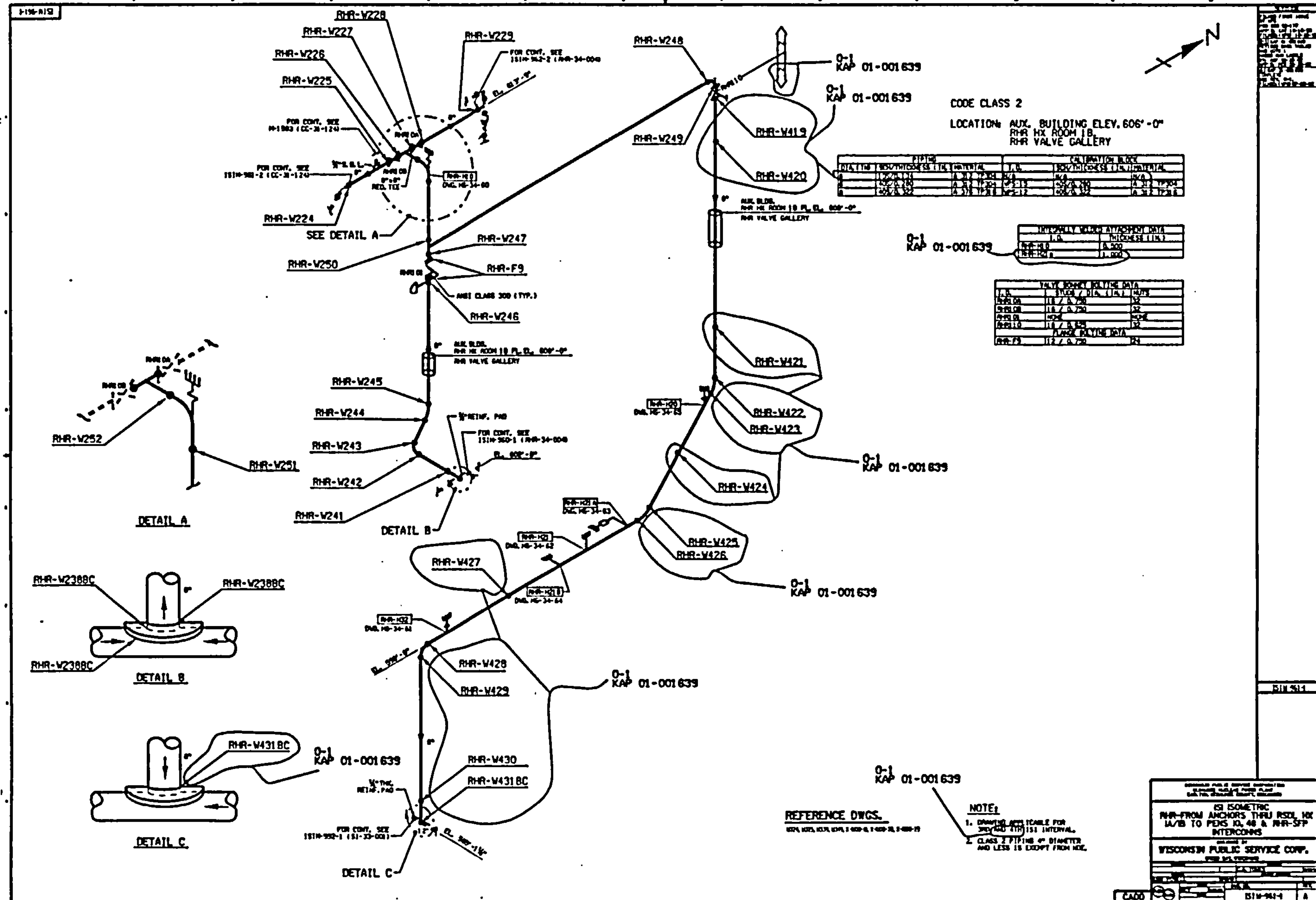
ISOMETRIC
RHR-FROM ANCHORS THRU RSDL HX 1A/1B TO PENS 10, 48 & RHR-SFP INTERCONNS

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-960-2

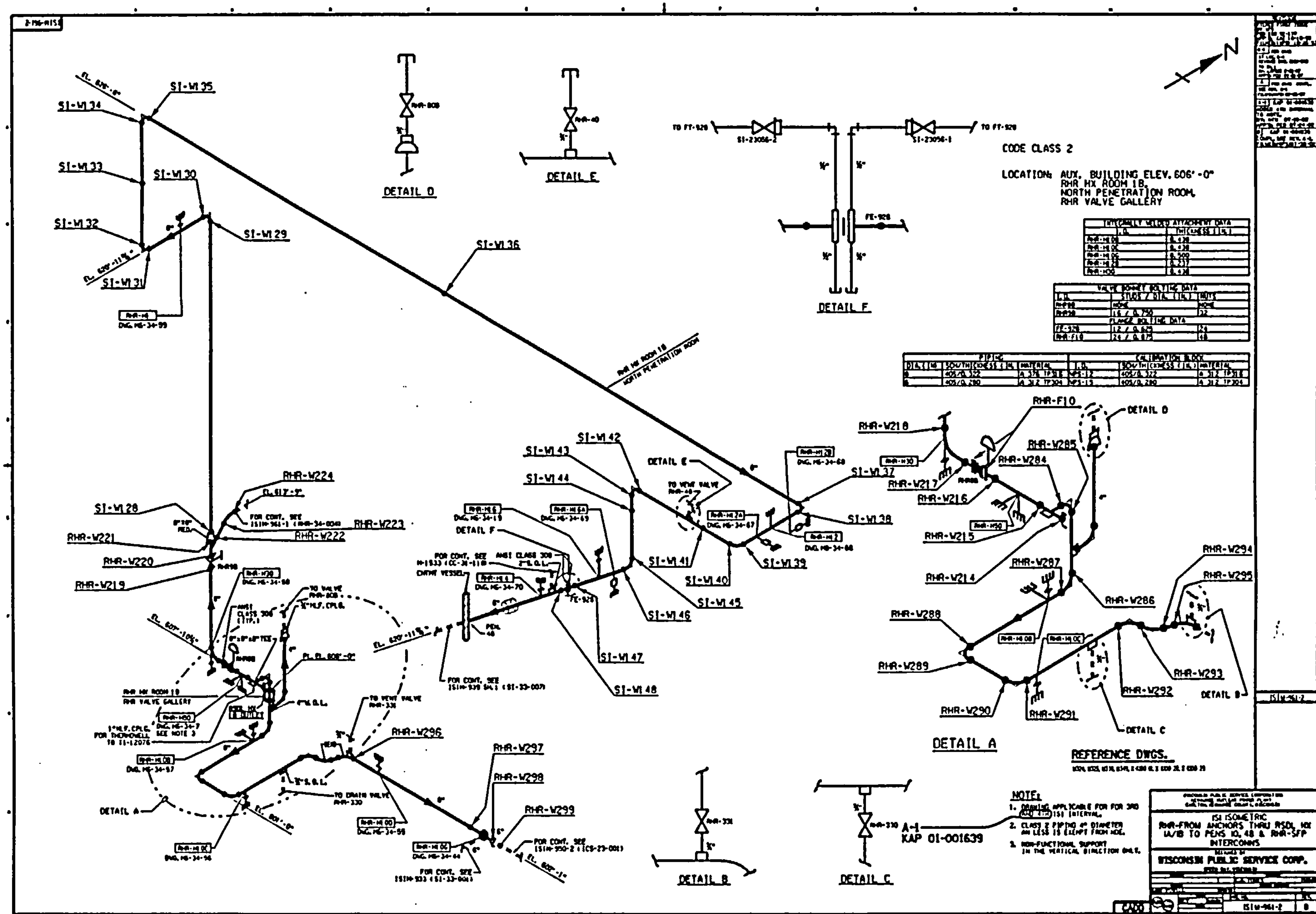
A



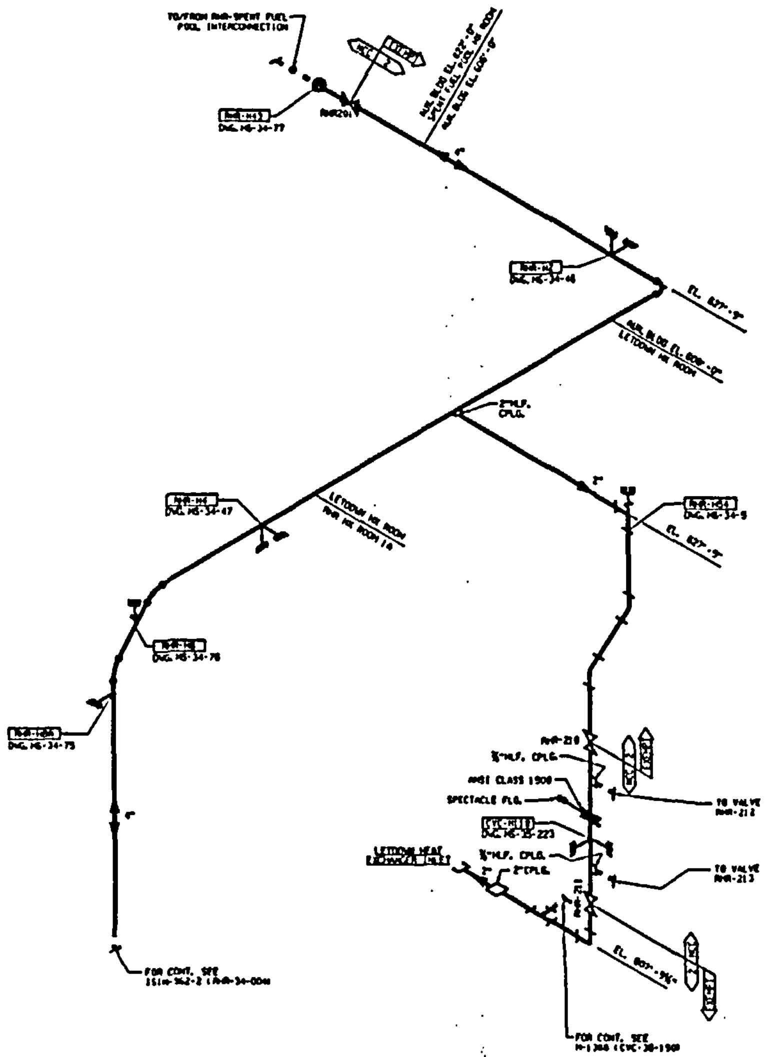
PIPING			CALIBRATION BLOCK		
LOCATION	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
[illegible]	[illegible]	A 312 TP304	N/A	N/A	N/A
[illegible]	40S/0.280	A 312 TP304	CPS-15	40S/0.280	A 312 TP304
[illegible]	40S/0.322	A 376 TP316	CPS-12	40S/0.322	A 312 TP316

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H10	0.500
RHR-H21A	1.000

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
RHR-8A	16 / 0.750	32
RHR-8B	16 / 0.750	32
RHR-8L	NONE	NONE
RHR-10	16 / 0.625	32
FLANGE BOLTING DATA		
RHR-F9	12 / 0.750	24



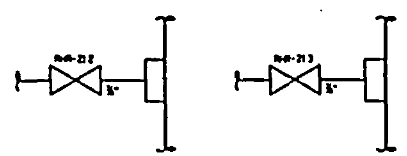
SI-W135
SI-W134
SI-W133
SI-W130
SI-W132
SI-W129
SI-W131
SI-W136
DETAIL D
DETAIL E
DETAIL F
CODE CLASS 2
LOCATION: AUX. BUILDING ELEV. 606'-0"
RHR HX ROOM 1B,
NORTH PENETRATION ROOM,
RHR VALVE GALLERY
RHR-F10
DETAIL D
RHR-W218
RHR-W285
RHR-W284
SI-W137
RHR-W217
RHR-W216
SI-W138
RHR-W215
SI-W139
SI-W140
SI-W141
SI-W142
SI-W143
SI-W144
SI-W145
SI-W146
SI-W147
SI-W148
RHR-W224
SI-W128
RHR-W223
RHR-W222
RHR-W221
RHR-W220
RHR-W219
RHR-W214
RHR-W287
RHR-W286
RHR-W294
RHR-W295
RHR-W288
RHR-W289
RHR-W293
RHR-W292
RHR-W290
RHR-W291
DETAIL B
DETAIL C
DETAIL A
REFERENCE DWGS.
RHR-W296
RHR-W297
RHR-W298
RHR-W299
DETAIL A
DETAIL B
DETAIL C
A-1
KAP 01-001639
NOTE:
1. DRAWING APPLICABLE FOR FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
3. NON-FUNCTIONAL SUPPORT IN THE VERTICAL DIRECTION ONLY.
ISI ISOMETRIC
RHR-FROM ANCHORS THRU RSDL HX 1A/1B TO PENS 10, 48 & RHR-SFP INTERCONNS
WISCONSIN PUBLIC SERVICE CORP.
ISIW-961-2



PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
4	40S/0.237	A 312 TP304	N/A	N/A	N/A
2	40/0.154	A 312 TP304	N/A	N/A	N/A

CODE CLASS 2

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



DETAIL A

DETAIL B

REFERENCE DWGS.

NOTE:
1. DRAWING APPLICABLE FOR 3RD [illegible] ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

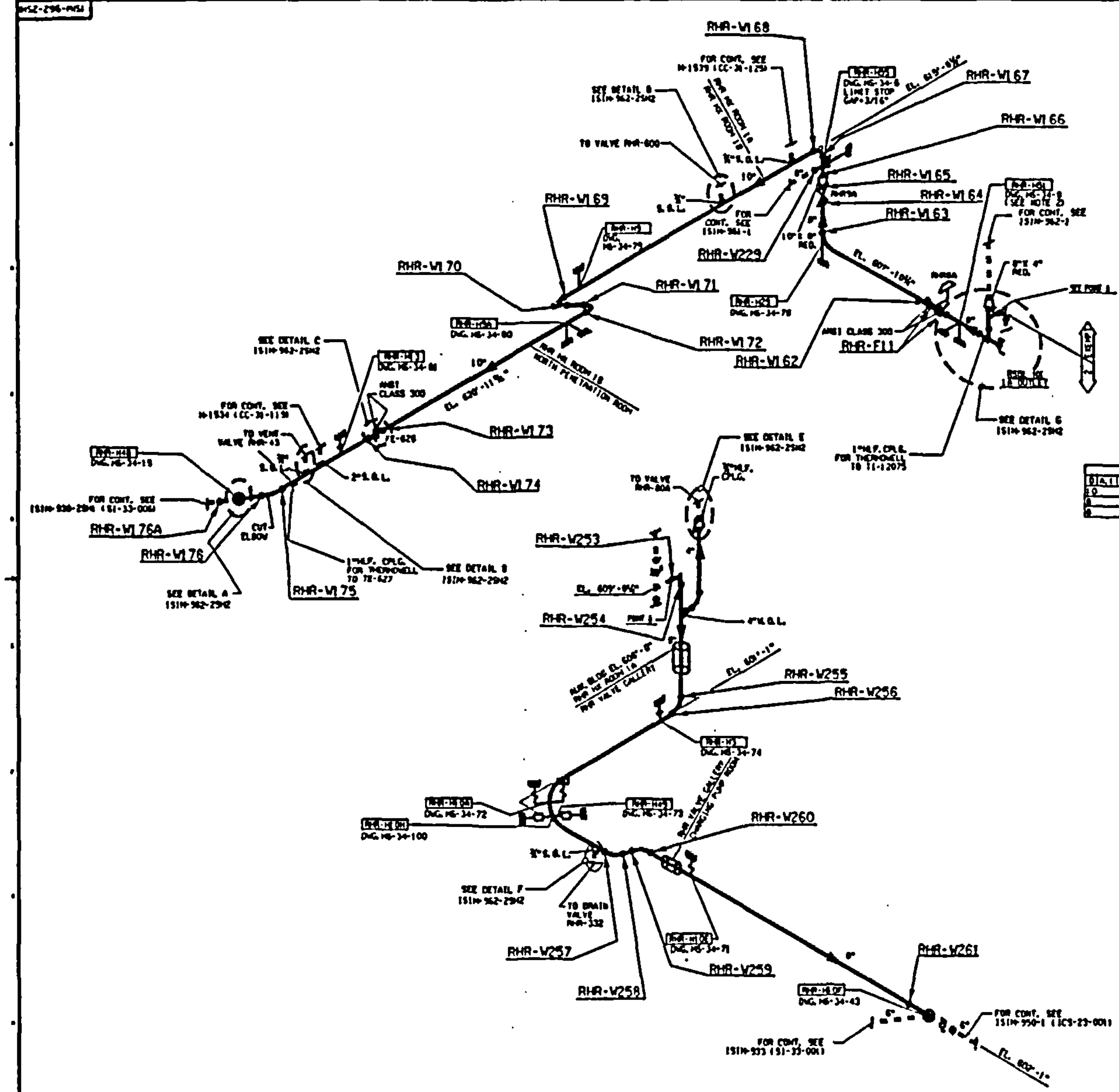
0-1
KAP 01-001639

ISOMETRIC
RHR-FROM ANCHORS THRU RSOL HX R/B TO PENS 10, 46 & RHR-SFP INTERCONN

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISI-M-962-4



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

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RHR-H48	0.200
RHR-H9A	0.237
RHR-H25	0.438
RHR-H10F	0.750

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
10	40S/0.365	A 312 TP316	WPS-9	40S/0.365	A 312 TP304
8	40S/0.322	A 312 TP316	WPS-12	40S/0.322	A 312 TP316
8	40S/0.322	A 376 TP316			

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
RHR8A	NONE	NONE
RHR9A	16 / 0.750	32

FLANGE BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
FE-626	16 / 0.750	32
RHR-F11	12 / 0.875	24

REFERENCE DWGS.

NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. NON-FUNCTIONAL SUPPORT IN THE ... PER ... FROM NDE.
3. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

A-1
KAP 01-001639

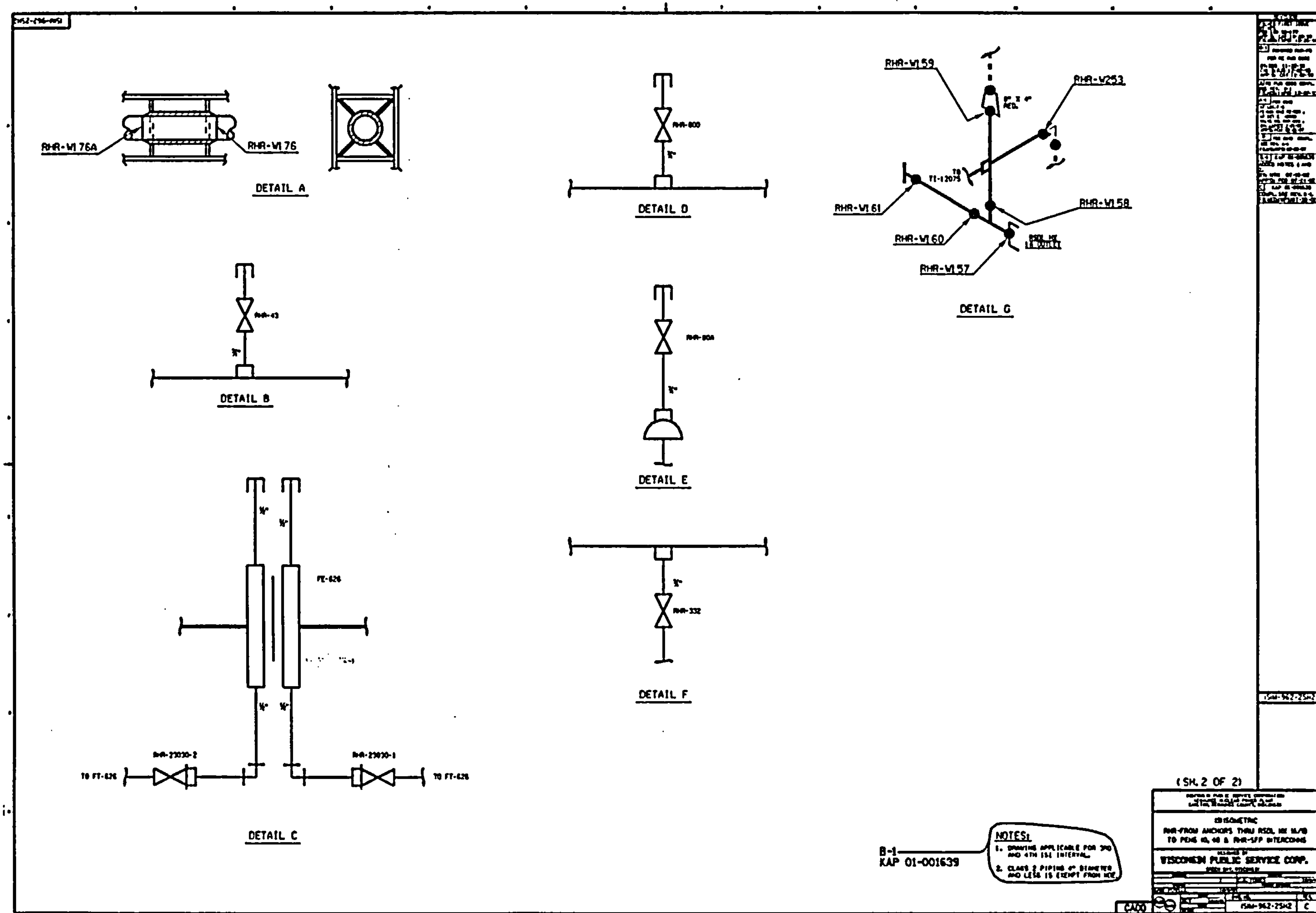
(SH. 1 OF 2)

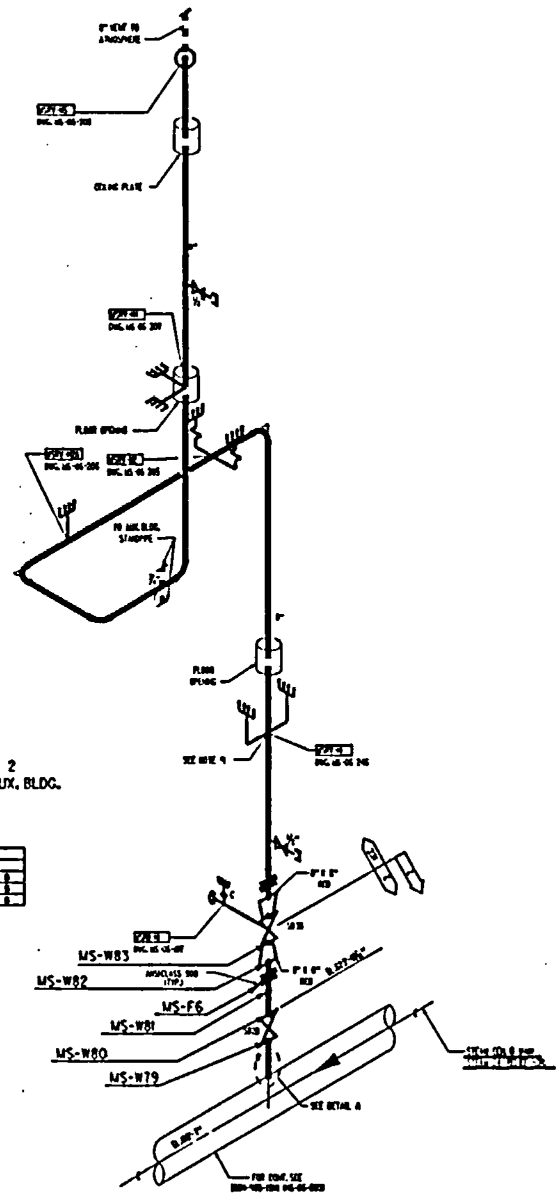
ISOMETRIC
RHR-FROM ANCHORS THRU RSDL HX 1A/1B TO PENS 10, 48 & RHR-SFP INTERCONNS

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISI-962-25I

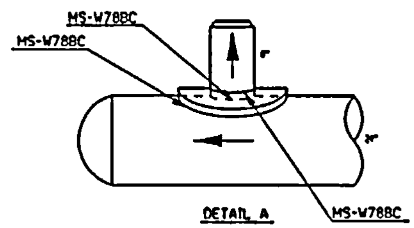

RHR-W176A
RHR-W176
DETAIL A
RHR-800
DETAIL D
RHR-W159
RHR-W253
RHR-W161
RHR-W158
RHR-W160
RHR-W157
DETAIL G
RHR-43
DETAIL B
DETAIL E
DETAIL F
RHR-332
FE-626
RHR-23030-2
RHR-23030-1
TO FT-626
TO FT-626
DETAIL C
(SH. 2 OF 2)
B-1
KAP 01-001639
NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
ISOMETRIC
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISM-962-2SH2
C



CODE CLASS 2
LOCATION: AUX. BLDG.

PIPING			CALIBRATION BLOCK		
DIA.(IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
8	80/0.500	A 106 GR B	WPS-13	80/0.500	A 106 GR B
8	100/0.594	A 106 GR B	WPS-14	100/0.594	A 106 GR B
6	80/0.432	A 234 WPB	WPS-15	80/0.432	A 106 GR B

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA.(IN)	NUTS
SO-38	6 / 0.875	6
SO-38	8 / 0.875	8
FLANGE BOLTING DATA		
MS-72	12 / 1.375	24



DETAIL A

A-1
KAP 01-001639

NOTE:

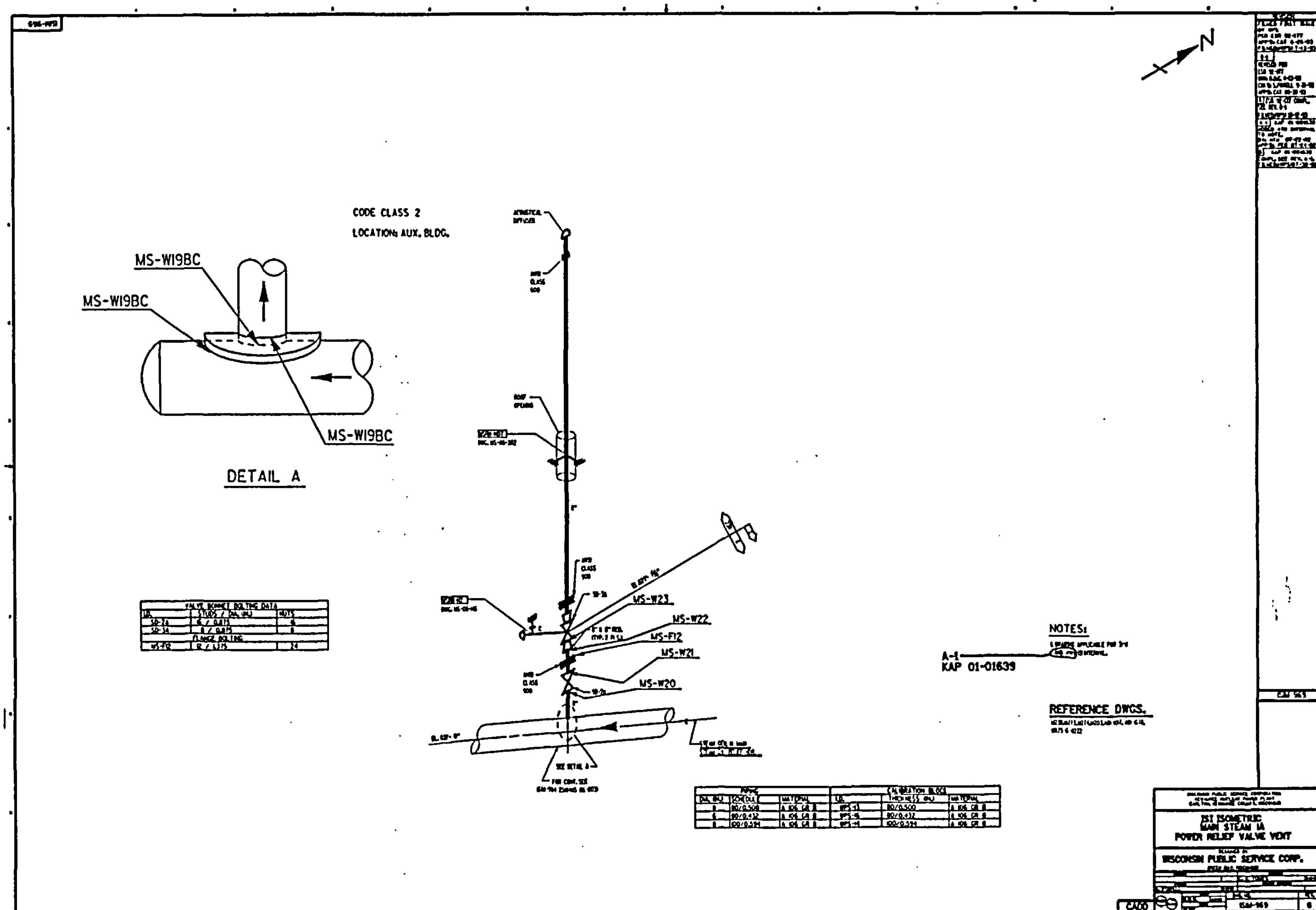
REFERENCE DWGS.

ISI ISOMETRIC
MAIN STEAM B
POWER RELIEF VALVE VENT

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISA-968



VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
SD-2A	6 / 0.875	6
SD-3A	8 / 0.875	8
FLANGE BOLTING		
MS-F12	12 / 1.375	24

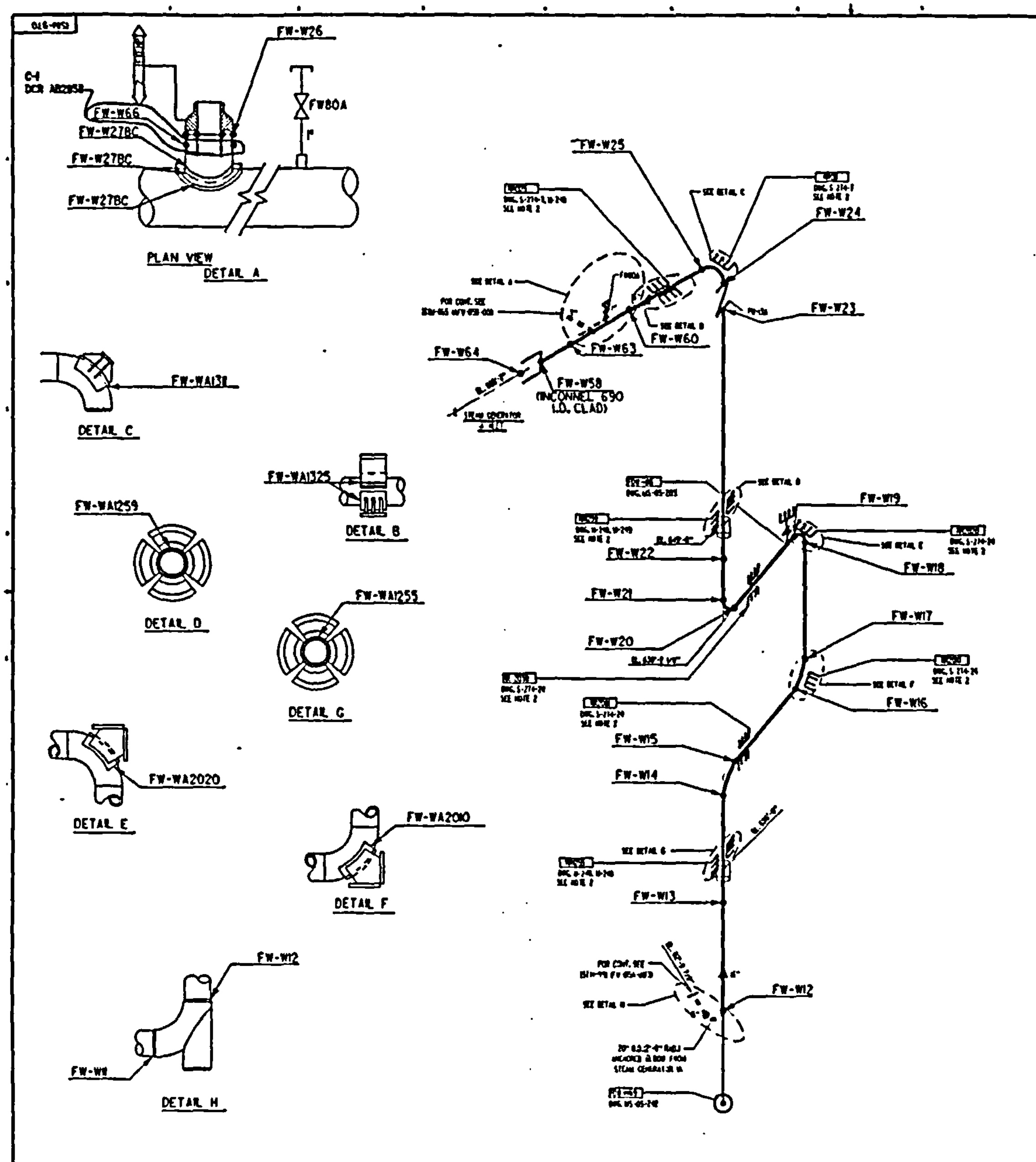
PIPING			CALIBRATION BLOCK		
DIA. (IN.)	SCHEDULE	MATERIAL	I.D.	THICKNESS (IN.)	MATERIAL
8	80/0.500	A 106 GR B	[illegible]	80/0.500	A 106 GR B
6	80/0.432	A 106 GR B	[illegible]	80/0.432	A 106 GR B
8	100/0.594	A 106 GR B	[illegible]	100/0.594	A 106 GR B

ISI ISOMETRIC
MAIN STEAM 1A
POWER RELIEF VALVE VENT

WISCONSIN PUBLIC SERVICE CORP.

ISAM-969

0



CODE CLASS 2

LOCATION: CONTAINMENT

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
WA1325 (FW-WA1325)	1.0
WA131 (FW-WA131)	1.0
WA1259 (FW-WA1259)	1.0
WA2020 (FW-WA2020)	1.0
WA2010 (FW-WA2010)	1.0
WA1255 (FW-WA1255)	1.0
FDW-H63	1.562

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
FW3A	4 / 1.75	4

PIPING			CALIBRATION BLOCK		
DIA. (IN.)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
16	100/1.031	A 106 GR B/C	WPS-32	100/1.031	A 106 GR B
16 NOZ.	60/0.656	A 106 GR B	WPS-38	60/0.656	A 106 GR B
8	100/0.594	A 106 GR B	WPS-41	100/0.594	A 106 GR B
16 NOZ.	80/0.844 (NOTE 4)	INCONEL 690*	WPS-56	80/0.844 (NOTE 4)	INCONEL 690*
19 NOZ.	-/1.375	SA 508 CL 2 CS	WPS-48	-/1.375	SA 508 CL 2 CS

*SEE NOTE 3

REFERENCE DWGS.

NOTES:

1. DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
3. FW NOZZLE TRANSITION PIPE SPOOL BUTTERED WITH INCONEL 690.
4. NOM. THICKNESS OF CARBON STEEL & INCONEL BASE MATERIAL. SEE WESTINGHOUSE DRAWINGS 6453E02, SHEETS 9 & 10 FOR FEEDWATER NOZZLE TRANSITION PIECE CLAD DETAILS.

ISI ISOMETRIC
FEEDWATER FROM ANCHORED ELL TO STEAM GEN. 1A

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISM-970

D

ISI-971

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RR1505 (FW-WA1505)	1.0
RR1511 (FW-WA1511)	1.0
RR1515 (FW-WA1515)	1.0
RR1521 (FW-WA1521)	1.0
RR1527 (FW-WA1527)	1.0
RR1533 (FW-WA1533)	1.0
FCV-H170	1.594

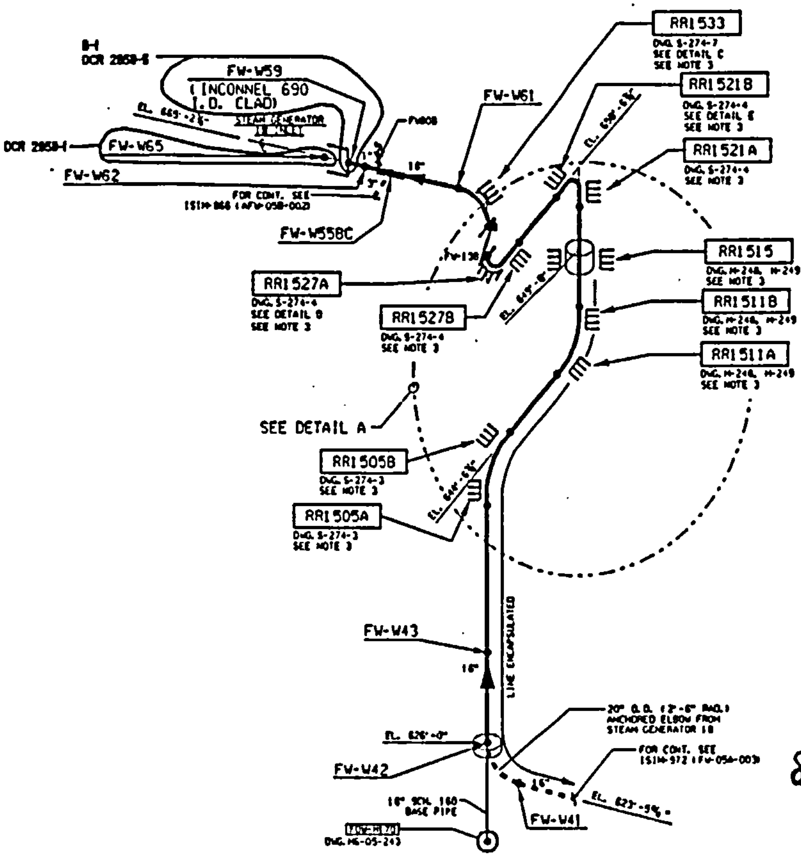
PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
16	140/1.438	A 106 GR. B	WPS-6	140/1.438	A 106 GR. B
16	100/1.031	A 106 GR. B/C	WPS-32	100/1.031	A 106 GR. B
16 NOZ.	60/0.656	A 106 GR. B	WPS-38	60/0.656	A 106 GR. B
16 NOZ.	80/0.844	INCONEL 690*	WPS-46	80/0.844	INCONEL 690*
19 NOZ.	-/1.375	SA 508 CL.2 CS	WPS-48	-/1.375	SA 508 CL.2 CS

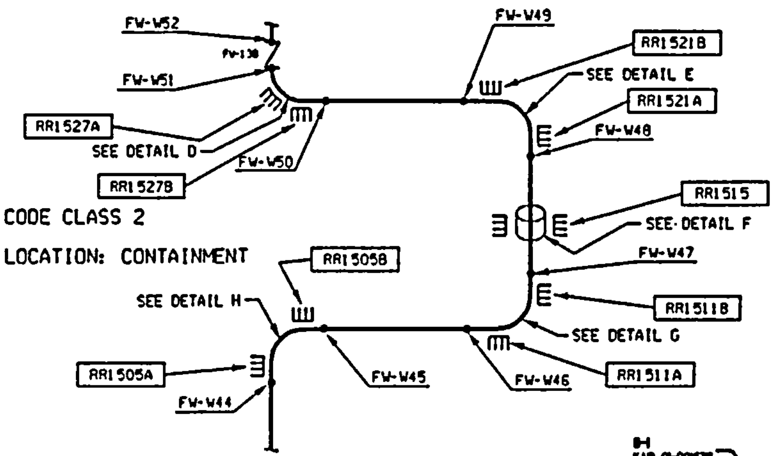
*SEE NOTE 4

DCR 2858-1

8-H
DCR 2858-6

VALVE BONNET BOLTING DATA		
VALVE ID	STUDS/DIA. (IN.)	NUTS
FW138	4/1.25	4

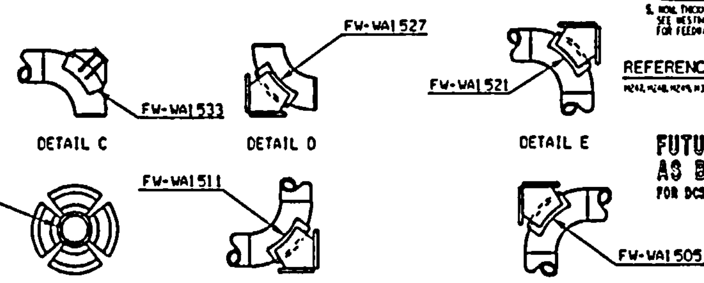




CODE CLASS 2

LOCATION: CONTAINMENT

DETAIL A



DETAIL C

DETAIL D

DETAIL E

DETAIL F

DETAIL G

DETAIL H

8-H
KAP 01-000639

NOTES:

1. DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
4. FW NOZZLE TRANSITION PIPE SPOOL BUTTERED WITH INCONEL 690.
5. NOM. THICKNESS OF CARBON STEEL & INCONEL BASE MATERIAL. SEE WESTINGHOUSE DRAWINGS 6455E12, SHEETS 9 & 10 FOR FEEDWATER NOZZLE, TRANSITION PIECE CLAD DETAILS.

8-H
DCR 2858-5

REFERENCE DWGS.

M242, M248, M249, M255, M415, M416, M417, M413, M295, ABE-372

FUTURE AS BUILT FOR DCR 2858

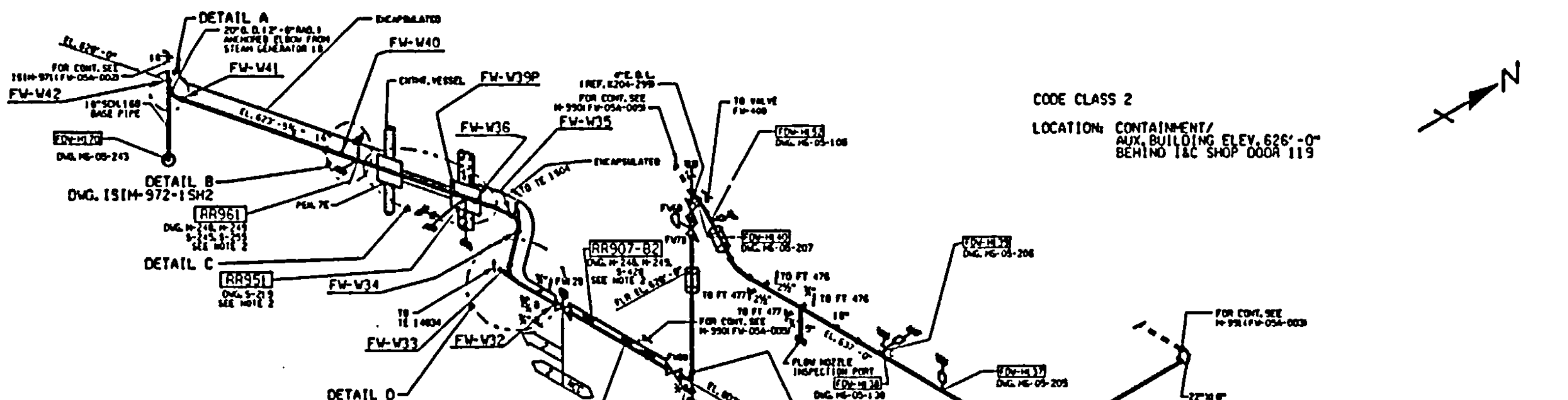
ISI ISOMETRIC
FEEDWATER
FROM ANCHORED ELL TO STM GEN. 1B

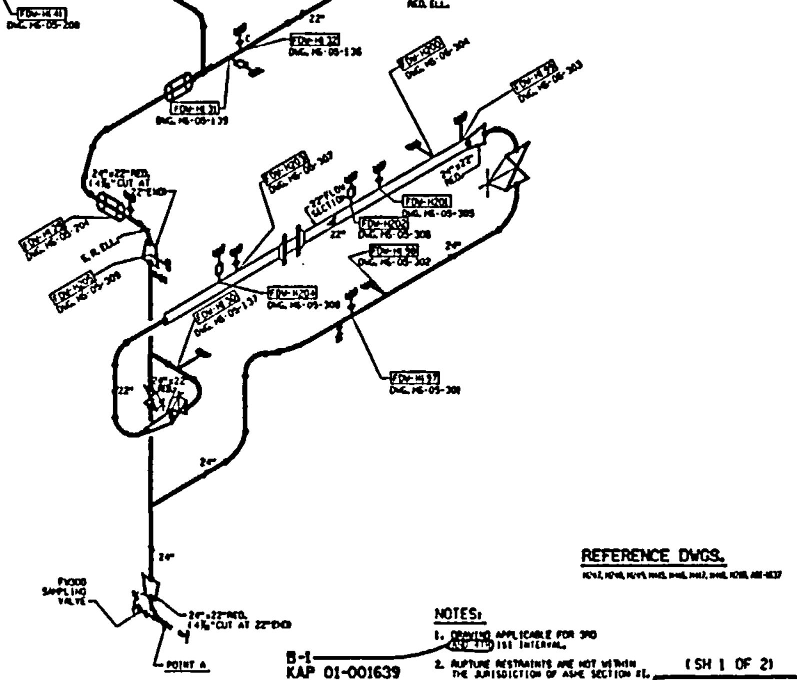
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-971 | C

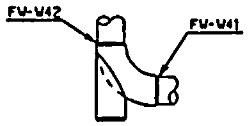
ISIM-972-1





CODE CLASS 2

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

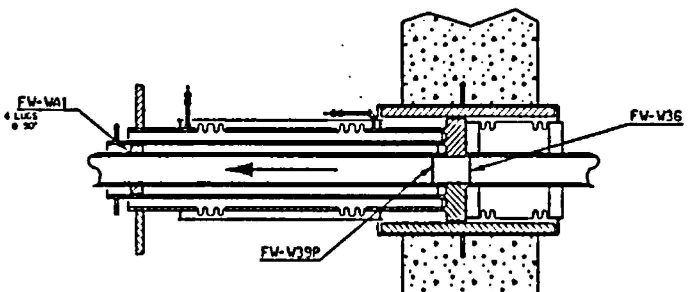


DETAIL A

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
16	140/1.438	A 106 Gr B	WPS-6	140/1.438	A 106 Gr B
16	100/1.031	A 106 Gr B	WPS-32	100/1.031	A 106 Gr B

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
FW 28	16 / 1.25	16

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
FDW-H170	1.594
RR961(FW-WA961)	1.000
FW-WA1	1.000



DETAIL C

SEE DWG. XK-204-283

REFERENCE DWGS.

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 NDE.

B-1
KAP 01-001639

(SH 1 OF 2)

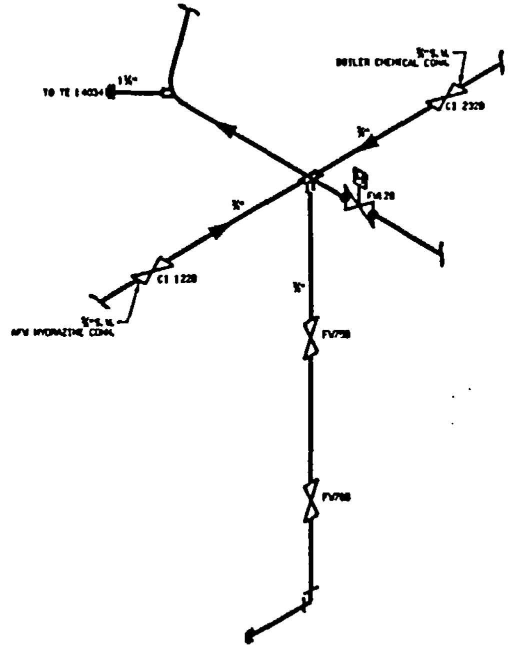
ISI ISOMETRIC
FEEDWATER- FROM ANCHOR NEAR HTRS TO ANCHORED ELLS INSIDE CNTMT

WISCONSIN PUBLIC SERVICE CORP.

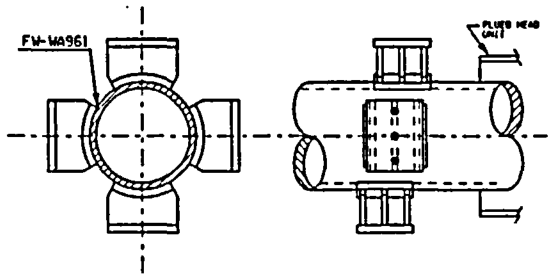
CADD

ISIM-972-1SH1 C

ISIM-972-ISH2



DETAIL D



DETAIL B

NOTES:

1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

0-1
KAP 01-001639

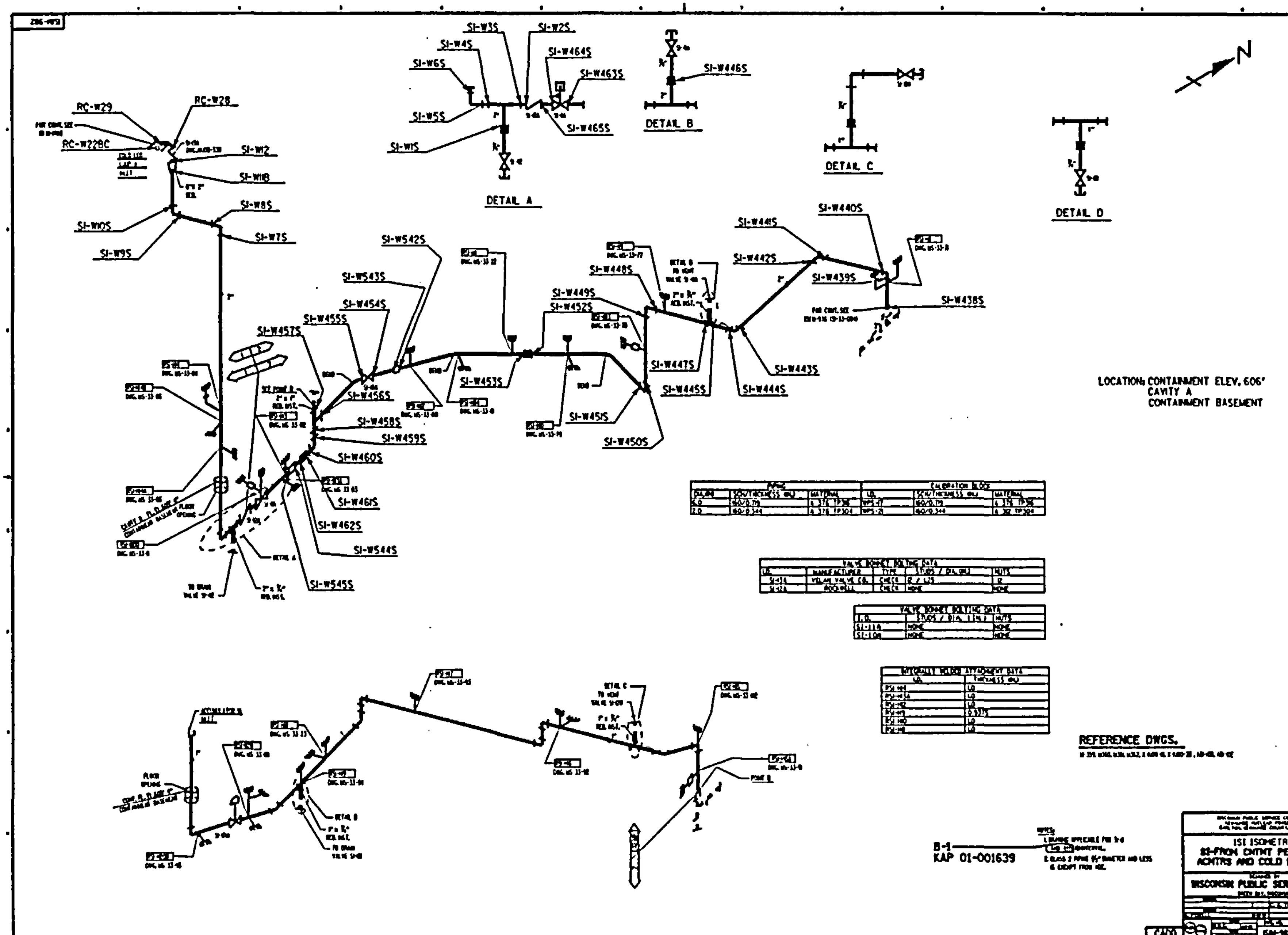
(SH 2 OF 2)

ISI ISOMETRIC
FEEDWATER- FROM ANCHOR NEAR HTRS
TO ANCHORED ELLS INSIDE CNTMT

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-972-ISH2 | A



DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
	PIPING			CALIBRATION BLOCK	
6.0	160/0.719	A 376 TP316	WPS-17	160/0.719	A 376 TP316
2.0	160/0.344	A 376 TP304	WPS-21	160/0.344	A 312 TP304

VALVE BONNET BOLTING DATA

I.D.	MANUFACTURER	TYPE	STUDS / DIA. (IN)	NUTS
SI-13A	VELAN VALVE CO.	CHECK	12 / 1.25	12
SI-12A	ROCKWELL	CHECK	NONE	NONE

VALVE BONNET BOLTING DATA

I.D.	STUDS / DIA. (IN)	NUTS
SI-11A	NONE	NONE
SI-10A	NONE	NONE

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS (IN)
PSI-H4	1.0
PSI-H3A	1.0
PSI-H2	1.0
PSI-H5	0.3375
PSI-H10	1.0
PSI-H8	1.0

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT

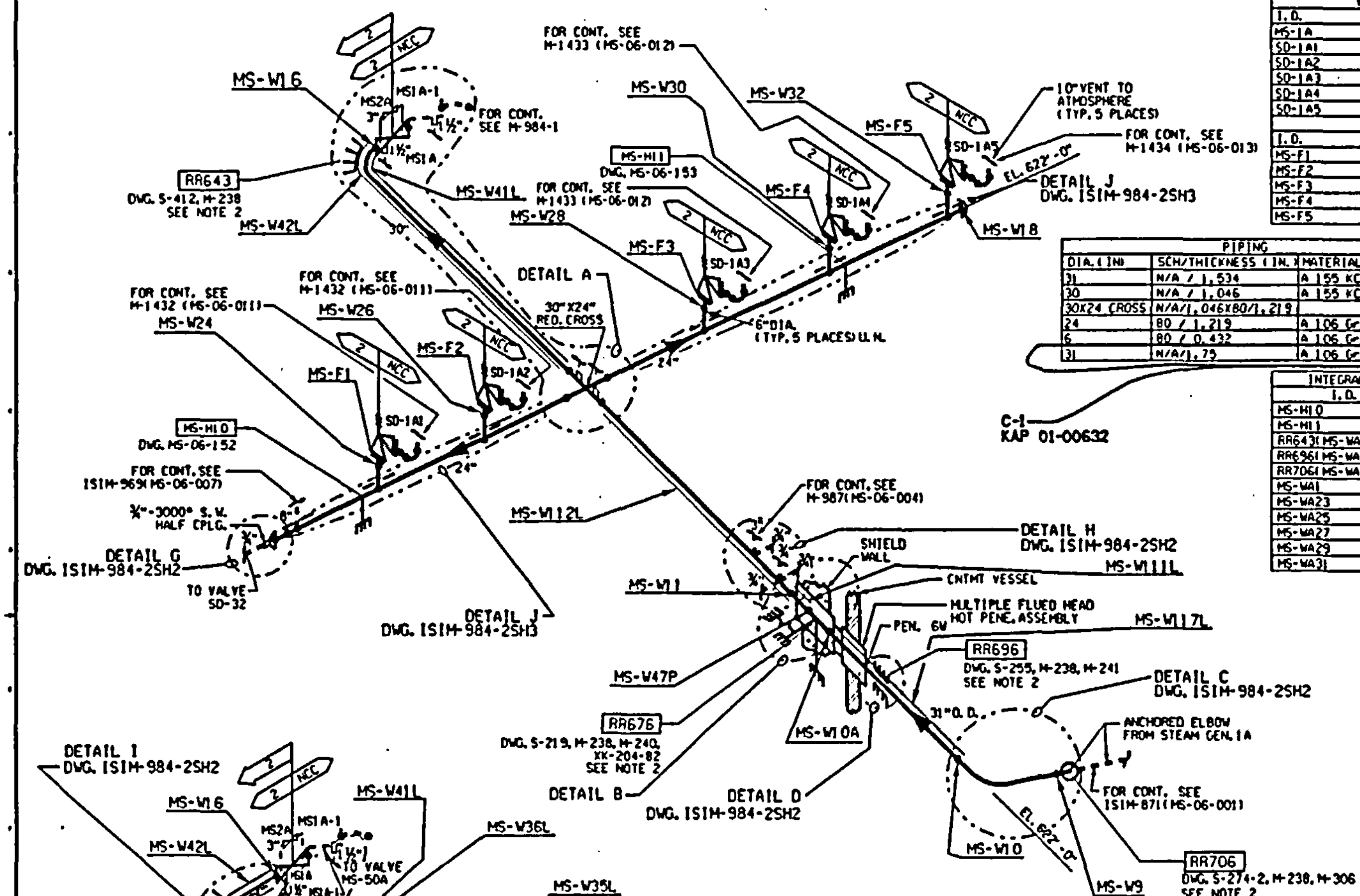
ISI ISOMETRIC
SI-FROM CNTMT PEN. 26N TO ACHTRS AND COLD LEG LOOPS

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISI-982

C



VALVE BONNET BOLTING DATA		
I.D.	STUDS / 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.	STUDS / 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 CL.1	WPS-37	N/A / 1.10	SA 515 Gr 70 CL.1
30	N/A / 1.046	A 155 KC 70 CL.1	WPS-37	N/A / 1.10	SA 515 Gr 70 CL.1
30X24 CROSS	N/A/1.046X80/1.219				
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-H10	0.277
MS-H11	0.277
RR643(MS-WA643)	0.750
RR696(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

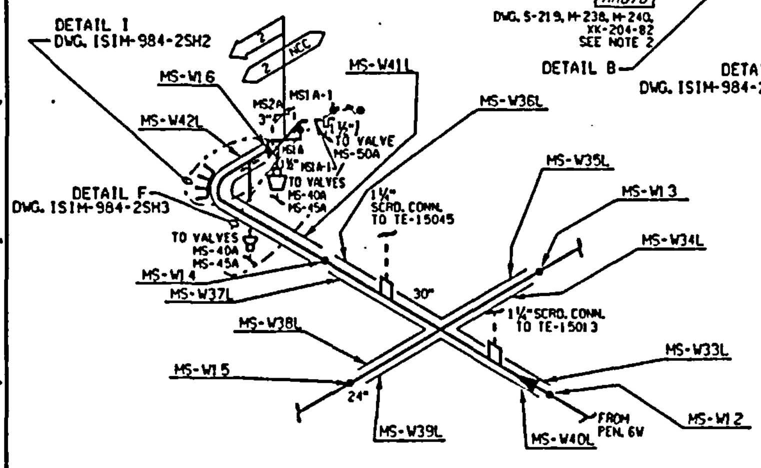
CODE CLASS 2

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

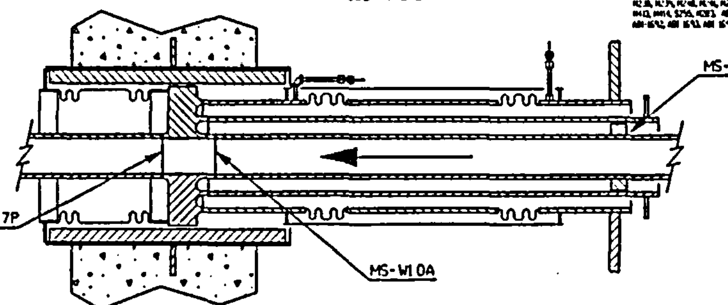
NOTES:

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 NDE.

REFERENCE DWGS.



DETAIL A



DETAIL B

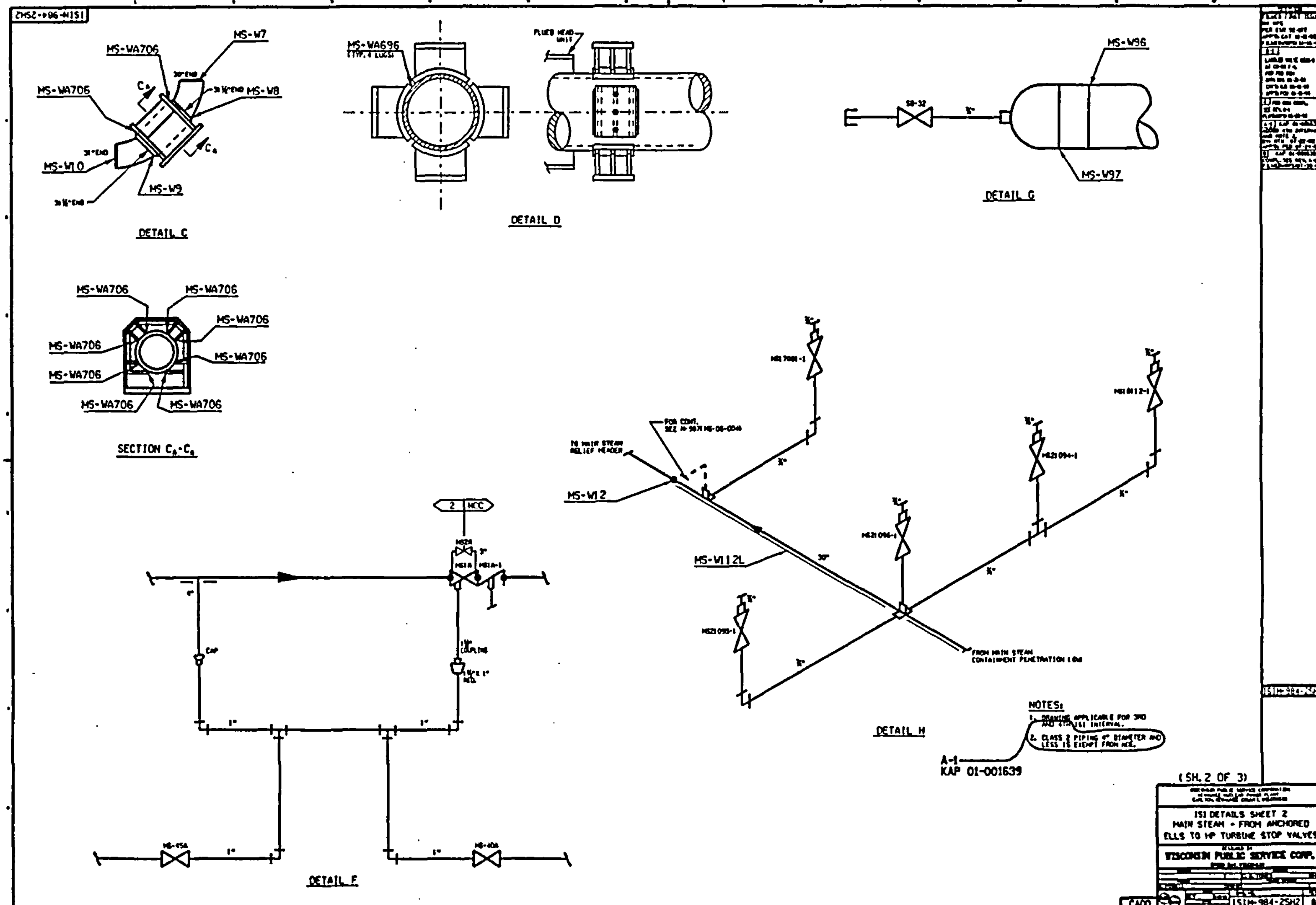
(SH. 1 OF 3)

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

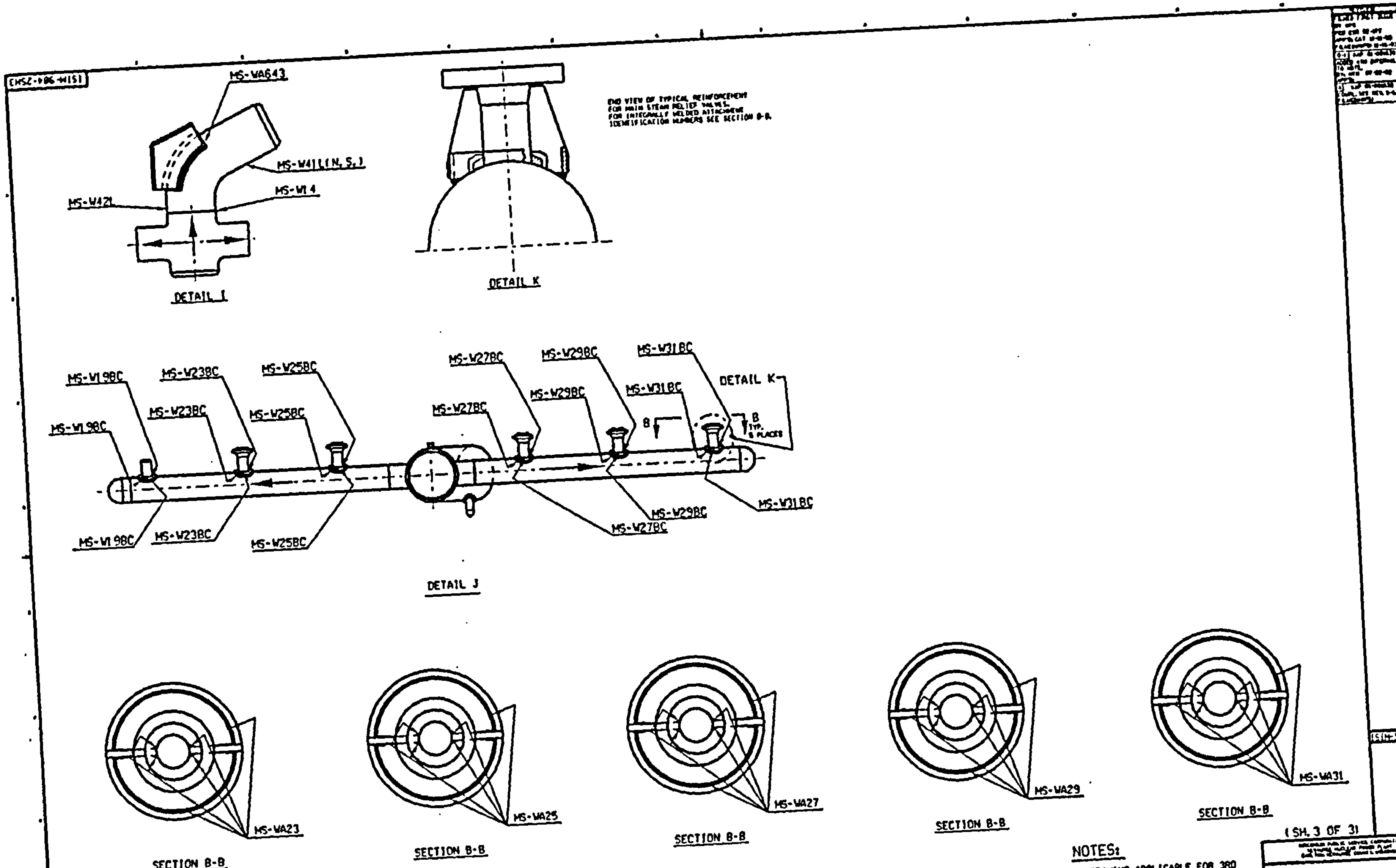
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-984-2SH1 | D



ISIM-984-2SH2
MS-WA706
MS-W7
MS-W8
MS-W10
MS-W9
DETAIL C
MS-WA696
DETAIL D
MS-W96
MS-W97
DETAIL G
SECTION C_A-C_B
2 MCC
DETAIL F
MS-W12
MS-W112L
30"
DETAIL H
NOTES:
1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.
A-1
KAP 01-001639
(SH. 2 OF 3)
ISI DETAILS SHEET 2
MAIN STEAM - FROM ANCHORED
ELLS TO HP TURBINE STOP VALVES
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISIM-984-2SH2



NOTES:

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

0-1
KAP 01-001639

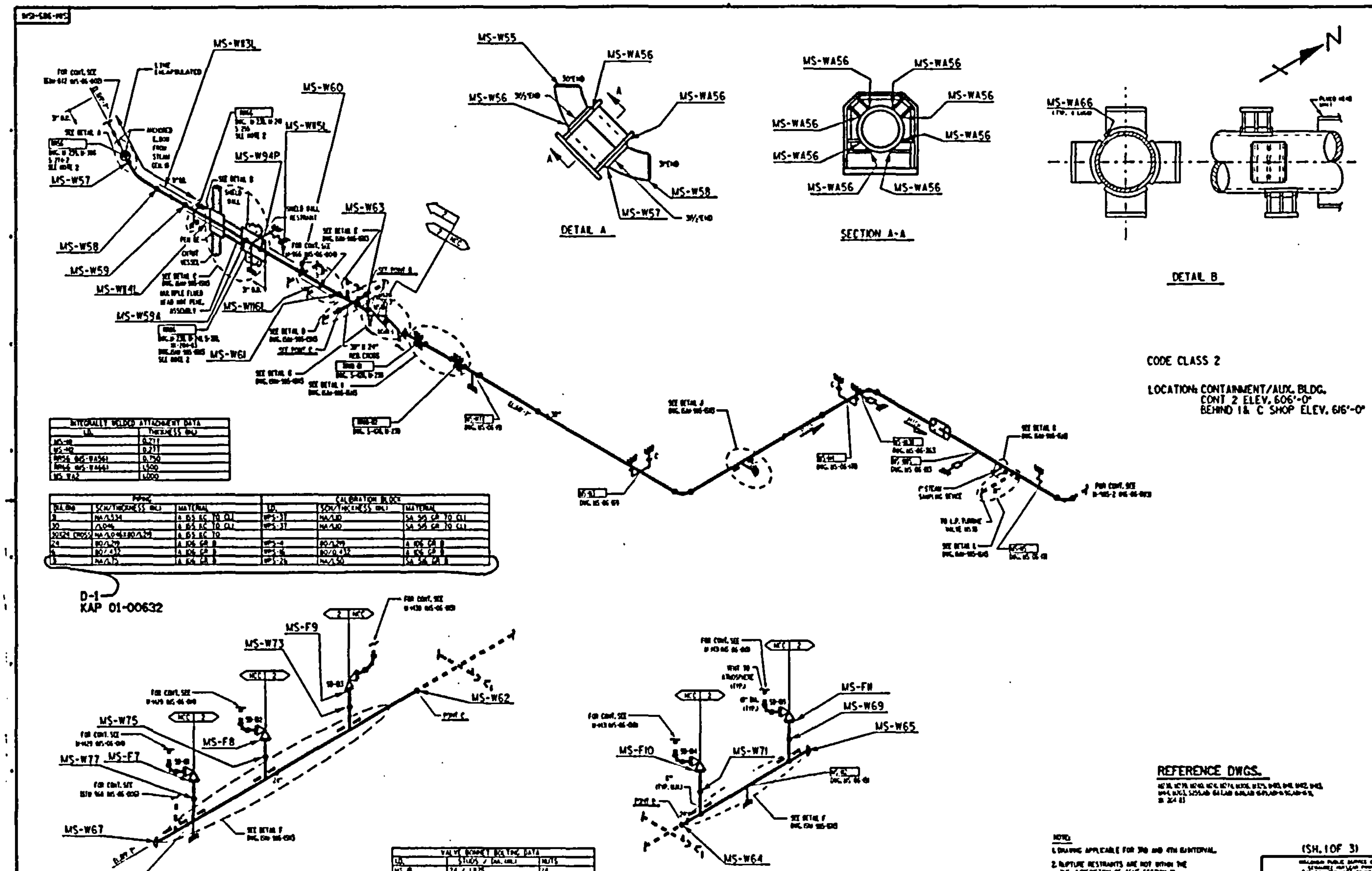
(SH. 3 OF 3)

MAIN STEAM - FROM ANCHORED ELLS TO HP TURBINE STOP VALVES

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-984-2SH3 A



INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
MS-40	0.711
MS-42	0.711
RPS6 (MS-WA56)	0.750
RPS6 (MS-WA66)	1.500
MS WA2	1.000

PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
31	NA/1.534	A 155 KC 70 CL1	WPS-37	NA/1.10	SA 515 GR 70 CL1
30	/1.046	A 155 KC 70 CL1	WPS-37	NA/1.10	SA 515 GR 70 CL1
30X24 CROSS	NA/1.046X80/1.29	A 155 KC 70			
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
13	NA/1.15	A 106 GR B	WPS-26	NA/1.50	SA 516 GR B

D-1
KAP 01-00632

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
MS 10	24 / 1.875	24
SD 01	4 / 0.750	4
SD 02	4 / 0.750	4
SD 03	4 / 0.750	4
SD 04	4 / 0.750	4
SD 05	4 / 0.750	4
VALVE BONNET BOLTING DATA		
MS-F7	12 / 1.250	24
MS-F8	12 / 1.250	24
MS-F9	12 / 1.250	24
MS-F10	12 / 1.250	24
MS-F11	12 / 1.250	24

REFERENCE DWGS.

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

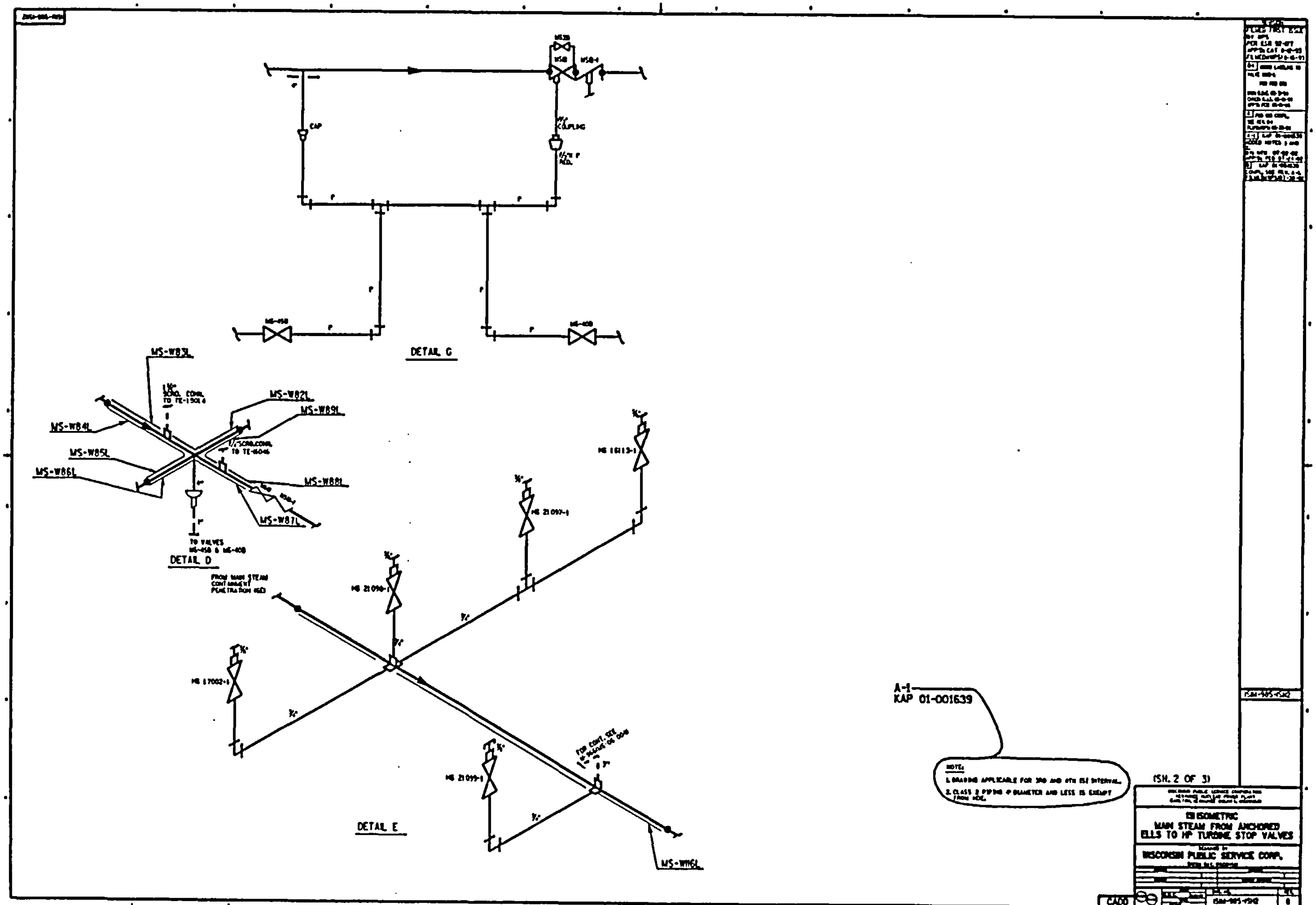
(SH. 1 OF 3)

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

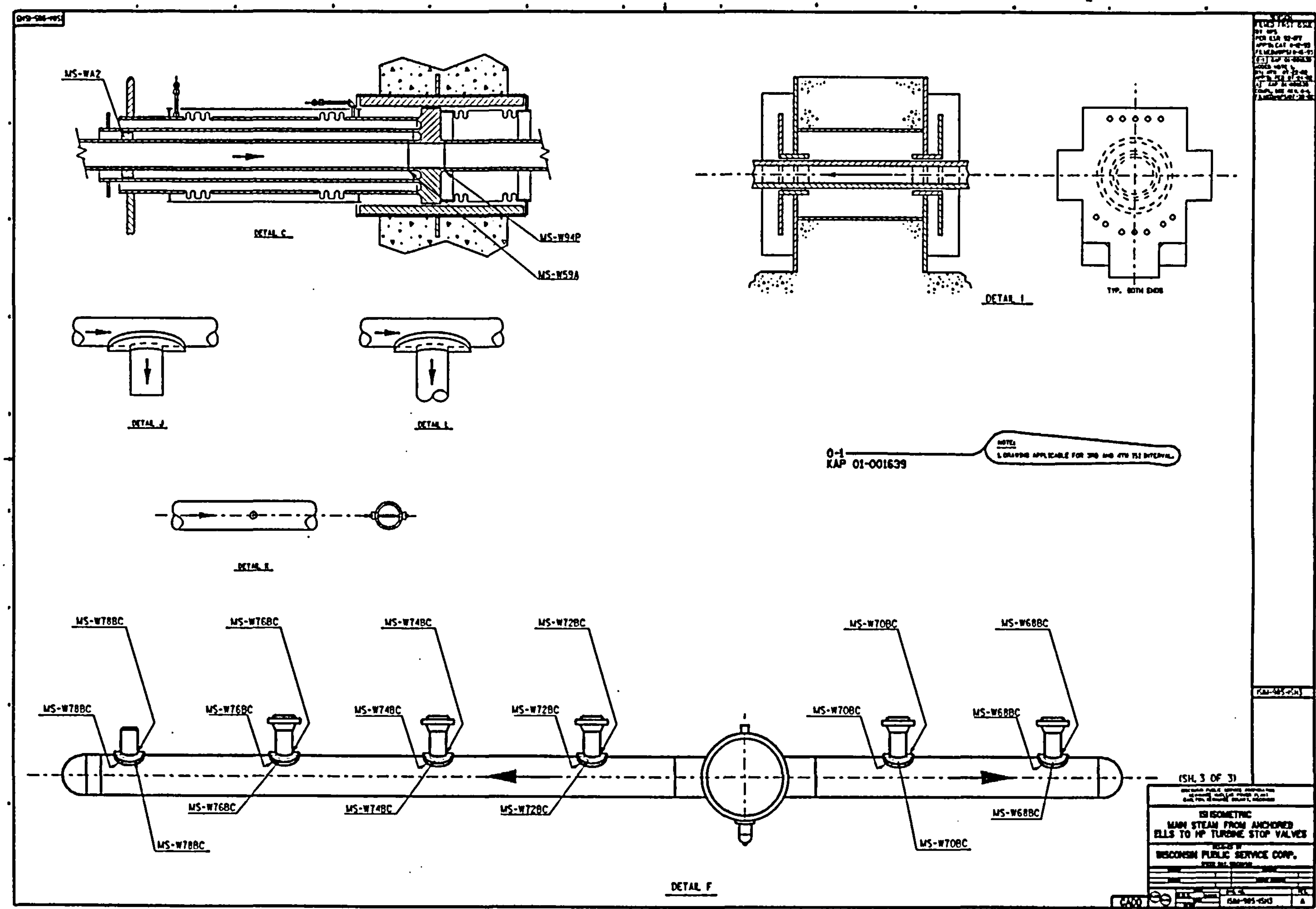
WISCONSIN PUBLIC SERVICE CORP.

CADD

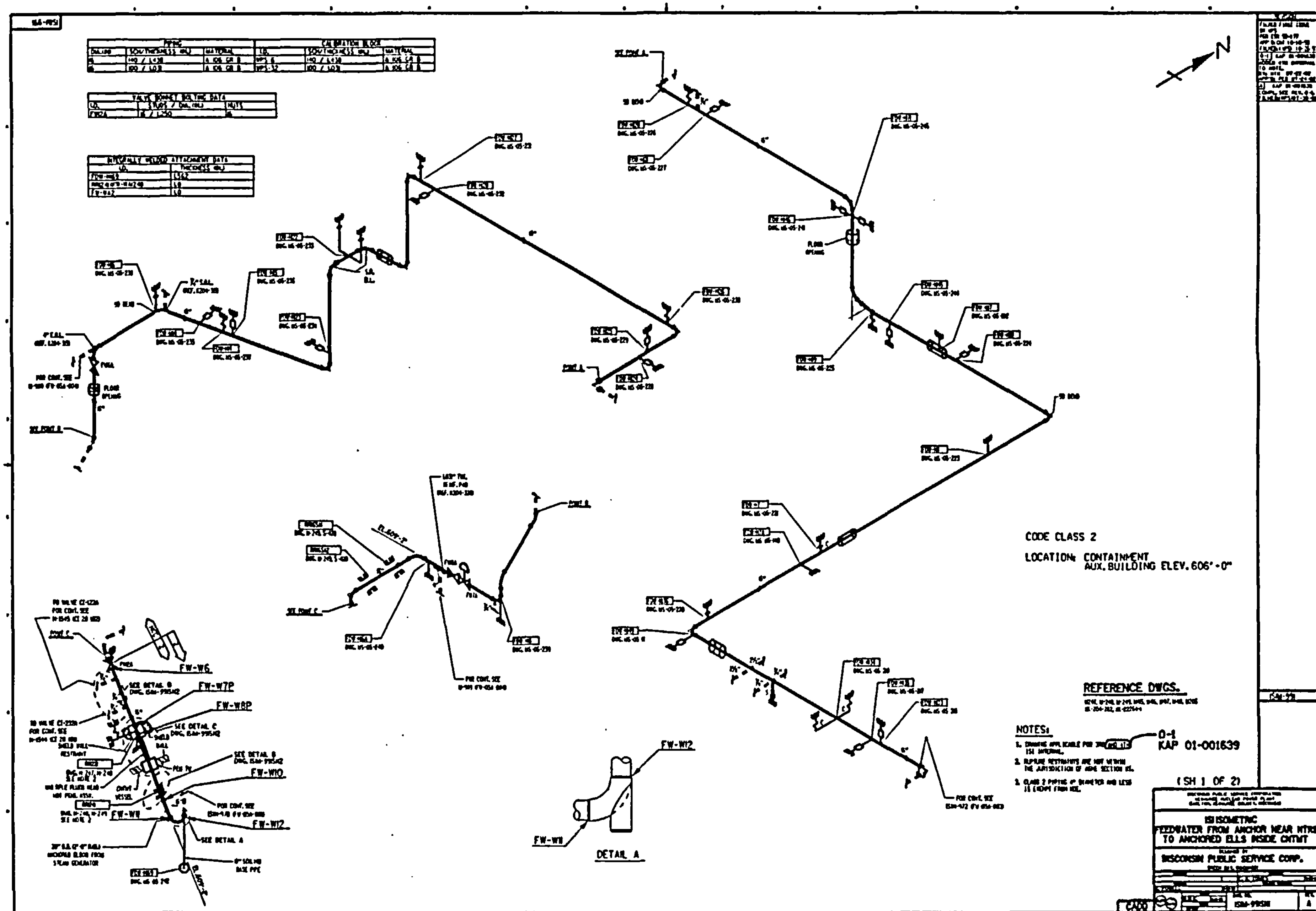
ISM-905-1SH



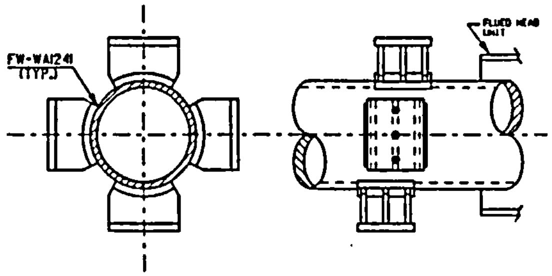
DETAIL G
MS-W83L
MS-W82L
MS-W89L
MS-W84L
MS-W85L
MS-W86L
MS-W88L
MS-W87L
DETAIL D
DETAIL E
MS-W116L
A-1
KAP 01-001639
NOTE:
(SH. 2 OF 3)
ISI ISOMETRIC
MAIN STEAM FROM ANCHORED
ELLS TO HP TURBINE STOP VALVES
WISCONSIN PUBLIC SERVICE CORP.
CADD



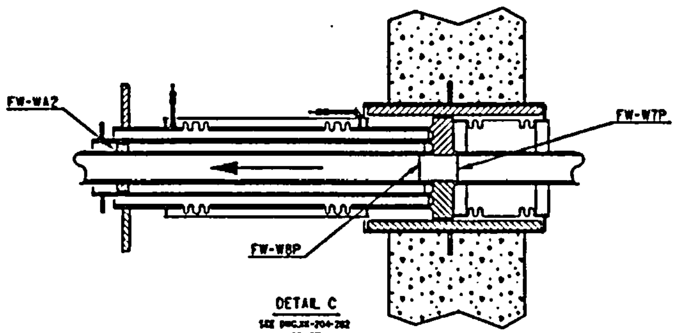
MS-WA2
DETAIL C
MS-W94P
MS-W59A
DETAIL I
TYP. BOTH ENDS
DETAIL J
DETAIL L
0-1
KAP 01-001639
NOTE:
DETAIL K
MS-W78BC
MS-W76BC
MS-W74BC
MS-W72BC
MS-W70BC
MS-W68BC
DETAIL F
(SH. 3 OF 3)
ISI ISOMETRIC
MAIN STEAM FROM ANCHORED
ELLS TO HP TURBINE STOP VALVES
WISCONSIN PUBLIC SERVICE CORP.
CADD



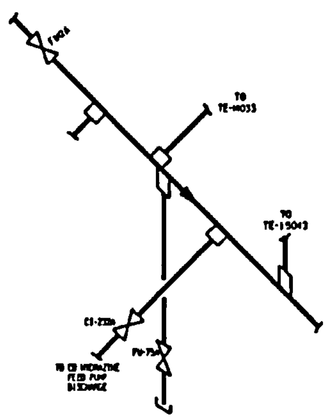
CODE CLASS 2
LOCATION: CONTAINMENT
AUX. BUILDING ELEV. 606'-0"
FW-W6
FW-W7P
FW-W8P
FW-W10
FW-W11
FW-W12
DETAIL A
REFERENCE DWGS.
NOTES:
0-1
KAP 01-001639
(SH 1 OF 2)
ISI ISOMETRIC
FEEDWATER FROM ANCHOR NEAR MTRS
TO ANCHORED ELLS INSIDE CNTMT
WISCONSIN PUBLIC SERVICE CORP.
CADD



DETAIL B



DETAIL C



DETAIL D

NOTES:

1. DRAWING APPLICABLE FOR 3RD ISI INTERVAL.
2. CLASS 2 PIPING 4" DIAMETER AND LESS IS EXEMPT FROM NDE.

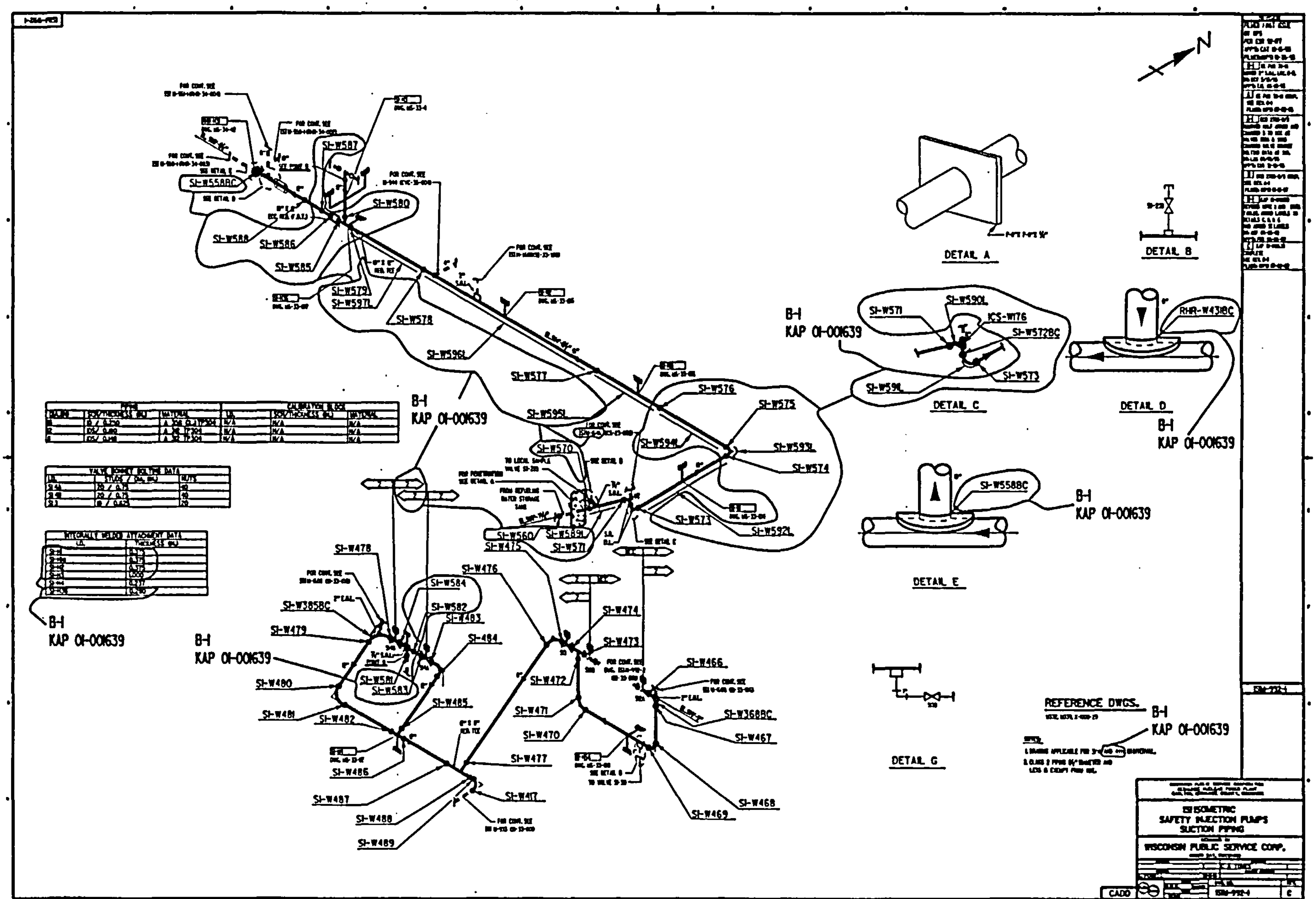
A-1
KAP 01-001639

(SH 2 OF 2)

ISI ISOMETRIC
FEEDWATER FROM ANCHOR NEAR HTRS TO ANCHORED ELLS INSIDE CNTMT

WISCONSIN PUBLIC SERVICE CORP.

CADD



N
DETAIL A
DETAIL B
DETAIL C
DETAIL D
DETAIL E
DETAIL G
SI-W558BC
SI-W587
SI-W580
SI-W588
SI-W586
SI-W585
SI-W579
SI-W597L
SI-W578
SI-W596L
SI-W577
SI-W595L
SI-W576
SI-W575
SI-W594L
SI-W593L
SI-W574
SI-W573
SI-W592L
SI-W570
SI-W560
SI-W589L
SI-W571
SI-W475
SI-W571
SI-W590L
ICS-W176
SI-W572BC
SI-W573
SI-W591L
RHR-W4318C
SI-W558BC
B-1
KAP 01-001639
SI-W478
SI-W584
SI-W385BC
SI-W582
SI-W483
SI-W479
SI-484
SI-W480
SI-W581
SI-W583
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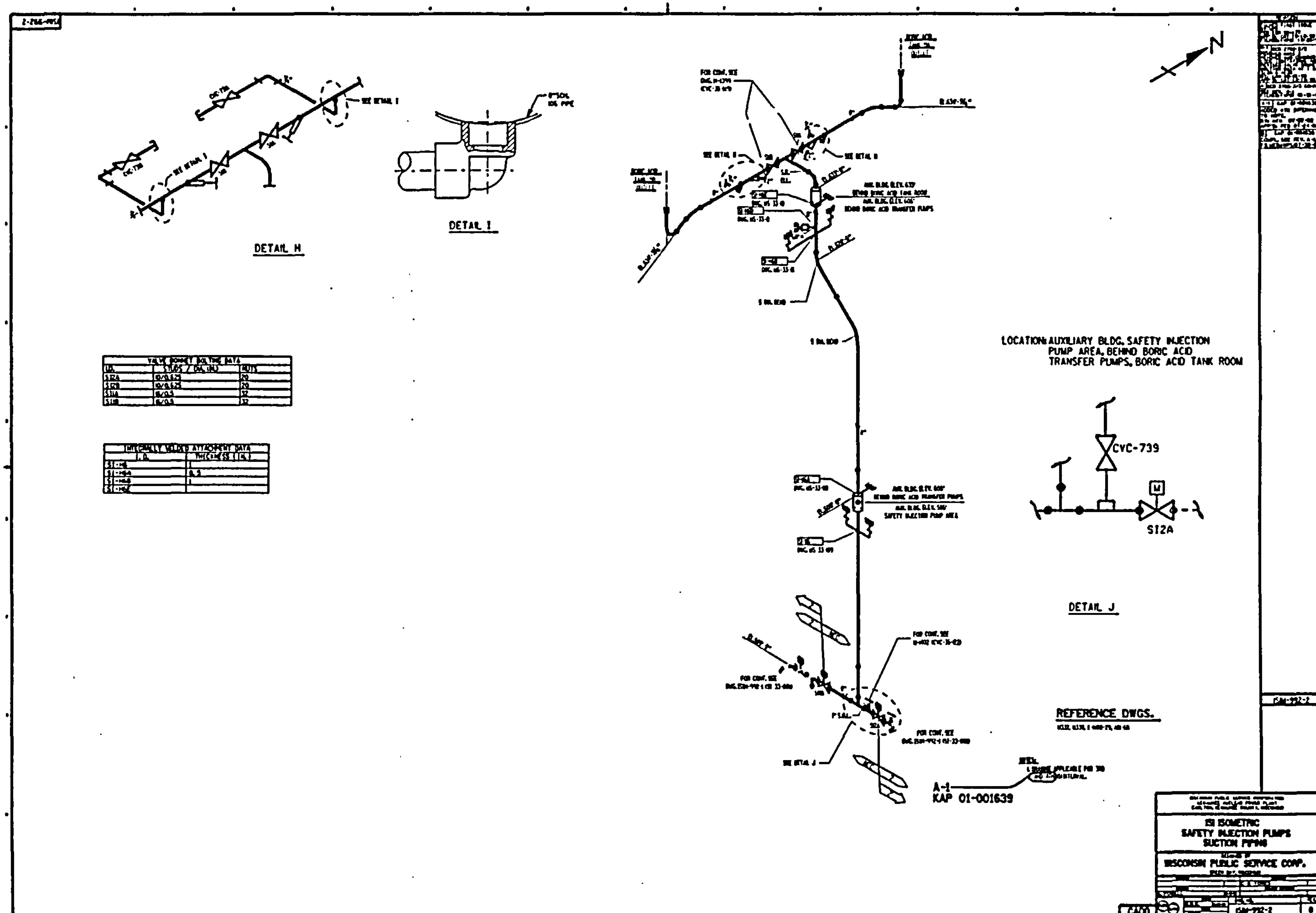
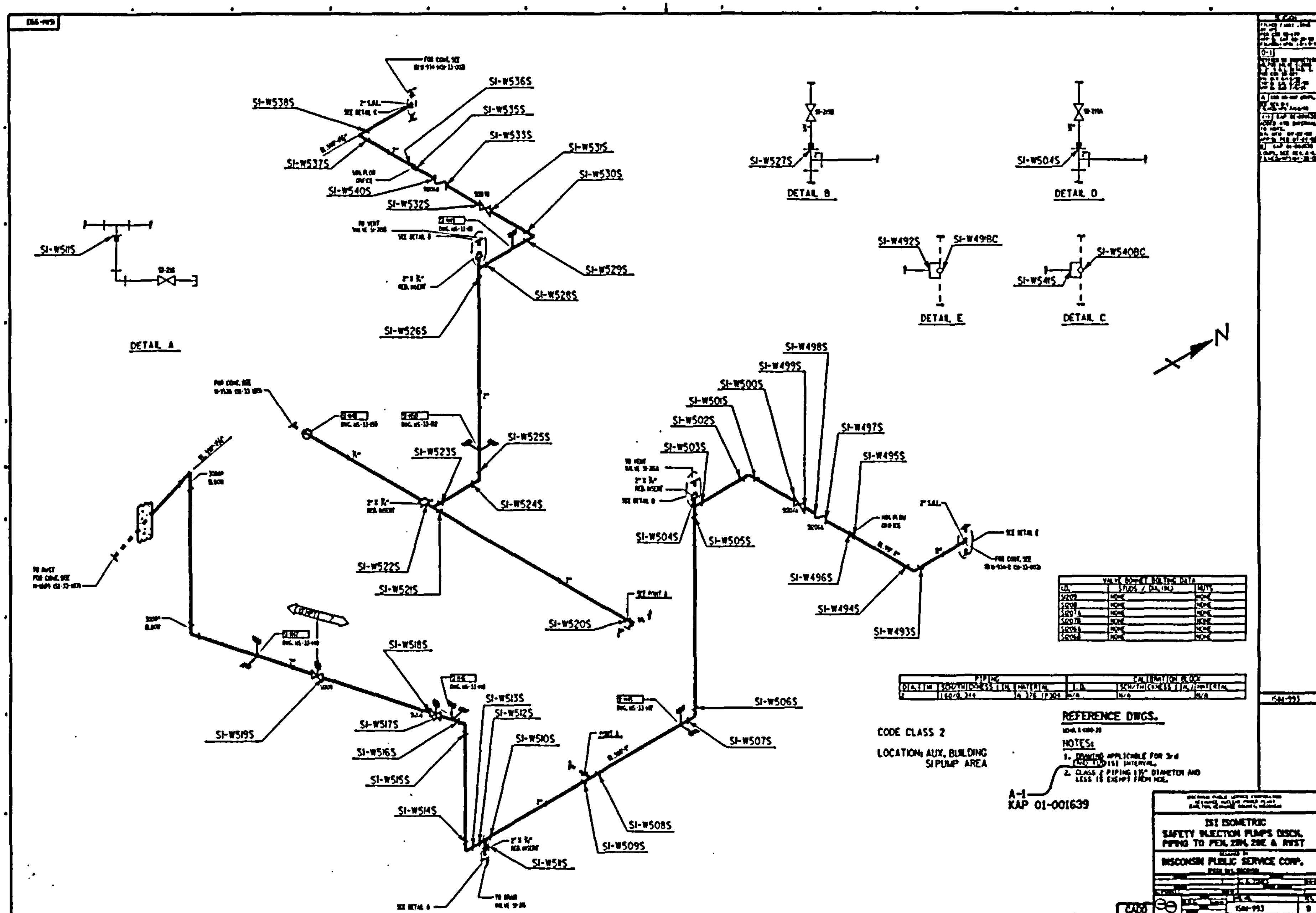
SI-W481
SI-W482
SI-W486
SI-W487
SI-W488
SI-W489
SI-W476
SI-W474
SI-W473
SI-W472
SI-W471
SI-W470
SI-W477
SI-W417
SI-W466
SI-W368BC
SI-W467
SI-W468
SI-W469
REFERENCE DWGS.
ISI ISOMETRIC
SAFETY INJECTION PUMPS
SUCTION PIPING
WISCONSIN PUBLIC SERVICE CORP.
CADD

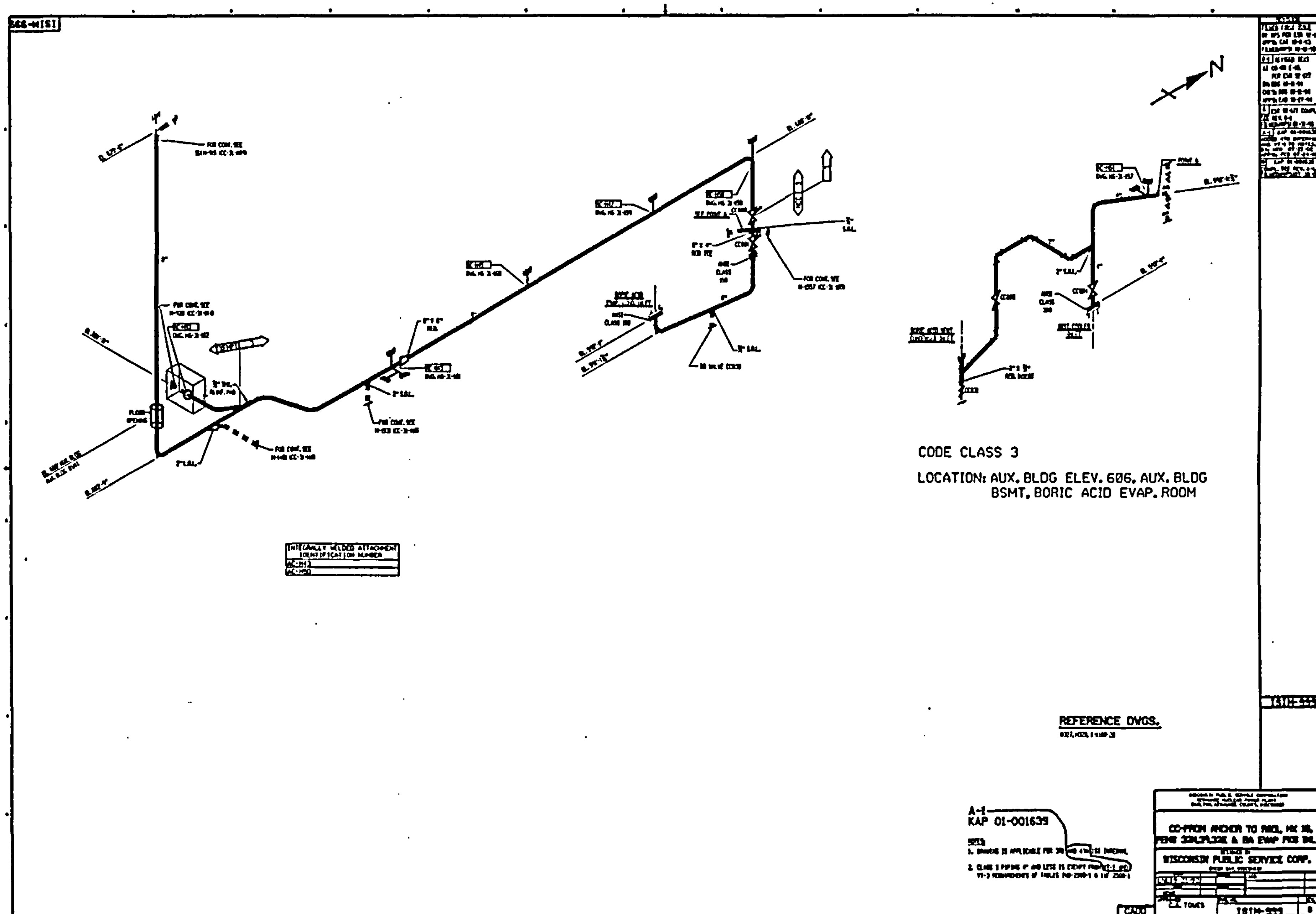


VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN)	NUTS
SI2A	10/0.625	20
SI2B	10/0.625	20
SI1A	16/0.5	32
SI1B	16/0.5	32

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
SI-H6	1
SI-H5A	0.5
SI-H8	1
SI-H5	

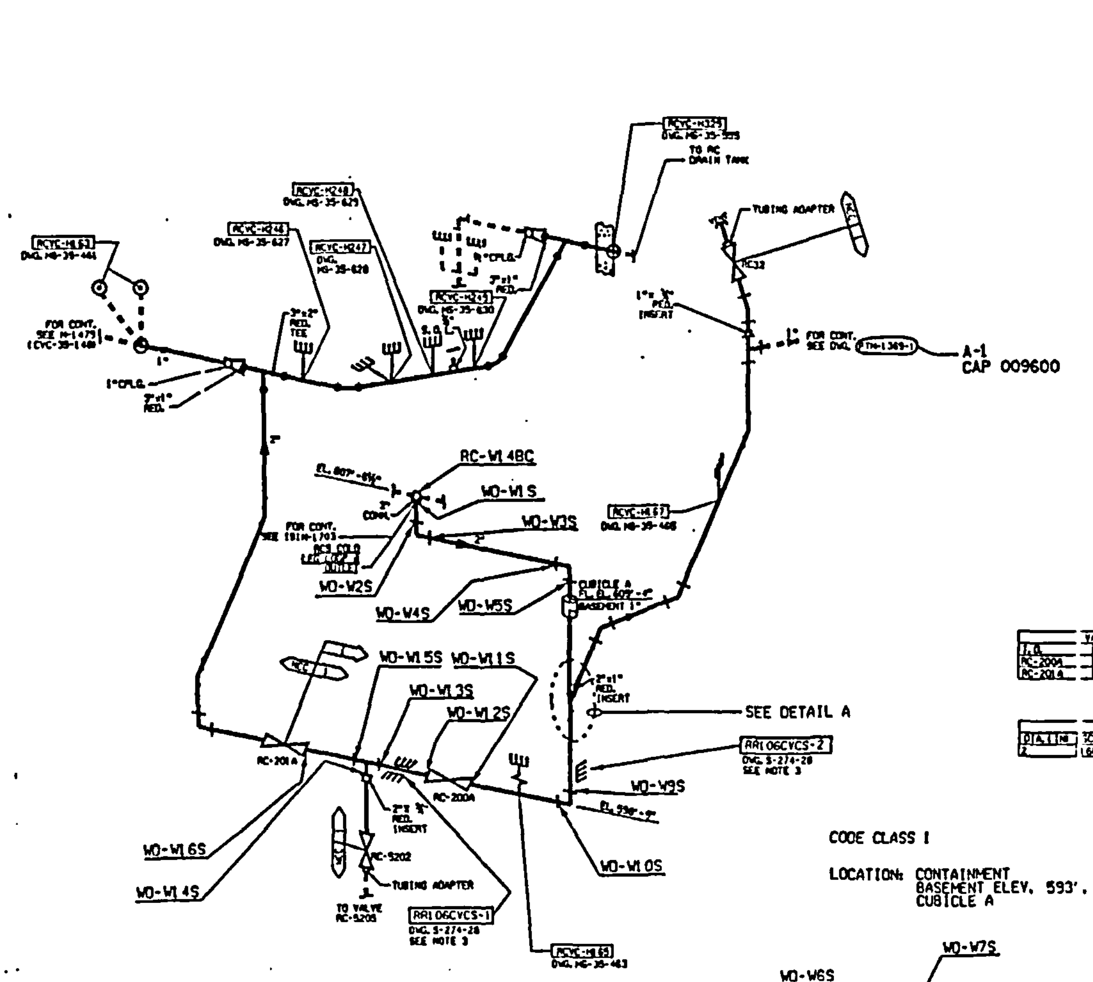


SI-W538S
SI-W536S
SI-W535S
SI-W533S
SI-W537S
SI-W540S
SI-W532S
SI-W531S
SI-W530S
SI-W529S
SI-W528S
SI-W526S
SI-W511S
DETAIL A
SI-W527S
DETAIL B
SI-W504S
DETAIL D
SI-W492S
SI-W491BC
DETAIL E
SI-W540BC
SI-W541S
DETAIL C
N
SI-W498S
SI-W499S
SI-W500S
SI-W501S
SI-W502S
SI-W503S
SI-W497S
SI-W495S
SI-W504S
SI-W505S
SI-W496S
SI-W494S
SI-W493S
SI-W525S
SI-W523S
SI-W524S
SI-W522S
SI-W521S
SI-W520S
SI-W518S
SI-W517S
SI-W516S
SI-W515S
SI-W514S
SI-W513S
SI-W512S
SI-W510S
SI-W519S
SI-W506S
SI-W507S
SI-W508S
SI-W509S
SI-W51S
CODE CLASS 2
LOCATION: AUX. BUILDING
SI PUMP AREA
REFERENCE DWGS.
NOTES:
1. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
2. CLASS 2 PIPING 1½" DIAMETER AND LESS IS EXEMPT FROM NDE.
A-1
KAP 01-001639
ISI ISOMETRIC
SAFETY INJECTION PUMPS DISCH.
PIPING TO PEN. 29N, 29E & RWST
WISCONSIN PUBLIC SERVICE CORP.
ISI-993
CADD



N
CODE CLASS 3
LOCATION: AUX. BLDG ELEV. 606, AUX. BLDG BSMT, BORIC ACID EVAP. ROOM
INTEGRALLY WELDED ATTACHMENT IDENTIFICATION NUMBER
REFERENCE DWGS.
A-1
KAP 01-001639
WISCONSIN PUBLIC SERVICE CORP.
CADD
ISIM-999

Z-69C1-H151

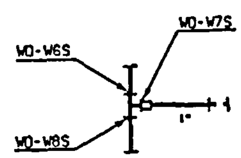


	VALVE BONNET BOLTING DATA	
I.D.	STUDS / DIA. (IN.)	NUTS
RC-200A	NONE	NONE
RC-201A	NONE	NONE

	PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL	
2	160/0.344	A 376 TP304	WPS-21	160/0.344	A 312 TP304	

CODE CLASS I

LOCATION: CONTAINMENT
BASEMENT ELEV. 593'.
CUBICLE A



DETAIL A

NOTES:

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

REFERENCE DWGS.

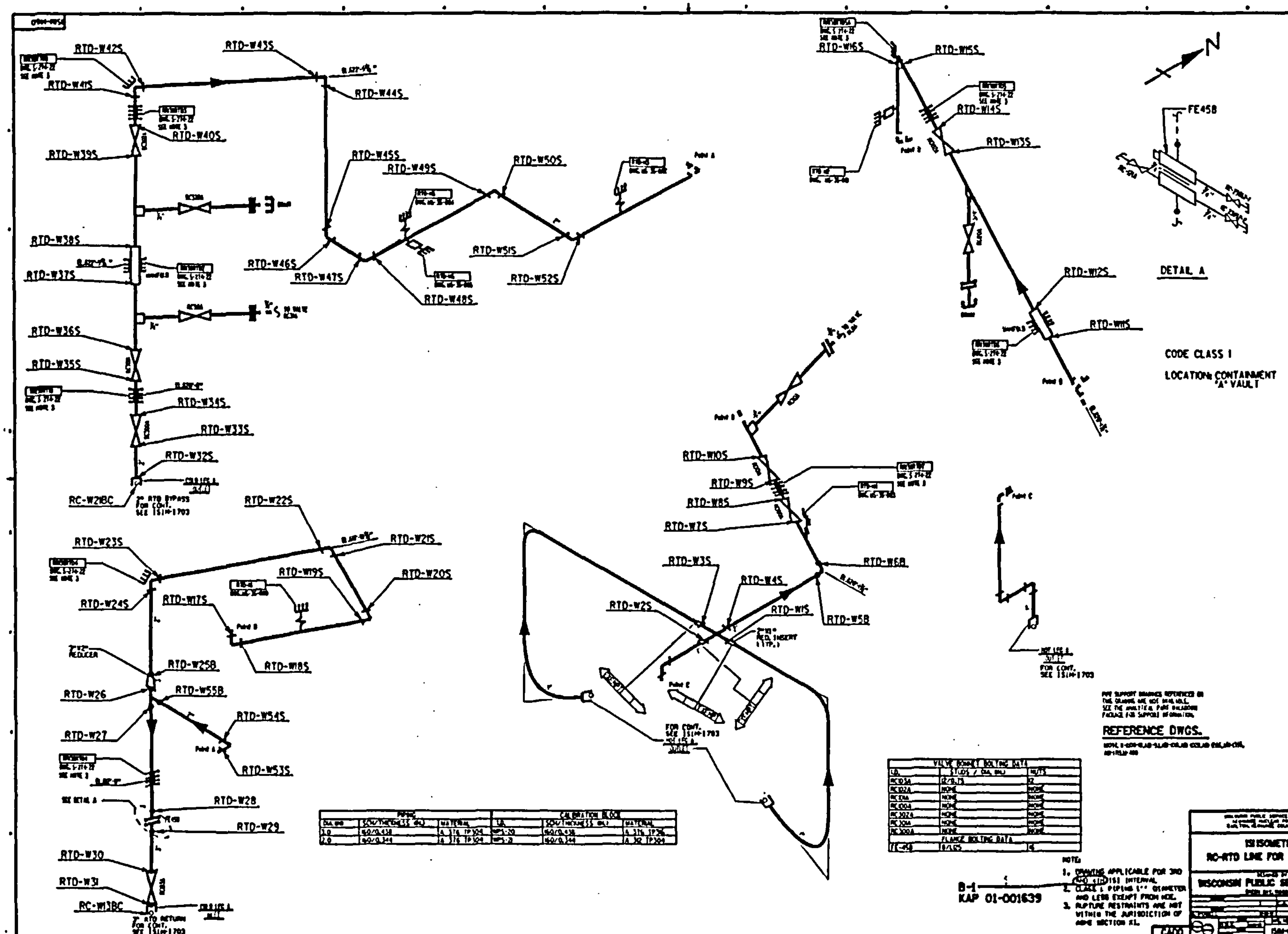
ISIM-1369-2

ISI ISOMETRIC
RCS COLD LEG LOOP A
AND EXCESS LETDOWN LINE

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-1369-2



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
3.0	160/0.438	A 376 TP304	NPS-3.0	160/0.438	A 376 TP304
2.0	160/0.344	A 376 TP304	NPS-2.0	160/0.344	A 312 TP304

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN)	NUTS
RC103A	12/0.75	12
RC102A	NONE	NONE
RC101A	NONE	NONE
RC100A	NONE	NONE
RC302A	NONE	NONE
RC301A	NONE	NONE
RC300A	NONE	NONE
FLANGE BOLTING DATA		
FE-458	8/1.125	16

PIPE SUPPORT DRAWINGS REFERENCED ON THIS DRAWING ARE NOT AVAILABLE. SEE THE ANALYTICAL PIPE SUPPORT PACKAGE FOR SUPPORT INFORMATION.

REFERENCE DWGS.

NOTE:

1. DRAWING APPLICABLE FOR 3RD (ISI) INTERVAL
2. CLASS 1 PIPING 1" DIAMETER AND LESS EXEMPT FROM ACE.
3. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.

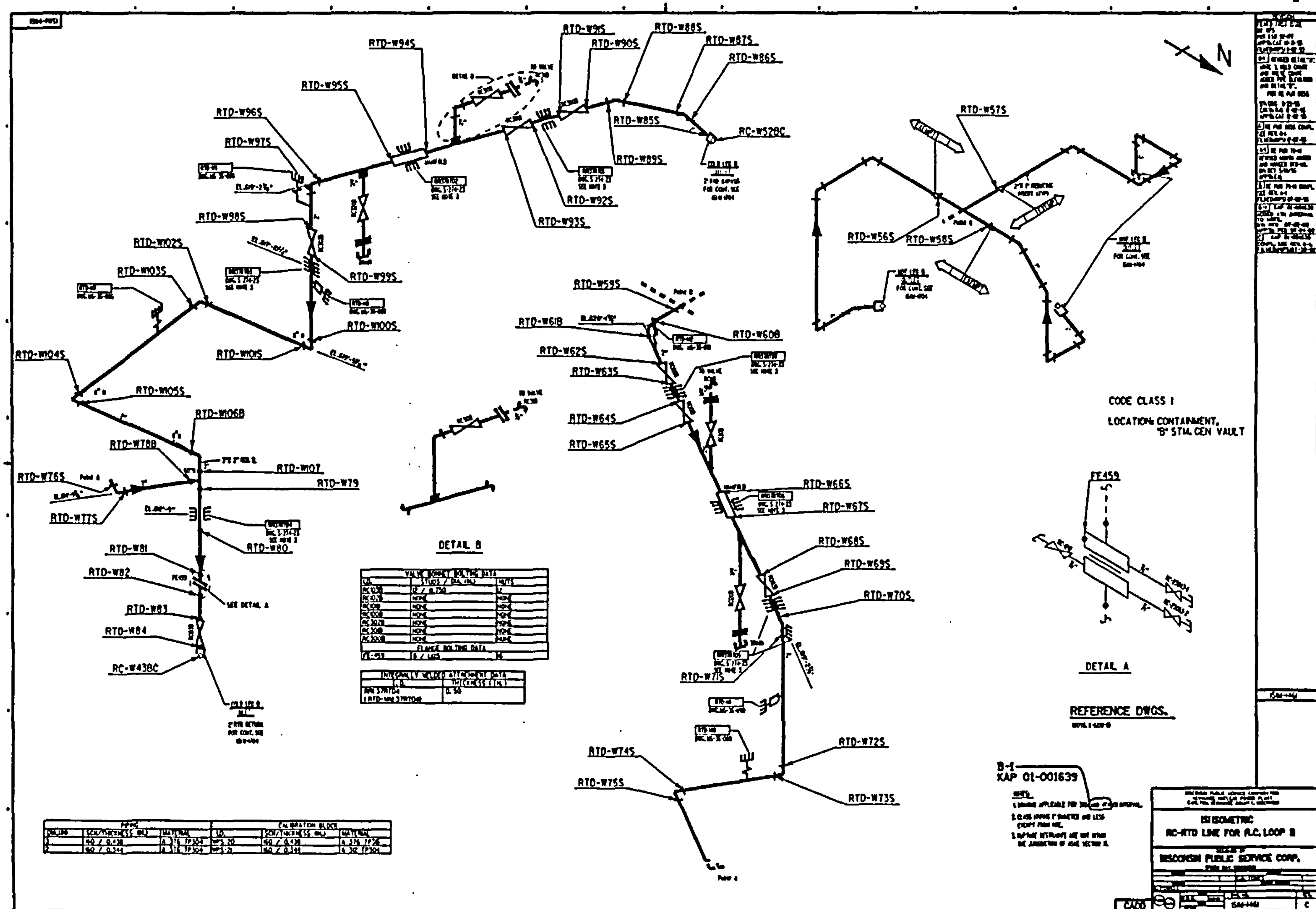
B-1
KAP 01-001639

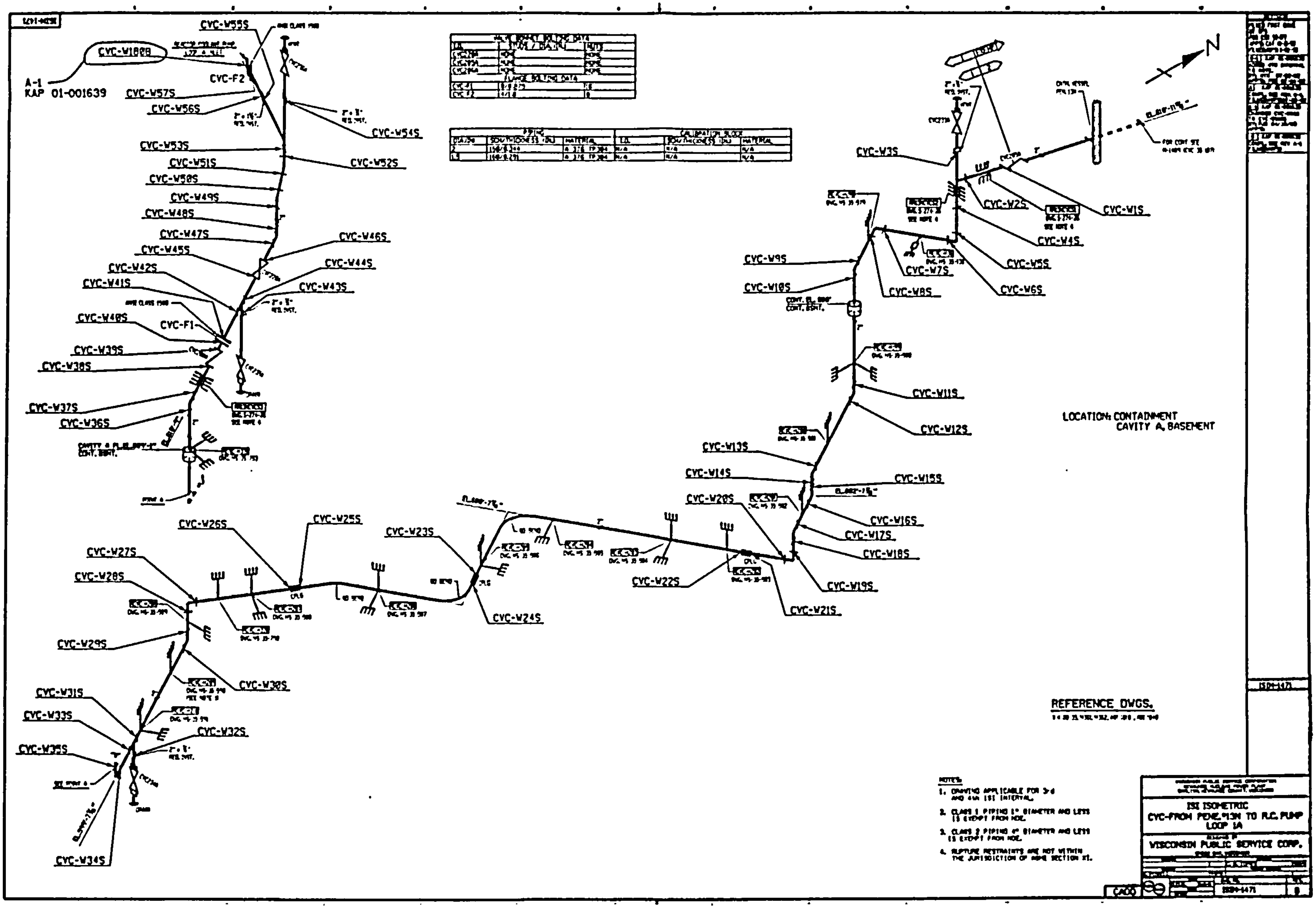
ISI ISOMETRIC
RC-RTD LINE FOR R.C. LOOP A

WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-1460 C


RTD-W94S
RTD-W95S
RTD-W96S
RTD-W97S
RTD-W98S
RTD-W99S
RTD-W100S
RTD-W101S
RTD-W102S
RTD-W103S
RTD-W104S
RTD-W105S
RTD-W106B
RTD-W107
RTD-W78B
RTD-W76S
RTD-W77S
RTD-W79
RTD-W80
RTD-W81
RTD-W82
RTD-W83
RTD-W84
RC-W43BC
RTD-W91S
RTD-W90S
RTD-W88S
RTD-W87S
RTD-W86S
RTD-W85S
RTD-W89S
RC-W52BC
RTD-W92S
RTD-W93S
RTD-W57S
RTD-W56S
RTD-W58S
RTD-W59S
RTD-W61B
RTD-W60B
RTD-W62S
RTD-W63S
RTD-W64S
RTD-W65S
RTD-W66S
RTD-W67S
RTD-W68S
RTD-W69S
RTD-W70S
RTD-W71S
RTD-W72S
RTD-W73S
RTD-W74S
RTD-W75S
N
SEE DETAIL A
DETAIL B
DETAIL A
FE459
CODE CLASS I
LOCATION: CONTAINMENT, "B" STM. GEN VAULT
REFERENCE DWGS.
B-1
KAP 01-001639
ISI ISOMETRIC
RC-RTD LINE FOR R.C. LOOP B
WISCONSIN PUBLIC SERVICE CORP.
CADD
C



VALVE BONNET BOLTING DATA		
I.D.	SIZE / QUANTITY	NUTS
[illegible]	NONE	NONE
[illegible]	NONE	NONE
[illegible]	NONE	NONE
FLANGE BOLTING DATA		
CVC-F1	[illegible]	[illegible]
CVC-F2	[illegible]	[illegible]

PIPING			CALIBRATION BLOCK		
DIA/IN	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
2	160/0.344	A 376 TP 304	N/A	N/A	N/A
1.5	160/0.281	A 376 TP 304	N/A	N/A	N/A

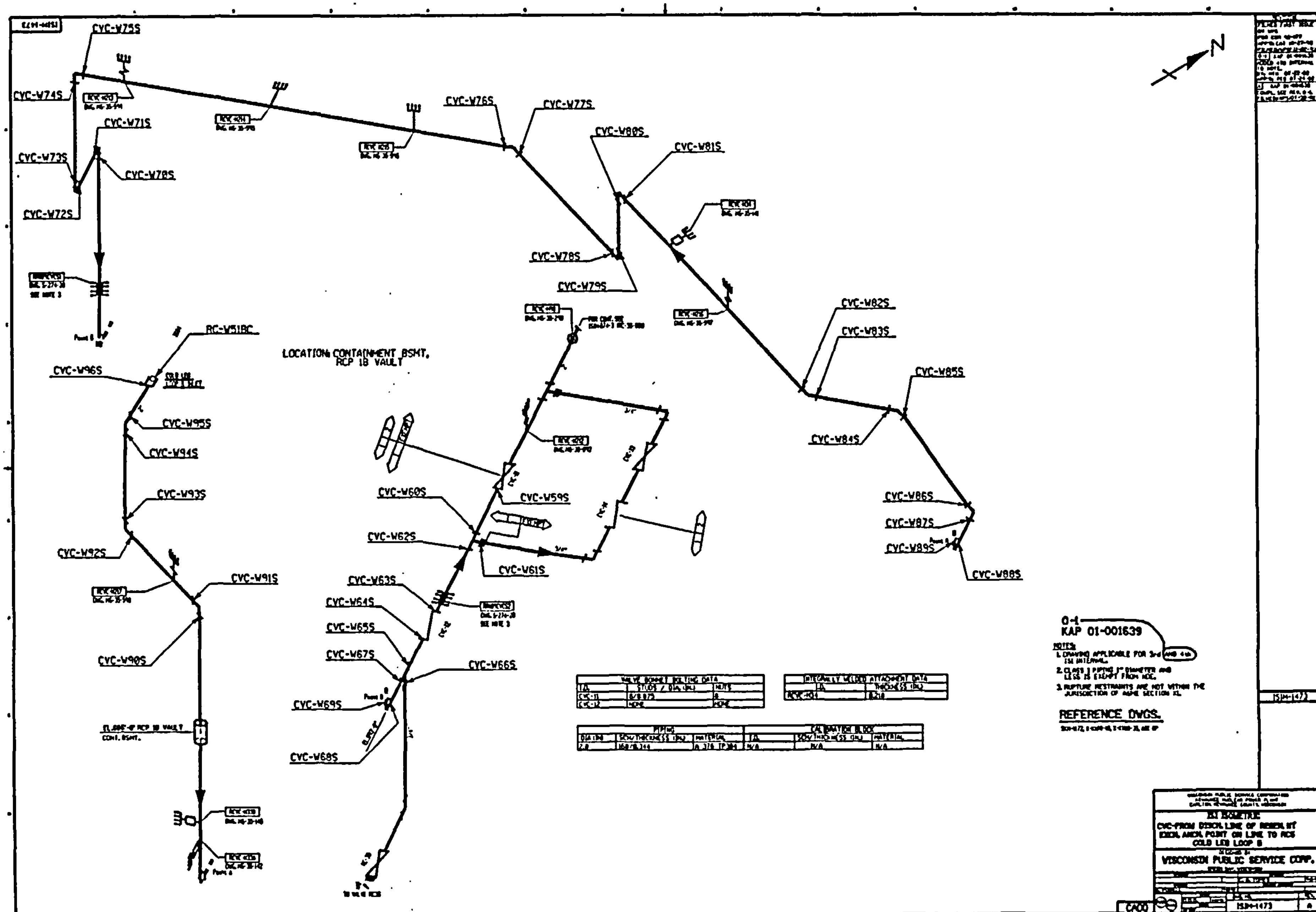
NOTES:

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.

ISI ISOMETRIC
CVC-FROM PENE. 13N TO R.C. PUMP LOOP 1A

WISCONSIN PUBLIC SERVICE CORP.

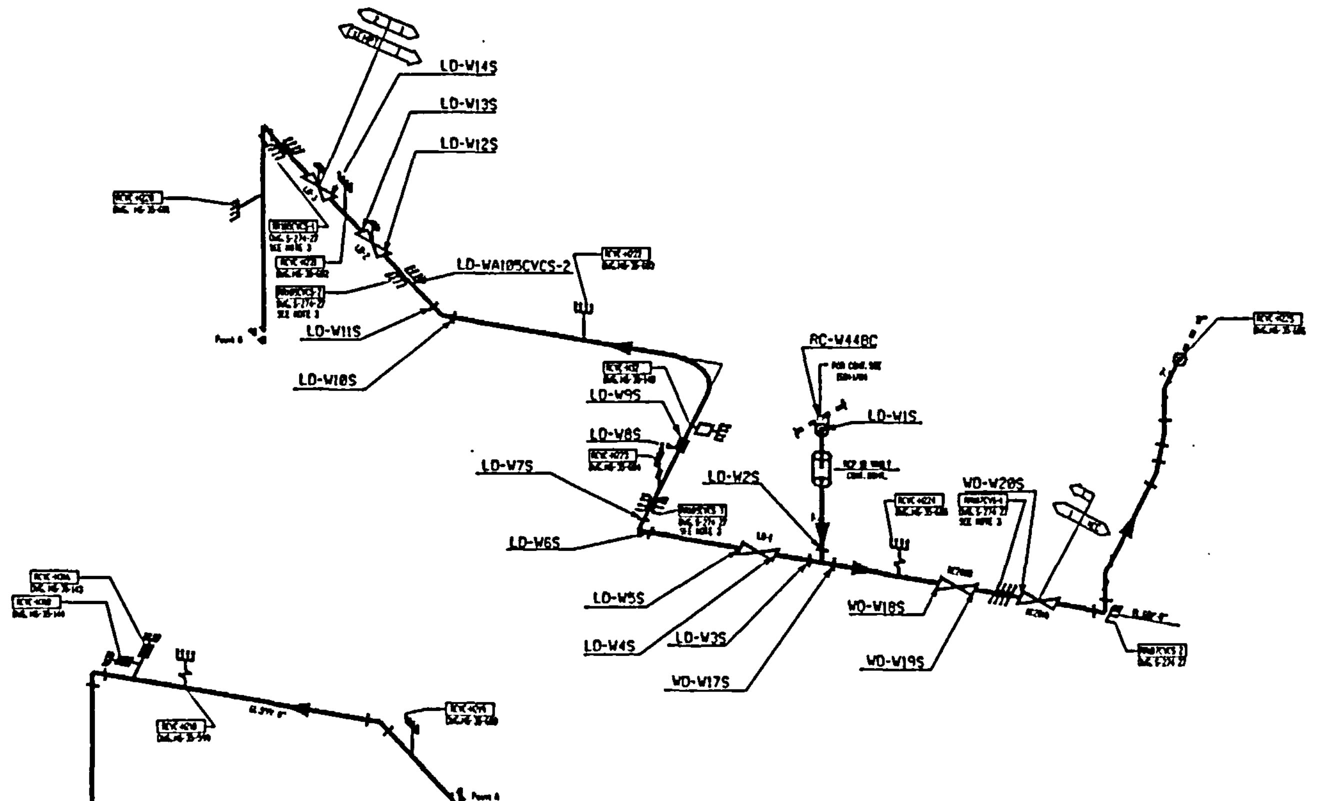
ISI-1471

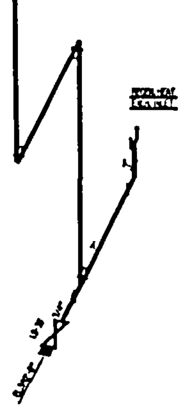


VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA (IN.)	NUTS
CVC-11	8/0.875	8
CVC-12	NONE	NONE

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN.)
RCYC-H04	0.218

PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
2.0	160/0.344	A 376 TP304	N/A	N/A	N/A





LOCATION: CONTAINMENT BSMT. RCP 1B VAULT

PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
2.0	160/0.344	A 312 TP304	N/A	N/A	N/A

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA (IN)	NUTS
LD-2	8/0.875	8
LD-3	8/0.875	8
LD-1	NONE	NONE
RC200B	NONE	NONE
RC210	NONE	NONE

INTEGRALLY WELDED ATTACHMENT DATA	
I.D.	THICKNESS (IN)
WA105CVCS-2 (LD-WA105CVCS-2)	0.5

A-1
KAP 01-001639

NOTES:

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

PIPE SUPPORT DRAWINGS REFERENCED ON THIS DRAWING MAY NOT BE AVAILABLE. SEE THE ANALYTICAL PART PIPE SUPPORT VALIDATION PACKAGE IF THE SUPPORT DRAWING HAS NOT BEEN MADE INTO A CONTROLLED DRAWING.

REFERENCE DWGS.

[illegible]

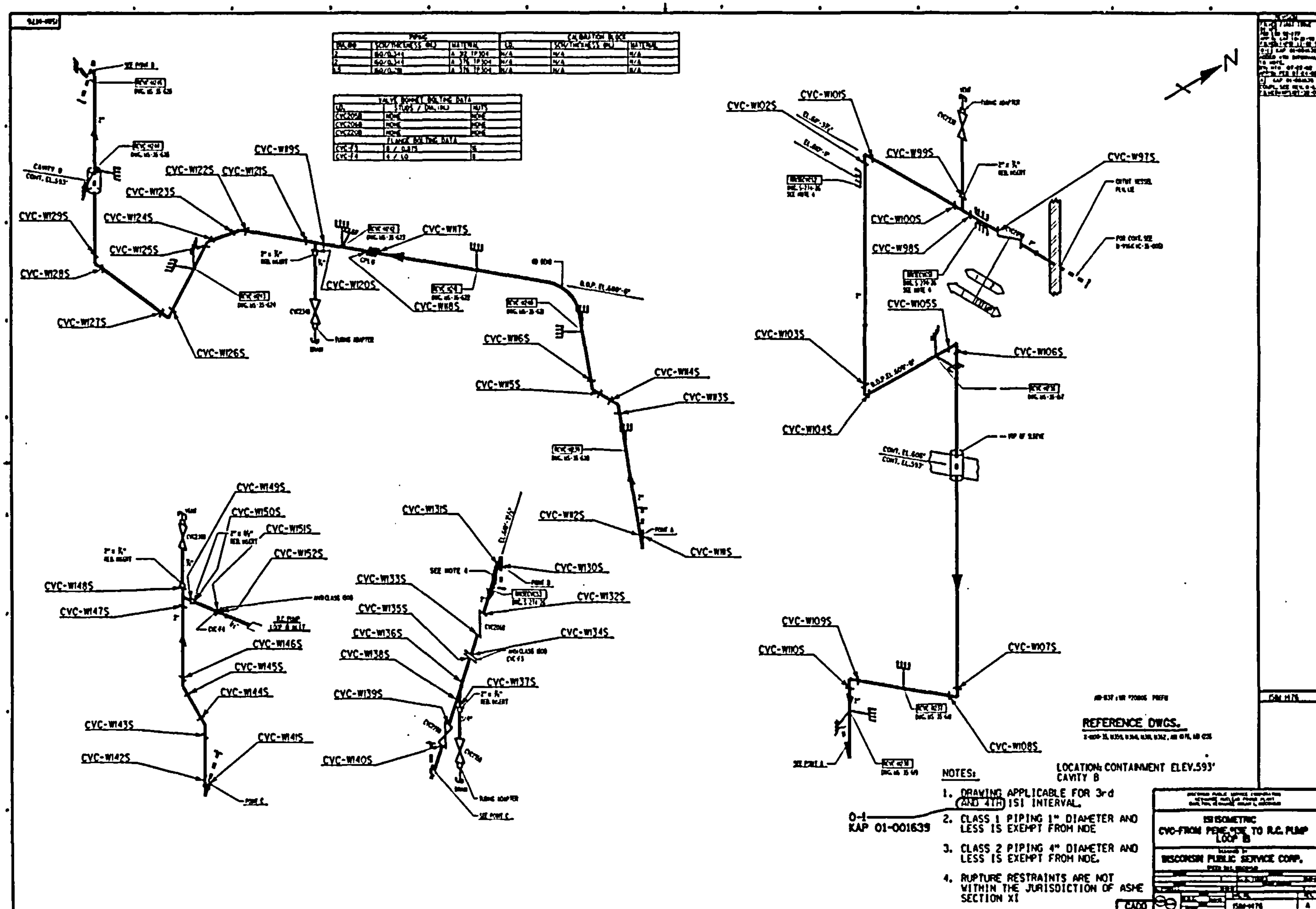
ISI ISOMETRIC

CVC-FROM LOOP B OF PUMP SUCTION TO REGENERATIVE HT. EXCH.

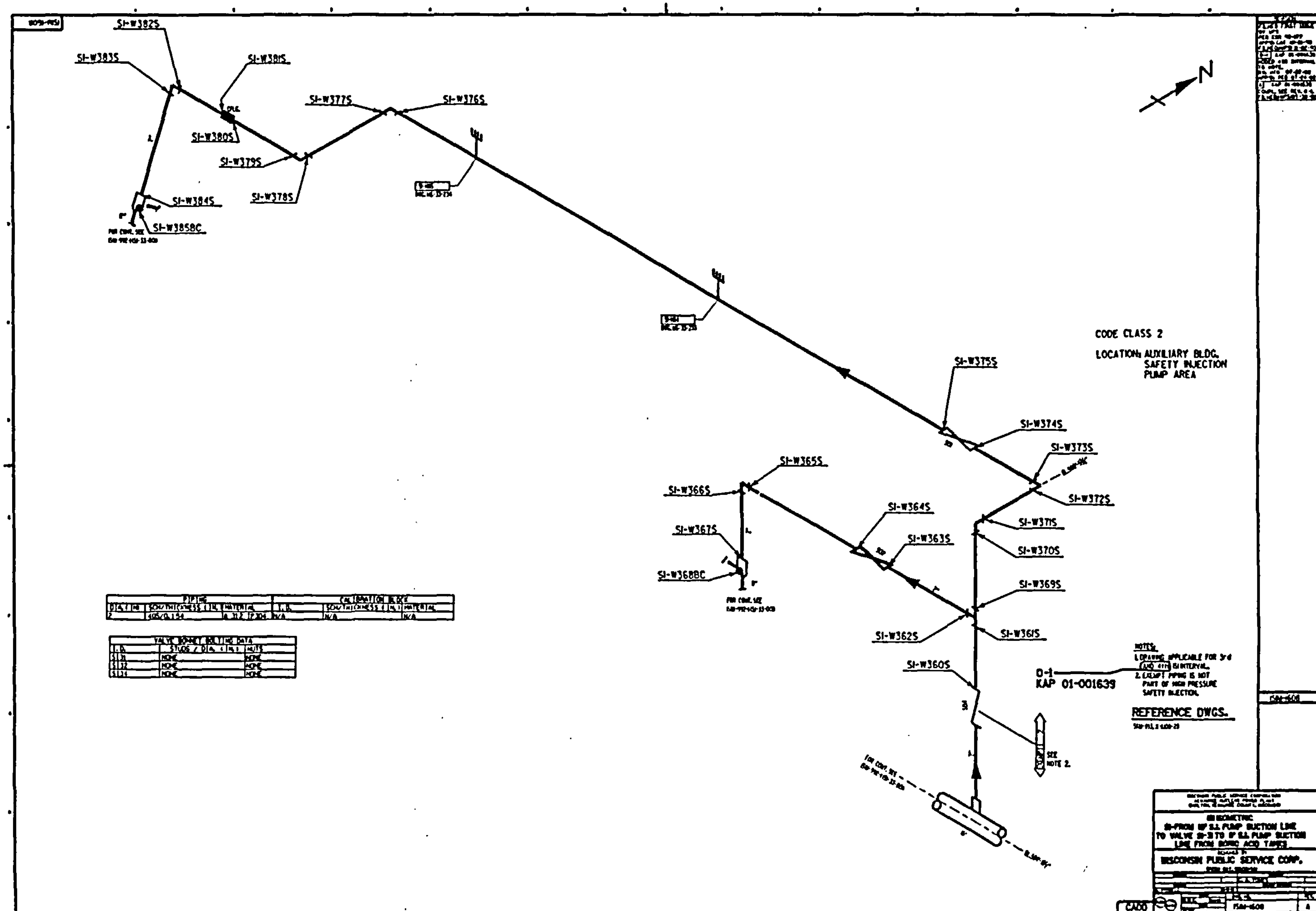
WISCONSIN PUBLIC SERVICE CORP.

CADD

ISIM-1474 | B

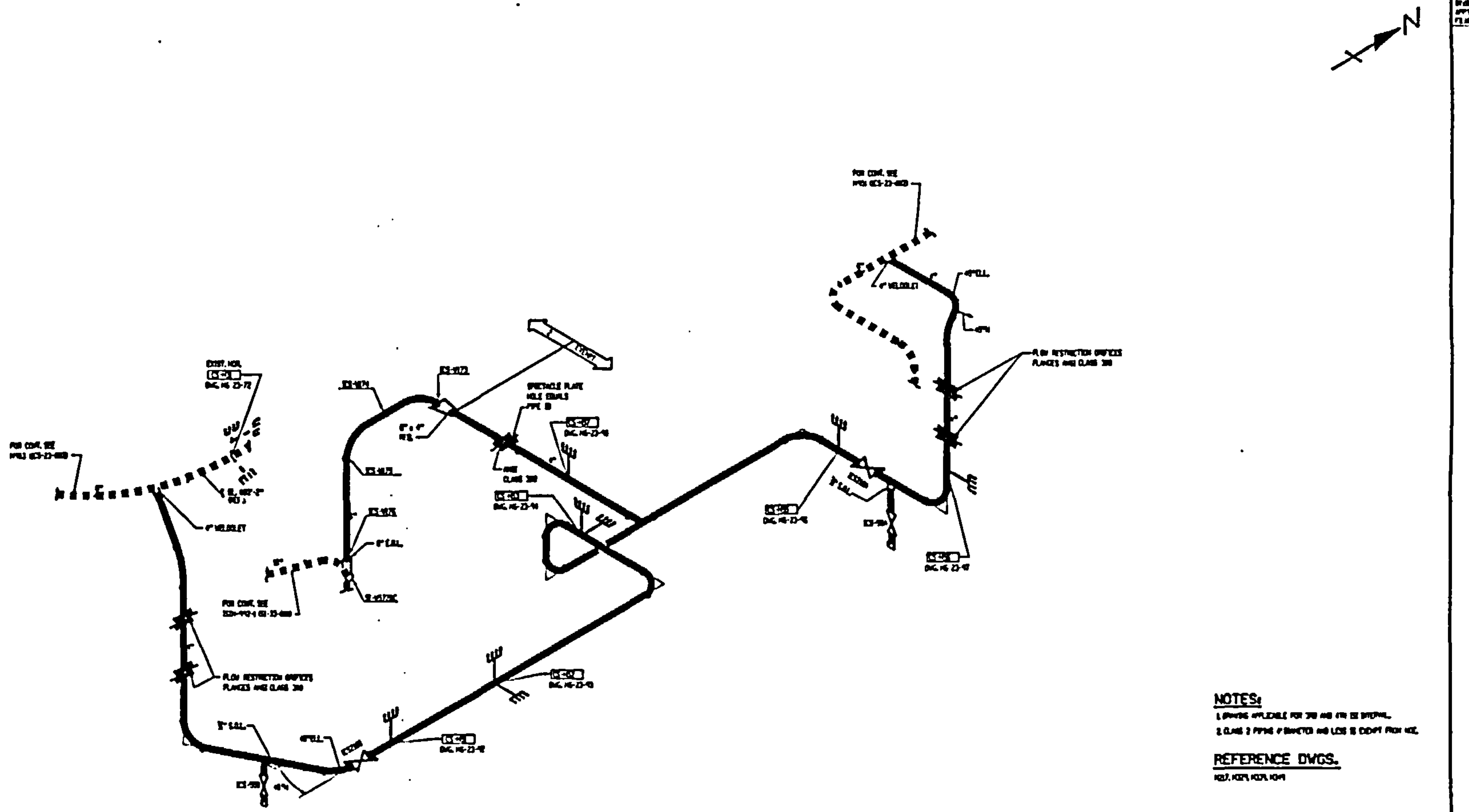


CVC-W129S
CVC-W128S
CVC-W127S
CVC-W126S
CVC-W125S
CVC-W124S
CVC-W123S
CVC-W122S
CVC-W121S
CVC-W120S
CVC-W119S
CVC-W118S
CVC-W117S
CVC-W116S
CVC-W115S
CVC-W114S
CVC-W113S
CVC-W112S
CVC-W111S
CVC-W102S
CVC-W101S
CVC-W99S
CVC-W97S
CVC-W100S
CVC-W98S
CVC-W105S
CVC-W103S
CVC-W106S
CVC-W104S
CVC-W109S
CVC-W110S
CVC-W107S
CVC-W108S
CVC-W149S
CVC-W150S
CVC-W151S
CVC-W152S
CVC-W148S
CVC-W147S
CVC-W146S
CVC-W145S
CVC-W144S
CVC-W143S
CVC-W142S
CVC-W141S
CVC-W131S
CVC-W130S
CVC-W133S
CVC-W132S
CVC-W135S
CVC-W136S
CVC-W134S
CVC-W138S
CVC-W137S
CVC-W139S
CVC-W140S
N
REFERENCE DWGS.
LOCATION: CONTAINMENT ELEV.593'
CAVITY B
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
0-1
KAP 01-001639
ISOMETRIC
CVC-FROM PENE TO R.C. PUMP LOOP B
WISCONSIN PUBLIC SERVICE CORP.
CADD



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
2	40S/0.154	A 312 TP304	N/A	N/A	N/A

VALVE BONNET BOLTING DATA		
I.D.	STUDS / DIA. (IN.)	NUTS
SI 31	NONE	NONE
SI 32	NONE	NONE
SI 34	NONE	NONE



NOTES:

REFERENCE DWGS.

PIPING			CALIBRATION BLOCK		
[illegible]	[illegible]	MATERIAL	[illegible]	[illegible]	MATERIAL
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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

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

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

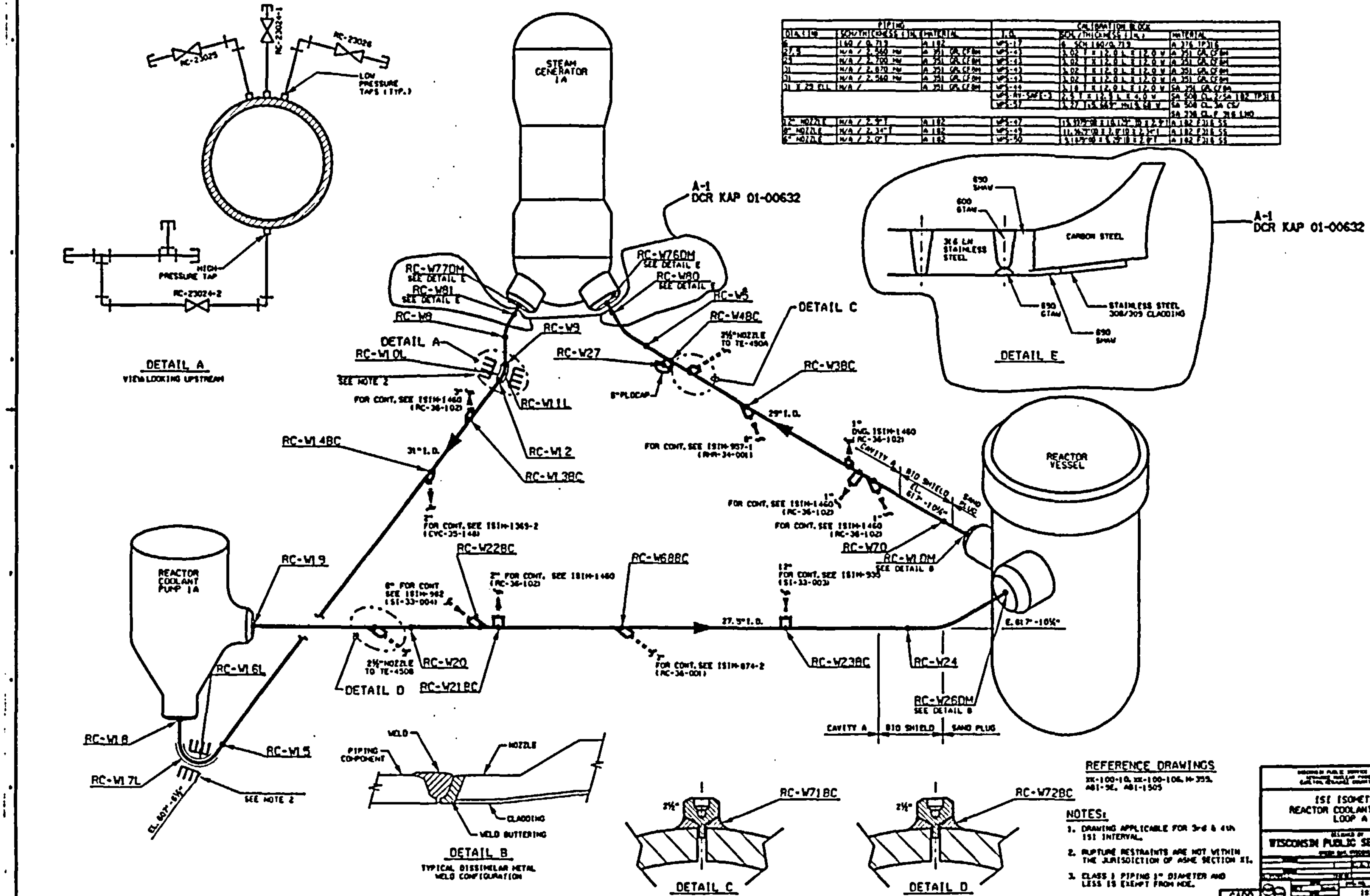
CADD

DWG. NO. ISIM-1646

REV. (-)

CODE CLASS 1

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



PIPING			CALIBRATION BLOCK		
DIA (IN)	SCH/THICKNESS (IN)	MATERIAL	I.D.	SCH/THICKNESS (IN)	MATERIAL
6	160 / 0.719	A 182	WPS-17	6 SCH 160/0.719	A 376 TP316
27.5	N/A / 2.560 MW	A 351 GR. CF8M	WPS-41	3.02 T x 12.0 L x 12.0 W	A 351 GR. CF8M
29	N/A / 2.700 MW	A 351 GR. CF8M	WPS-41	3.02 T x 12.0 L x 12.0 W	A 351 GR. CF8M
31	N/A / 2.870 MW	A 351 GR. CF8M	WPS-41	3.02 T x 12.0 L x 12.0 W	A 351 GR. CF8M
31	N/A / 2.560 MW	A 351 GR. CF8M	WPS-41	3.02 T x 12.0 L x 12.0 W	A 351 GR. CF8M
31 X 29 ELL	N/A /	A 351 GR. CF8M	WPS-44	3.18 T x 12.0 L x 12.0 W	SA 351 GR. CF8M
			WPS-RY-SAF-3	2.5 T x 12.5 L x 4.0 W	SA 508 CL. 2/SA 182 TP316
			WPS-57	3.27 [illegible]	SA 508 CL. 3A CS/ SA 336 CL.F 316 LNO
12" NOZZLE	N/A / 2.5"T	A 182	WPS-47	[illegible]	A 182 F316 SS
8" NOZZLE	N/A / 2.34"T	A 182	WPS-49	[illegible]	A 182 F316 SS
6" NOZZLE	N/A / 2.0"T	A 182	WPS-50	[illegible]	A 182 F316 SS

REFERENCE DRAWINGS

XK-100-10, XK-100-106, M-359, A81-9E, A81-1505

NOTES:

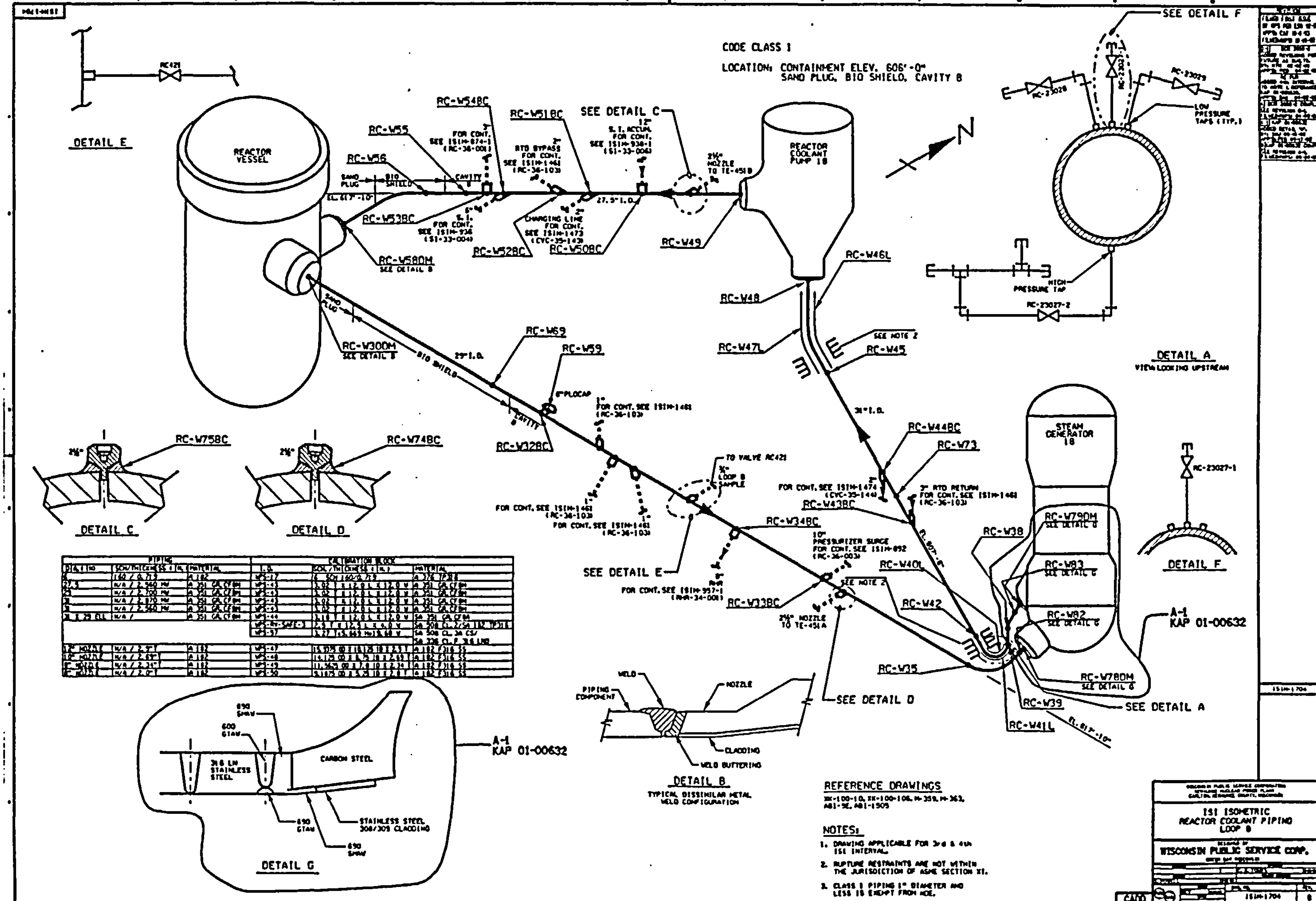
1. DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL.
2. RUPTURE RESTRAINTS ARE NOT WITHIN THE JURISDICTION OF ASME SECTION XI.
3. CLASS 1 PIPING 1" DIAMETER AND LESS IS EXEMPT FROM NDE.

ISI ISOMETRIC
REACTOR COOLANT PIPING
LOOP A

WISCONSIN PUBLIC SERVICE CORP.

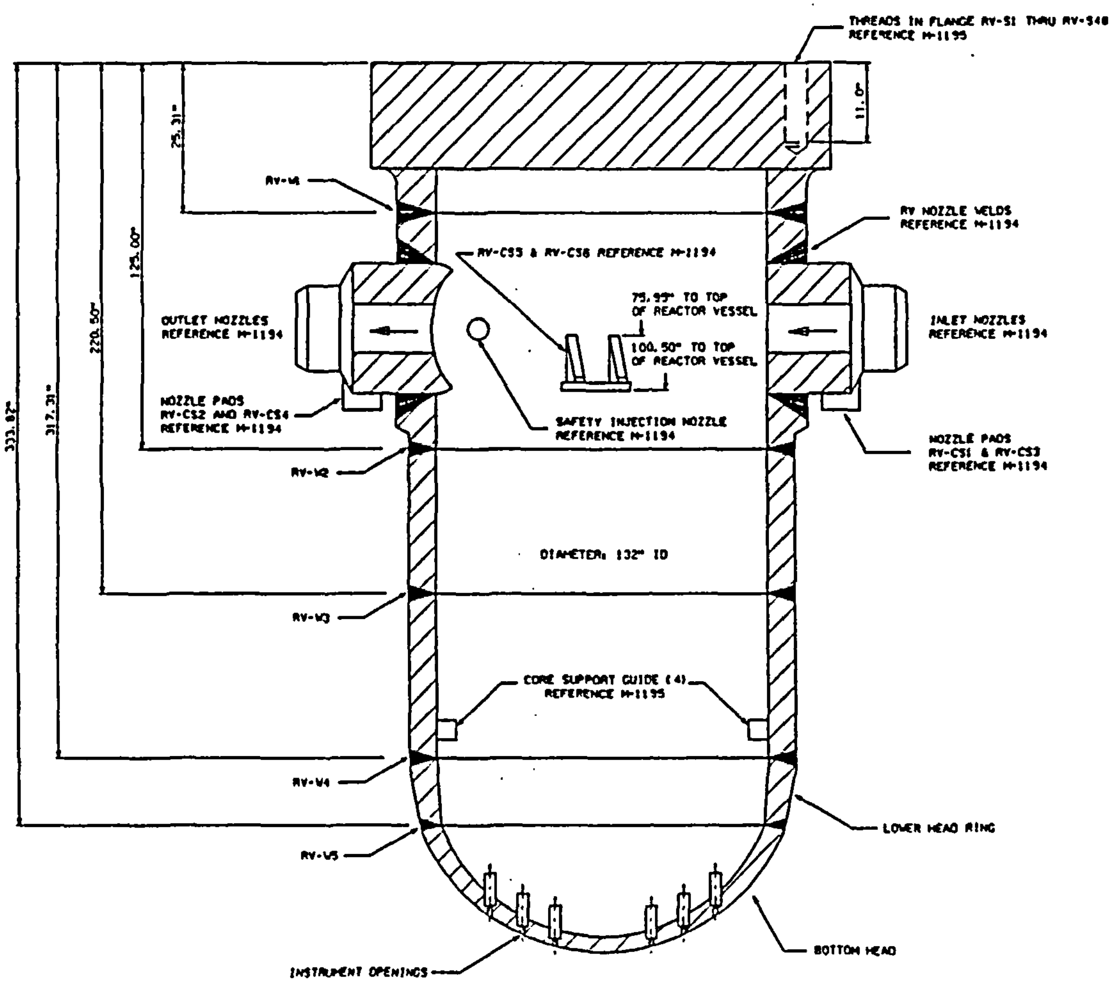
CADD

ISIH-1703



PIPING			CALIBRATION BLOCK		
DIA. (IN)	SCH/THICKNESS (IN.)	MATERIAL	I.D.	SCH/THICKNESS (IN.)	MATERIAL
6	160 / 0.719	A 182	WPS-17	6 SCH 160/0.719	A 376 TP316
27.5	N/A / 2.560 MW	A 351 GR.CF8M	WPS-43	3.02 T x 12.0 L x 12.0 W	A 351 GR.CF8M
29	N/A / 2.700 MW	A 351 GR.CF8M	WPS-43	3.02 T x 12.0 L x 12.0 W	A 351 GR.CF8M
31	N/A / 2.870 MW	A 351 GR.CF8M	WPS-43	3.02 T x 12.0 L x 12.0 W	A 351 GR.CF8M
31	N/A / 2.560 MW	A 351 GR.CF8M	WPS-43	3.02 T x 12.0 L x 12.0 W	A 351 GR.CF8M
31 X 29 ELL	N/A /	A 351 GR.CF8M	WPS-44	3.18 T x 12.0 L x 12.0 W	SA 351 GR.CF8M
			WPS-RV-SAFE-1	2.5 T x 12.5 L x 6.0 W	SA 508 CL.2/SA 182 TP316
			WPS-57	3.27 T x 5.669 H x 15.68 W	SA 508 CL. 3A CS/ SA 336 CL.F 316 LN
12" NOZZLE	N/A / 2.5" T	A 182	WPS-47	15.3125 OD x 10.125 ID x 2.5 T	A 182 F316 SS
10" NOZZLE	N/A / 2.63"	A 182	WPS-48	14.125 OD x 8.75 ID x 2.63 T	A 182 F316 SS
6" NOZZLE	N/A / 2.34"	A 182	WPS-49	11.5625 OD x 7.0 ID x 2.34 T	A 182 F316 SS
6" NOZZLE	N/A / 2.0" T	A 182	WPS-50	9.1875 OD x 5.25 ID x 2.0 T	A 182 F316 SS

M-1193



157-011

LOCATION: CONTAINMENT

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
RV-W1	9.44"	A508-64 CL. 2 CS
RV-W2	7.0"	A508-64 CL. 2 CS
RV-W3	7.0"	A508-64 CL. 2 CS
RV-W4	7.0"	A508-64 CL. 2 CS
RV-W5	4.12" MIN.	A533 GR. B CL. 1 CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-RV-1	16" [illegible] x 8.625" W	SA508 CL. 2 CS
WPS-RV-2	9.0" T x 32" L x 6.0" W	SA508 CL. 2 CS
WPS-RV-3	7.0" T x 28" L x 6.0" W	SA508 CL. 2 CS
WPS-RV-4	5.0" T x 18" L x 6.0" W	SA508 CL. 2 CS

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 1

3). RV INSTRUMENT PENETRATION ID #S: RV-P1 THRU RV-P36

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
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: (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.
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

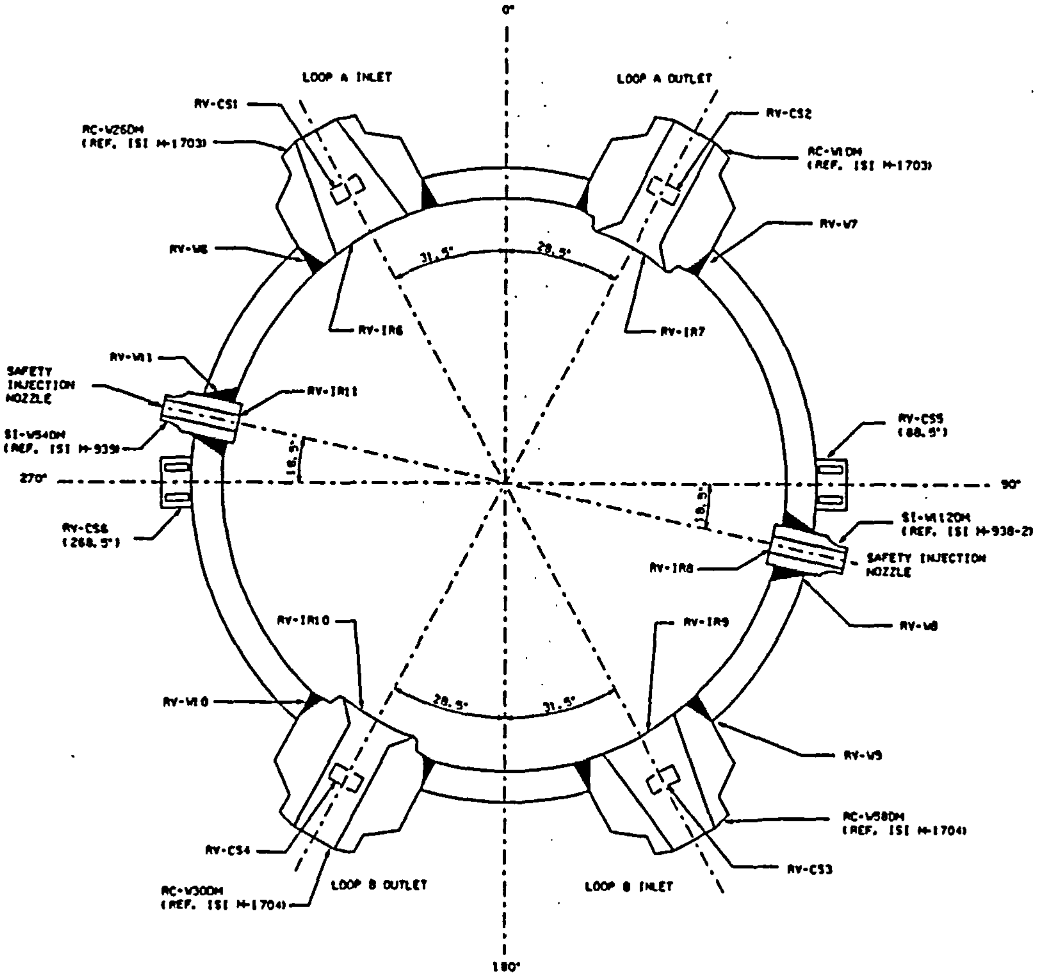
REACTOR VESSEL
RV

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED | APPROVED: PHILLIP E. BUKES 6/16/93
CHECKED: D. H. 1/17/83 | PROJECT APPROVED
DRAWN: ESS 4/1/93
SCALE: NONE
DWG. NO. M-1193
REV. E

CADD

M-1194



157-011

LOCATION: CONTAINMENT

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
RV-W6	9.44"	A508-64 CL. 2 CS
RV-IR6	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-W7	9.44"	A508-64 CL. 2 CS
RV-IR7	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-W8	9.37"	A508-64 CL. 2 CS
RV-IR8	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-W9	9.44"	A508-64 CL. 2 CS
RV-IR9	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-W10	9.44"	A508-64 CL. 2 CS
RV-IR10	INNER RADIUS SECTION	A508-64 CL. 2 CS
RV-W11	9.37"	A508-64 CL. 2 CS
RV-IR11	INNER RADIUS SECTION	A508-64 CL. 2 CS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
RV-CS5	4.25"	SA 516 GR. 70 CS
RV-CS6	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.	DIAMETER/SCHEDULE	MATERIAL
WPS-RV-1	16"THK=31"L&T=8.625"W	SA-508-64 CL. 3 CS
WPS-RV-2	9.0"T=32"L=6.0"W	SA-508-64 CL. 2 CS
WPS-RV-3	7.0"T=28"L=6.0"W	SA-508-64 CL. 3 CS
WPS-SIS-01	6.0"T=15"L=4.0"W	SA-508-64 CL. 2 CS

E-1
KAP 01-001639

NOTES:

1). DRAWING APPLICABLE FOR 3rd ~~AND 4th~~ ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

REVISION
F KAP 01-001639 COMPLETE SEE REV. E-1. FILMED:(WPS)
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:(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 PDR 0149 REVISED WELD ATTCH. DATA. ADDED INLET AND OUTLET NOZZEL WELD DATA. BY: J.SPICE 2-21-97 APP'D: PCM 02-21-97
D PDR 0149 COMPL. SEE REV. C-1 FILM'D:(WPS) 02-25-97
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:(WPS) 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

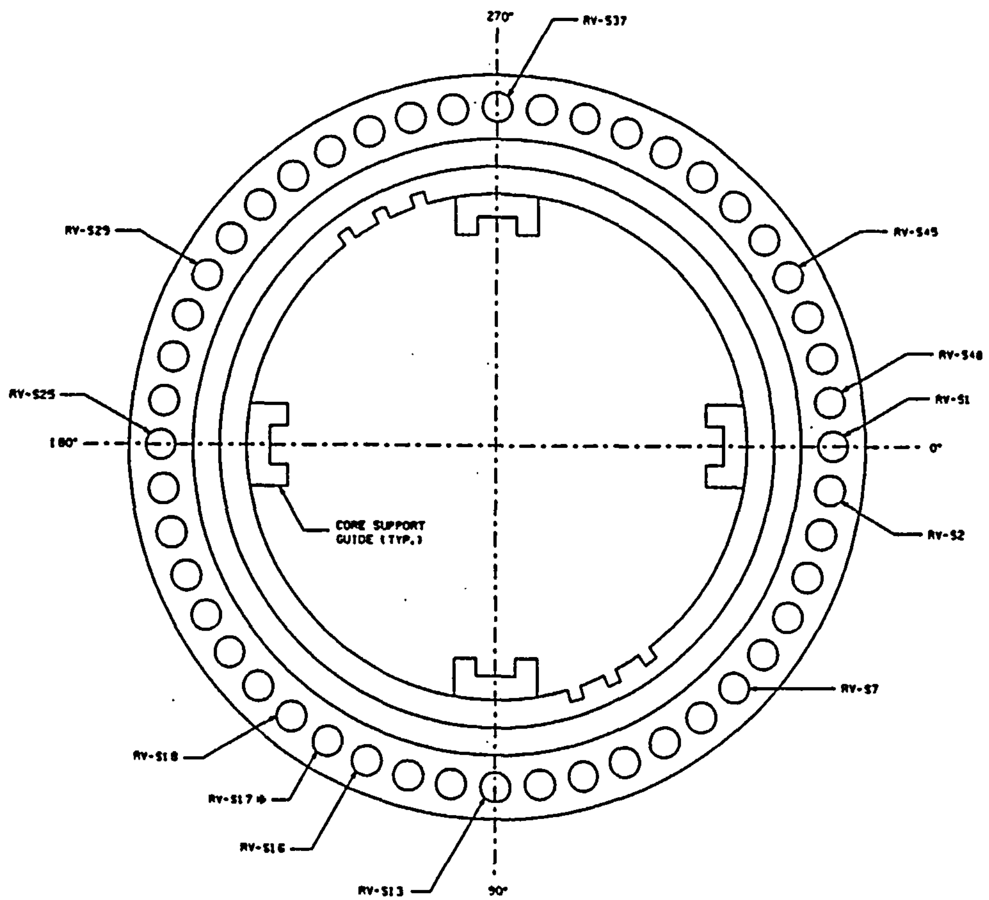
REACTOR VESSEL NOZZLES AND INTEGRALLY WELDED ATTACHMENTS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/16/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		
DRAWN: ESS	4/1/93	DWG. NO. M-1194	REV. F
SCALE: NONE			

CADD

M-1195



✱ NOTE: LOCATION FOR REACTOR VESSEL STUD, NUT AND WASHERS #55.

157-011

D-1
KAP 01-001639

LOCATION: CONTAINMENT

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
RV-S1 THRU RV-S48	11.0"	A508-64 CL.2 CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-35	6.0"T:20"L:6.0"W	SA508 CL.2 CS
WPS-RV-4	5.0"T:10"L:6.0"W	SA508 CL.2 CS

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 1

REVISION

A
PDO 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
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: (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.
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 THREADS IN FLANGE

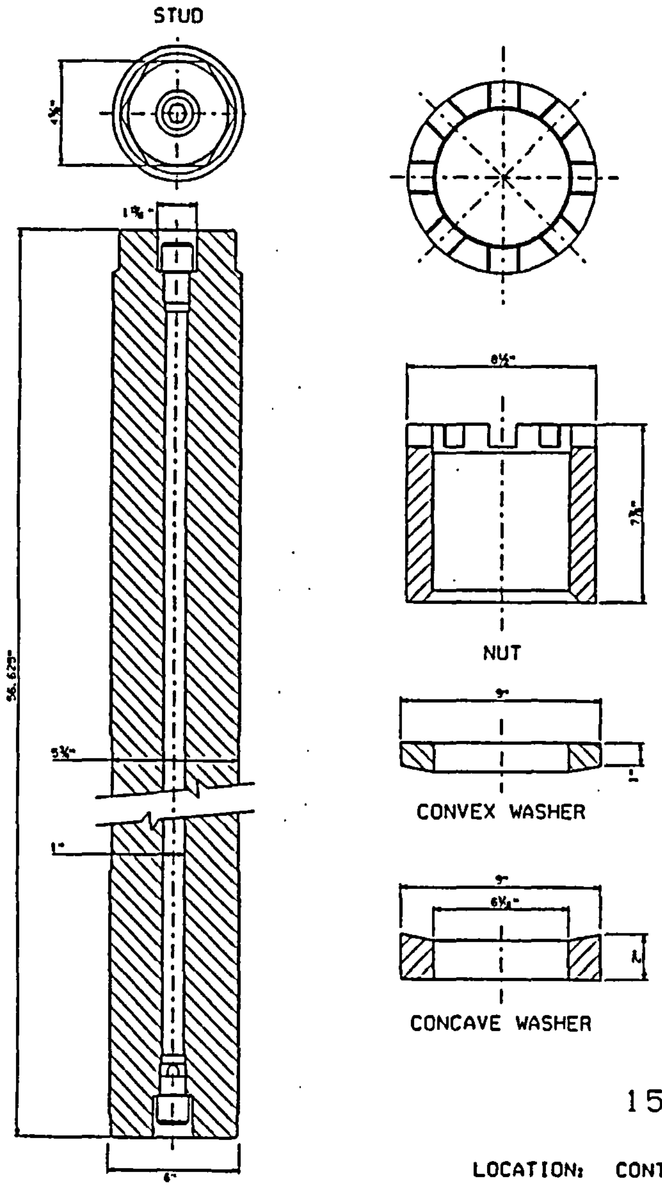
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/16/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		

CADD

DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1195	E
SCALE			
NONE			

9611-W



COMPONENT DATA

PART	I.D.	MATERIAL
STUD RV-ST1	1 THRU 16, 18 THRU 48, 55	SA-540 GRADE B24
NUT RV-N1	1 THRU 16, 18 THRU 48, 55	SA-540 GRADE B24
WASHERS (CONCAVE/CONVEX) RV-WC1	1 THRU 16, 18 THRU 48, 55	SA-540 GRADE B24

CALIBRATION BLOCK

I.D.	DIAMETER/LENGTH	MATERIAL
WPS-40	5.75" / 56.625"	SA-540 GRADE B24

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 1

157-011

LOCATION: CONTAINMENT

REVISION

A
PDO 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
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: (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.
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

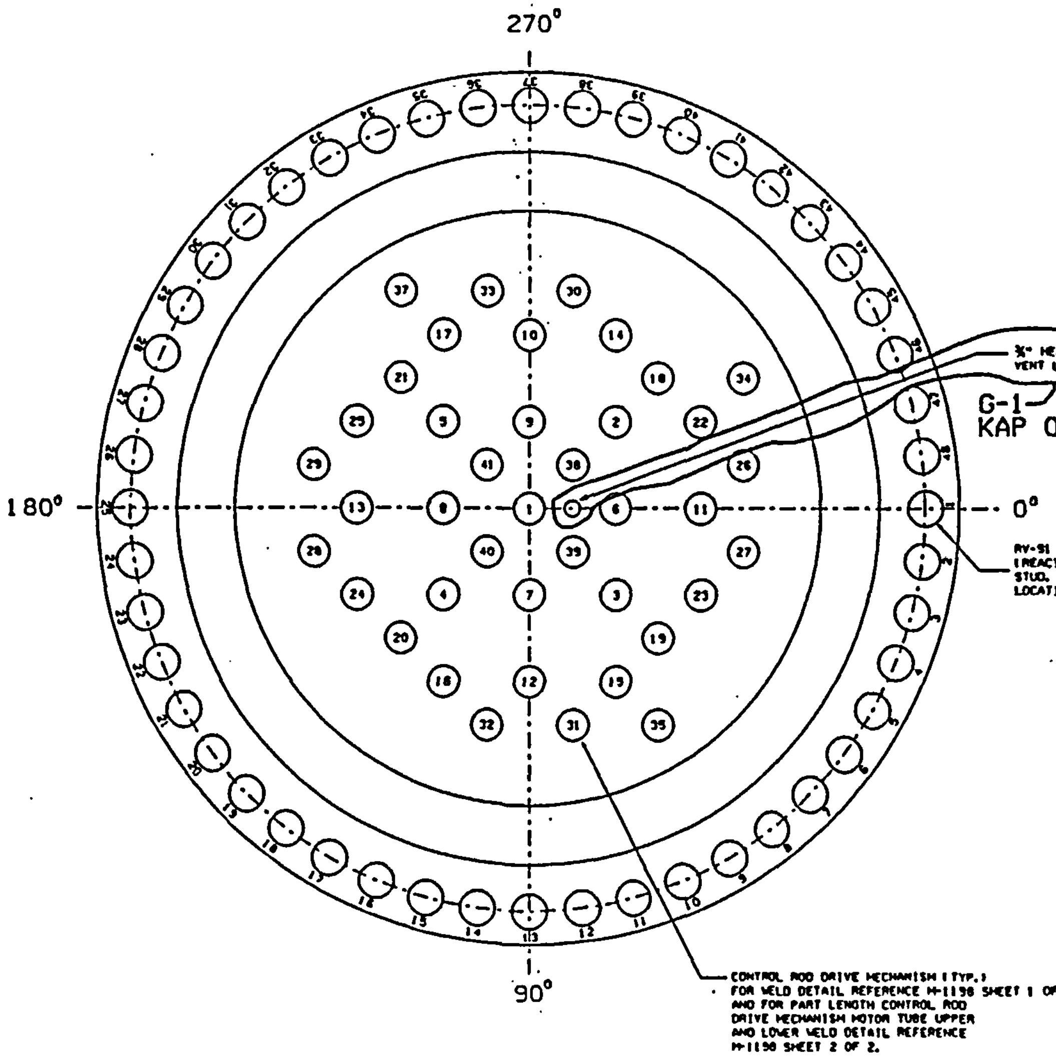
REACTOR VESSEL STUD, NUT AND WASHERS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

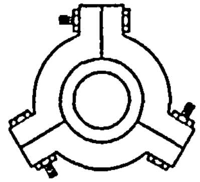
DESIGNED		APPROVED	
		PHILLIP E. BUKES	9/13/93
CHECKED		PROJECT APPROVED	
D.H.	1/17/83		

DRAWN		DWG. NO.	REV.
D.R./D.S	1/13/83	M-1196	E
SCALE			
NONE			

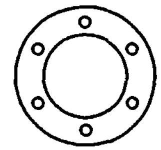
CADD



157-011



HARMON CLAMP



JACKING SCREW ASSEMBLY (6 SCREWS)

CONOSEAL BOLTING

PORT DESCRIPTION	PORT NUMBERS	IDENT.
CONOSEAL BOLTING (THERMOCOUPLE INSPECTION)	34, 35, 37	RV-CD34 RV-CD35 RV-CD37
PLUTONIUM RECYLE WITH CONTROL ROD DRIVE MECHANISM HOUSING	2, 3, 4, 5	CONTROL ROD DRIVE MECHANISM RV-CD1 THRU RV-CD35, & RV-CD37 THRU RV-CD41
PART LENGTH CONTROL ROD DRIVE MECHANISM HOUSING	6, 7, 8, 9	
FULL LENGTH CONTROL ROD DRIVE MECHANISM HOUSING	BALANCE	
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	6	RV-CDW42 RV-CDW43
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	7	RV-CDW44 RV-CDW45
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	8	RV-CDW46 RV-CDW47
PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE	9	RV-CDW48 RV-CDW49

NOTES:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

REVISION

G-1	KAP 01-00632 ADDED 3/4" VENT LINE. BY: SMJ 10-07-02 APP'D:
H	KAP 01-00632 COMPL SEE REV G-1 FILM'D: (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 DESCRI., 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: DAK 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

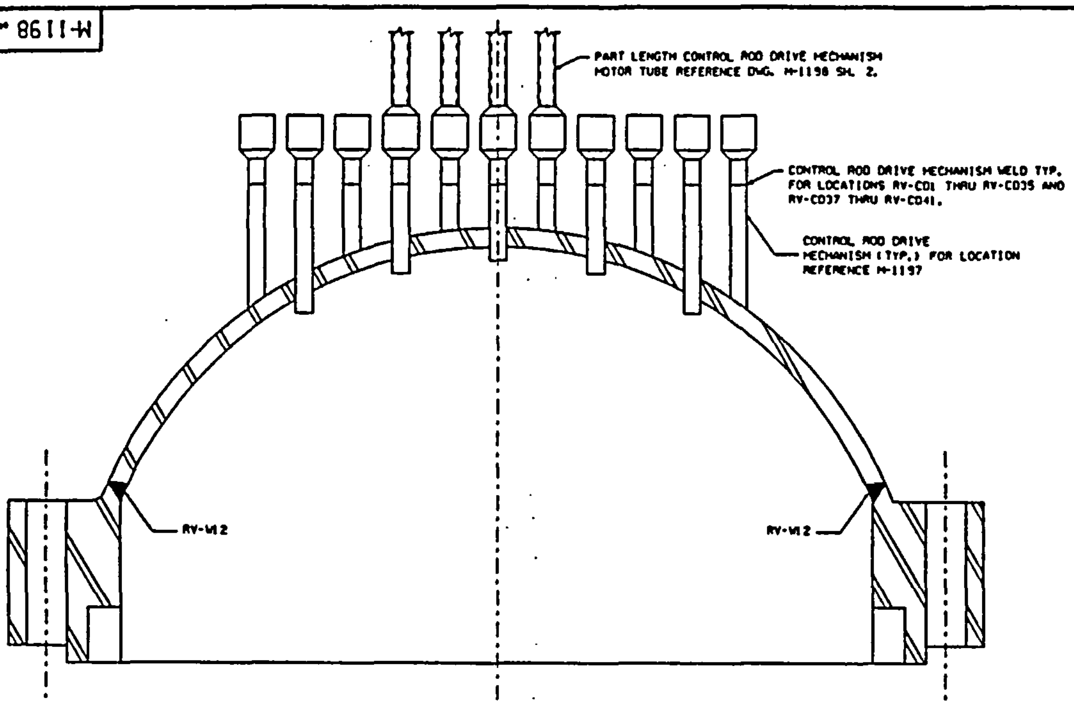
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	5/13/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/93		
DRAWN		DWG. NO.	REV.
D. R. / D. S.	1/13/93	M-1197	H
SCALE			
NONE			

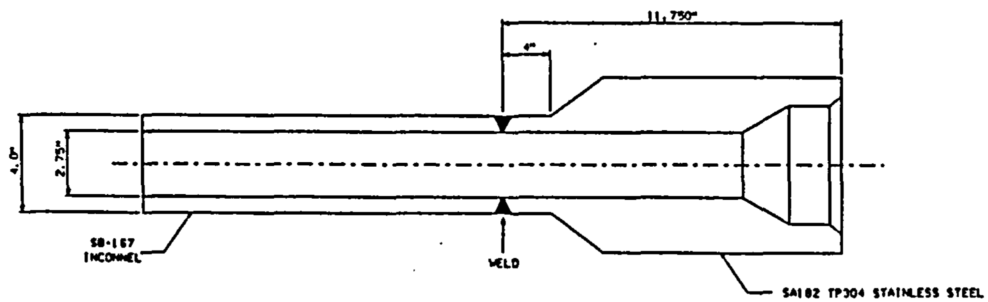
LOCATION: CONTAINMENT

CADD

M-1198 SH. 1



REACTOR VESSEL CLOSURE HEAD FLANGE



CONTROL ROD DRIVE MECHANISM (TYP.)
WELD IDENTIFICATION: RV-CD1 THRU RV-CD35 AND RV-CD37 THRU RV-CD41

157-011

LOCATION: CONTAINMENT

COMPONENT WELD DATA

I.D.	THICKNESS
RV-W12	6.0"
CRDM WELD RV-CD1 THRU RV-CD35 AND RV-CD37 THRU RV-CD41	.625"

REACTOR VESSEL CLOSURE HEAD
FLANGE.........6.0"T A508-64 CLASS 2 CARBON STEEL
DOME...........SA533 GR.B CLASS 1 CARBON STEEL
DIAMETER.......137.5"
CIRCUM.........432.0"

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-35	6.0"T x 20"L x 6"W	SA-508 CL.2 CS
WPS-18	4" SCH160 0.531"T	A376 TP 316 SS

E-1
KAP 01-001639

NOTES:
1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL
2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

REVISION

F KAP 01-001639 COMPLETE SEE REV. E-1. FILMED:(WPS)

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:(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 KAP 1560 ADDED PART LENGTH CONTROL ROD DRIVE MECH. & INFO. TO COMP. WELD DATA & CALIBRATION BLOCK LISTS & MADE DWG. SH 1 OF 2. BY: SJD 4-1-98 APP'D: PEB 04-07-98

D KAP 1560 COMPL. SEE REV. C-1 FILMED:(WPS) 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:(WPS) 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

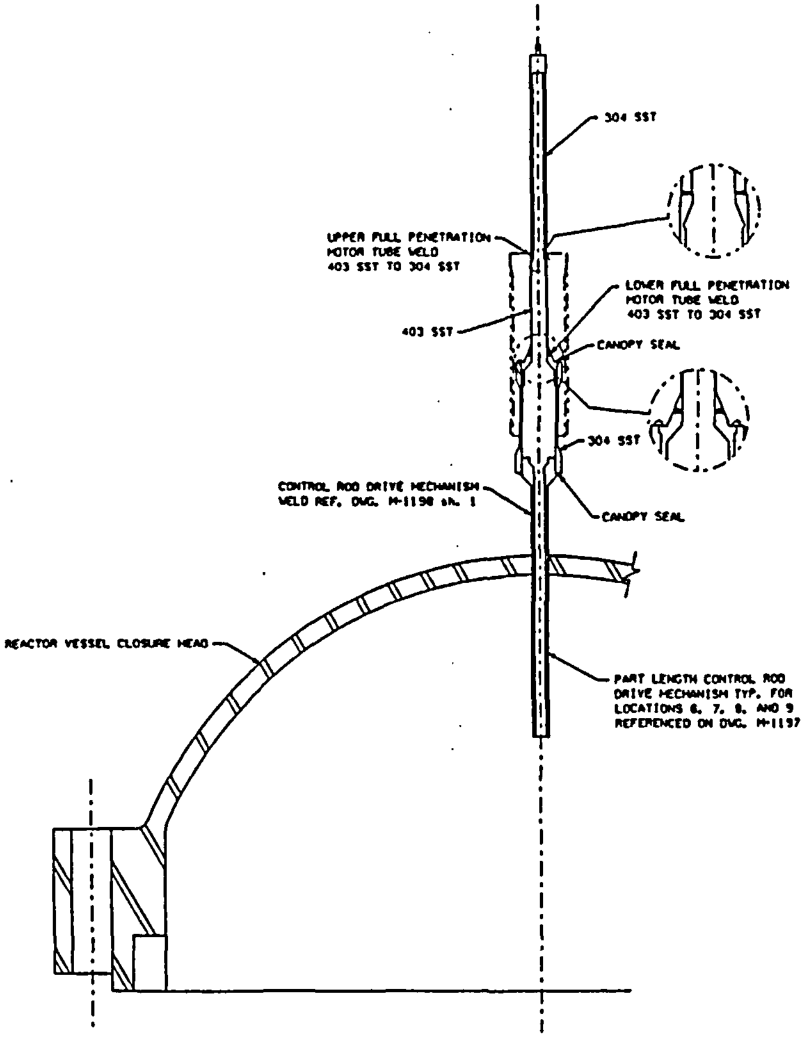
REACTOR VESSEL CLOSURE HEAD FLANGE AND CONTROL ROD DRIVE MECHANISM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED | APPROVED PHILLIP E. BUKES 5/13/93
CHECKED D. M. 1/17/83 | PROJECT APPROVED
DRAWN D. R. / D. S. 1/13/93
SCALE NONE

CADD

DWG. NO. M-1198 SH. 1 of 2
REV. F



PART LENGTH CONTROL ROD DRIVE MECHANISM MOTOR TUBE WELD DATA

PART LENGTH LOCATION	I.D.	DIAMETER	/ THICKNESS
NO. 6 LOWER WELD	RV-CDW42	4.85"	0.460"
NO. 6 UPPER WELD	RV-CDW43	3.75"	0.490"
NO. 7 LOWER WELD	RV-CDW44	4.85"	0.460"
NO. 7 UPPER WELD	RV-CDW45	3.75"	0.490"
NO. 8 LOWER WELD	RV-CDW46	4.85"	0.460"
NO. 8 UPPER WELD	RV-CDW47	3.75"	0.490"
NO. 9 LOWER WELD	RV-CDW48	4.85"	0.460"
NO. 9 UPPER WELD	RV-CDW49	3.75"	0.490"

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

LOWER WELD 0.94" ABOVE CANOPY SEAL.

0-1
KAP 01-001639

NOTES:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

3). REFERENCE DRAWINGS: XK100-411-1 THRU XK100-411-5.

REVISION
FILMED FIRST ISSUE PER KAP 1560. APP'D: PEB 04-07-9 FILMED:(WPS) 04-14-98
0-1 KAP 01-001639 REVISED NOTE 1. BY: ABF 06-03-02 APP'D:
A 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

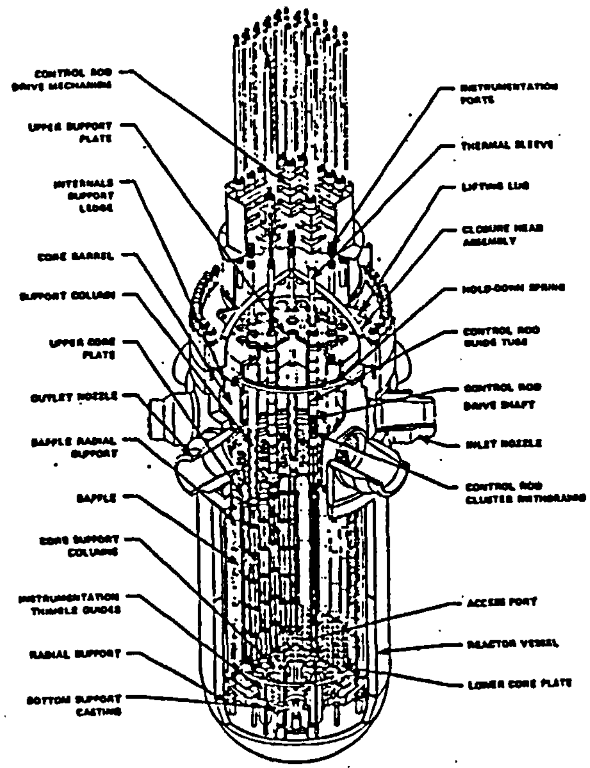
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

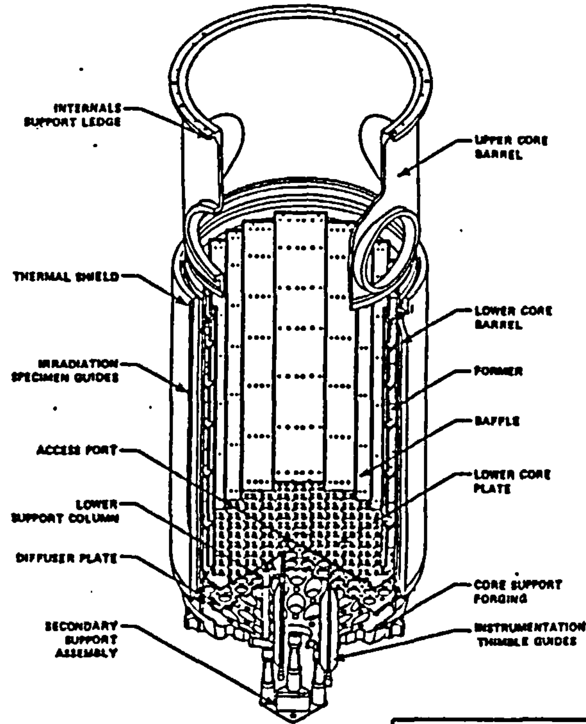
DESIGNED		APPROVED	
		PHILLIP E. BUKES	9/12/03
CHECKED		PROJECT APPROVED	
D.M.	1/17/03		
DRAWN		DWG. NO.	REV.
D.R./D.S	1/12/03	M-1198 sh. 2 of 2	A
SCALE			
NONE			

CADD

LOCATION: CONTAINMENT

M-1199





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 CADD PER ESR 92-177 DWN: DDG 6-9-93 CHK'D: B. TROTTER 6-10-93 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)

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 1

157-011

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

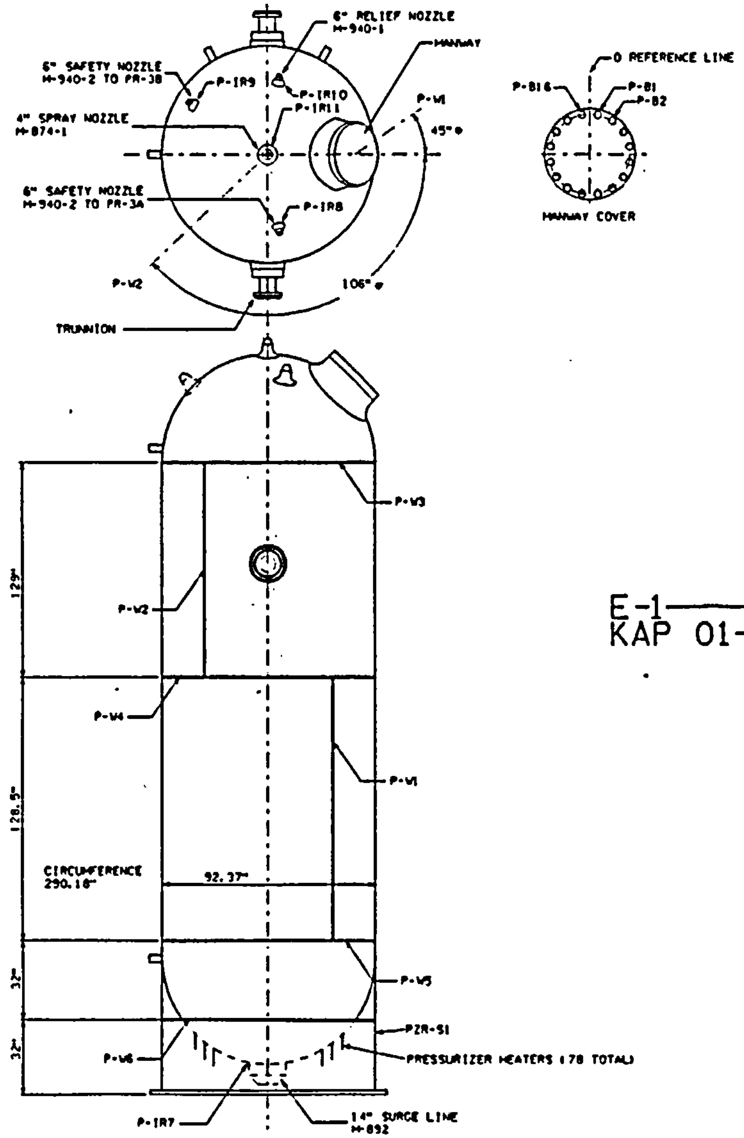
REACTOR VESSEL INTERNALS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	8-16-93
CHECKED		PROJECT APPROVED	
D.M.	1/17/03		

HYBRID CADD	DRAWN: D.D.G. 6-9-93	DWG. NO.	REV.
	SCALE: NONE	M-1199	E

M-1200



BOLTING DATA

BOLTS / DIA / LGTH	NUTS
16 /1.88" / 8.0"	N/A

E-1
KAP 01-001639

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
P-W1	4.5"	SA 533 GR.A CL.1 CS
P-W2	4.5"	SA 533 GR.A CL.1 CS
P-W3	4.5"	NOTE 4
P-W4	4.5"	SA 533 GR.A CL.1 CS
P-W5	4.5"	NOTE 4
P-W6	1.5"	SA 516 GR.70 CS
P-IR7	INNER RADIUS SECTION	SA 216 GR WCC CS
P-IR8	INNER RADIUS SECTION	SA 216 GR WCC CS
P-IR9	INNER RADIUS SECTION	SA 216 GR WCC CS
P-IR10	INNER RADIUS SECTION	SA 216 GR WCC CS
P-IR11	INNER RADIUS SECTION	SA 216 GR WCC CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-23	5.0"T=18.0"L=5.0"W	SA 533 GR.B CL.1 CS
WPS-26	1.5"T=13.0"L=2.5"W	SA 516 GR. 70 CS
WPS-45	13.25"Hx11.65"Lx5.72"W	SA 216-92 GR WCC CS
WPS-46	8.375"Hx11.125"Lx7.68"W	SA 216-92 GR WCC CS

E-1
KAP 01-001639

NOTES:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

3). PZR HEATER PENETRATION ID #S: PZR-P1 THRU PZR-P78

4). 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: 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	PDR 0149 ADDED CALIBR. DATA WPS-45, WPS-46 INFO AND PRESS. HEATERS 78 WAS 72. BY: J.SPICE 2-21-97 APP'D: PCM 02-21-97
D	PDR 0149 COMPL. SEE REV. C-1 FILM'D:(WPS) 02-25-97
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 FILM'D:(WPS) 8-3-99

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: PHILLIP E. BUKES 9/13/93 | CHECKED: D. M. 1/17/83 | PROJECT APPROVED:

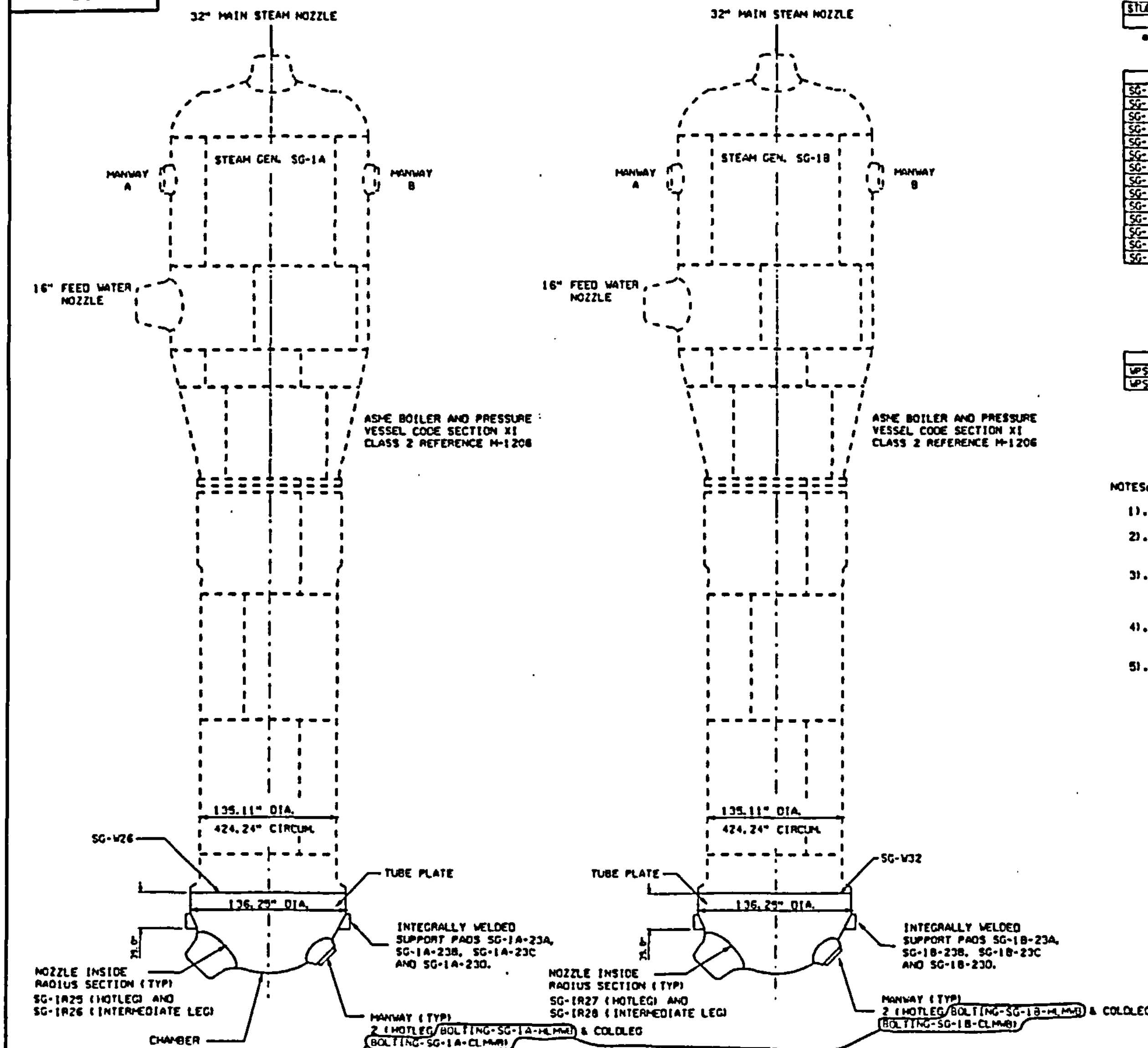
DRAWN: D.R./D.S. 1/13/83 | SCALE: NONE | DWG. NO. M-1200 | REV. F

CADD

LOCATION: CONTAINMENT PRESSURIZER VAULT

163-011

M-1201



E-1
KAP 01-001639

134-011, 134-012

LOCATION: CONTAINMENT

MANWAY BOLTING DATA EACH MANWAY

STUDS * / DIA. / LGTH	NUTS *	WASHERS *
16 / 1.88" / 15.5"	16	32

* INDIVIDUALLY STAMPED I.D.'s

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
SG-W26	5.25"	SA508 CL. 3A CS
SG-W32	5.25"	SA508 CL. 3A CS
SG-IR25 (HOTLEG)	8.18'' MAX.	SA508 CL. 3A CS
SG-IR26 (INTER. LEG)	8.18'' MAX.	SA508 CL. 3A CS
SG-IR27 (HOTLEG)	8.18'' MAX.	SA508 CL. 3A CS
SG-IR28 (INTER. LEG)	8.18'' MAX.	SA508 CL. 3A CS
SG-1A-23A	13.13"	A508 C26 CS
SG-1A-23B	13.13"	A508 C26 CS
SG-1A-23C	13.13"	A508 C26 CS
SG-1A-23D	13.13"	A508 C26 CS
SG-1B-23A	13.13"	A508 C26 CS
SG-1B-23B	13.13"	A508 C26 CS
SG-1B-23C	13.13"	A508 C26 CS
SG-1B-23D	13.13"	A508 C26 CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-54	5.0" T x 18.5" L x 7.5" W	SA508 CL. 3A CS
WPS-55	3.27" T x 15.74" H x 15.68" V	SA508 CL. 3A CS/ SA336 CL. F 316 LND

NOTES:

1). DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

3). STEAM GENERATOR SG-1A AND SG-1B INTEGRALLY WELDED SUPPORT PADS NUMBERED CLOCKWISE FROM CENTERLINE OF HOTLEG MANWAY: 23A, 23B, 23C & 23D

4). 0 REFERENCE: TOP CENTERLINE OF HOTLEG MANWAY FOR SG-W26 AND SG-W32

5). SG-W26 AND SG-W32 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: DAK 7-26-99

D RE PUR 0295 COMPL.
SEE REV. C-1
FILMED: (WPS) 8-3-99

D-1 DCR 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 DCR 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

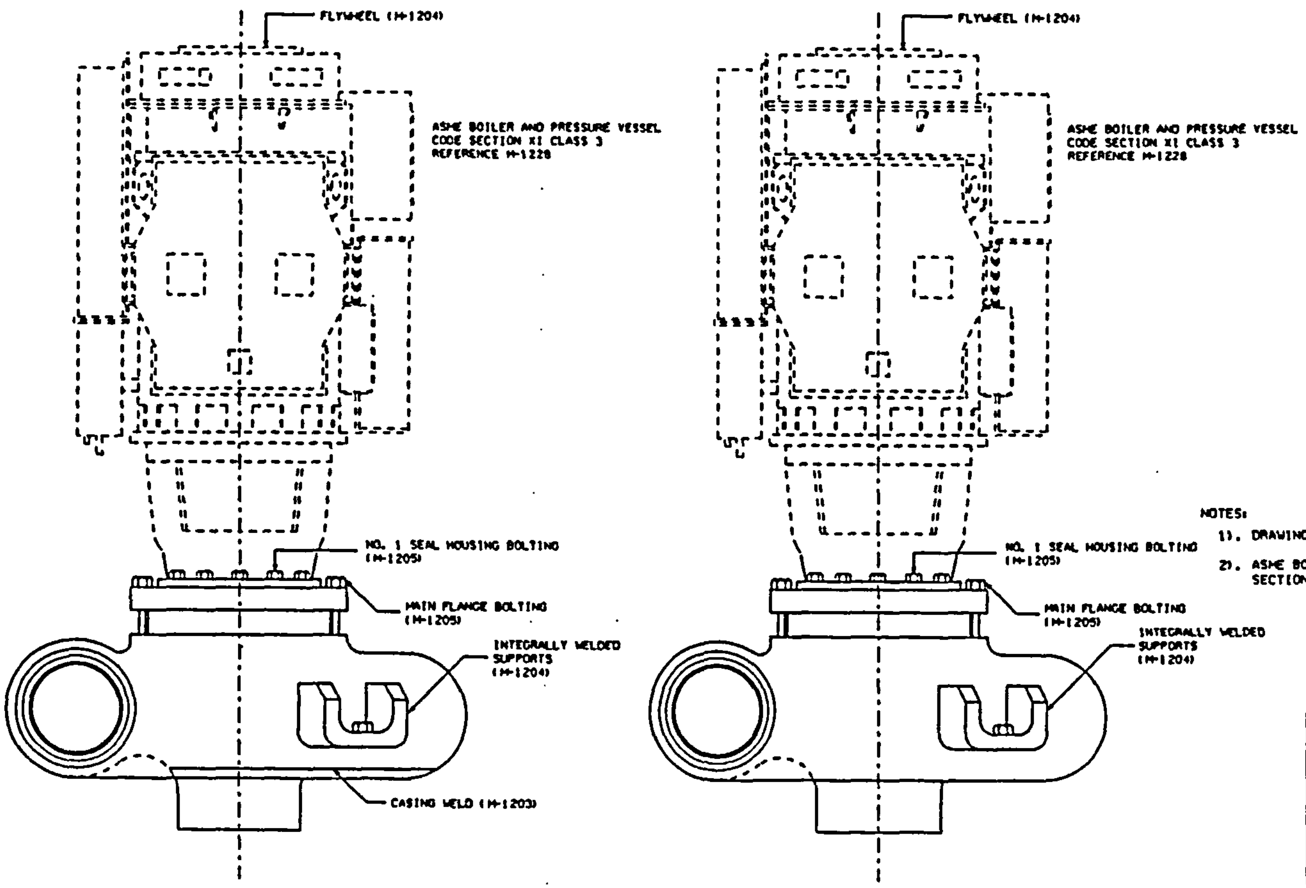
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

DRAWN		DWG. NO.	REV.
ESS	6/1/93	M-1201	F
SCALE NONE			

CADD

M-1202



RCP-1A
145-021
LOCATION: CONTAINMENT

RCP-1B
145-022

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 1

REVISION

A
PDD 0011 COMPL
SEE REV O-1
APP'D: CAT 10/23/89
FILM'D: (WPS) 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
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: 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 RCP-1A AND RCP-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/16/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/03		

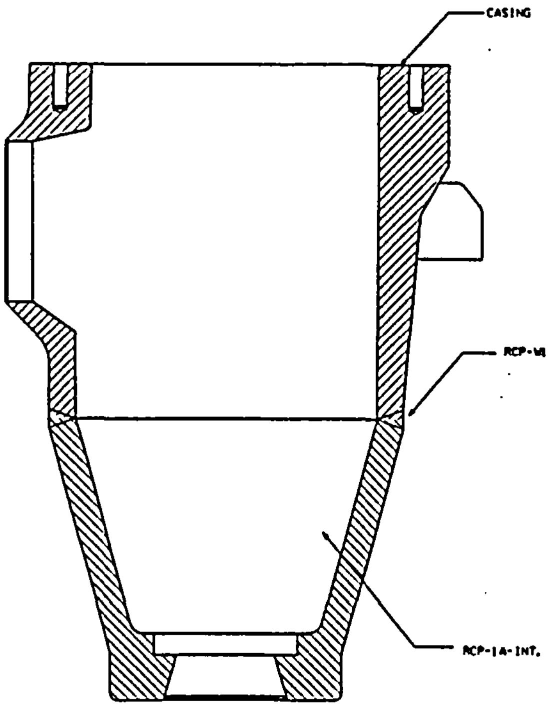
DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1202	E
SCALE			
NONE			

CADD

M-1203

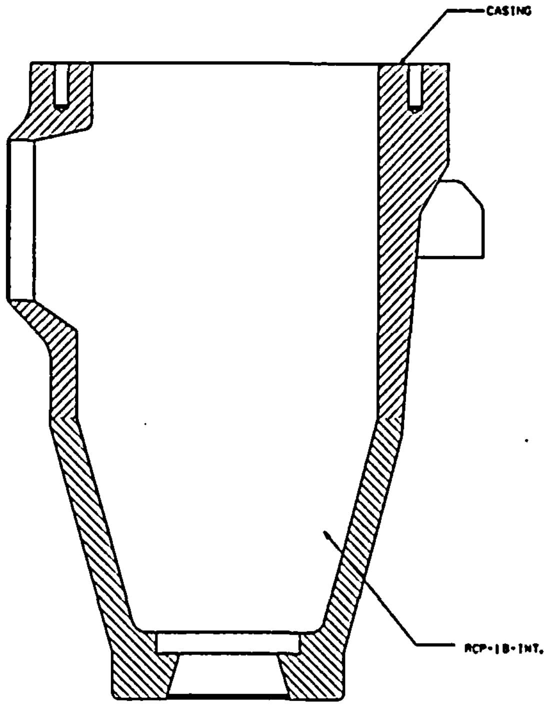
I.D.	THICKNESS	MATERIAL
RCP-WI	4.5" MIN.	A 351 CF8 M
RCP-1A-INT.	INTERIOR SURFACE	A 351 CF8 M
RCP-1B-INT.	INTERIOR SURFACE	A 351 CF8 M

COMPONENT DATA



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:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

LOCATION: CONTAINMENT

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 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: (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: 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

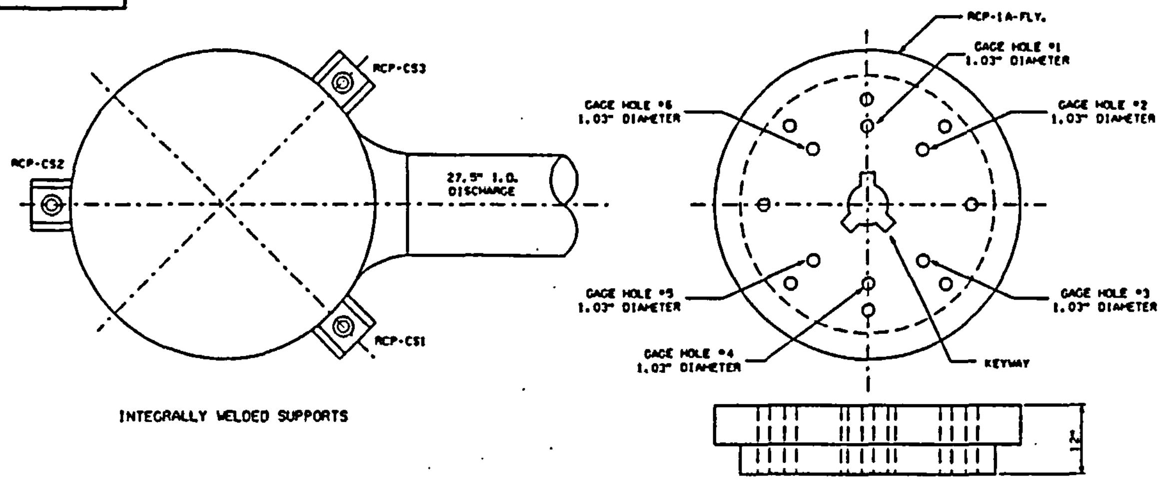
REACTOR COOLANT PUMP RCP-1A AND RCP-1B CASING

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/16/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

	DRAWN		DWG. NO.	REV.
CADD	ESS	4/1/93	M-1203	E
	SCALE: NONE			

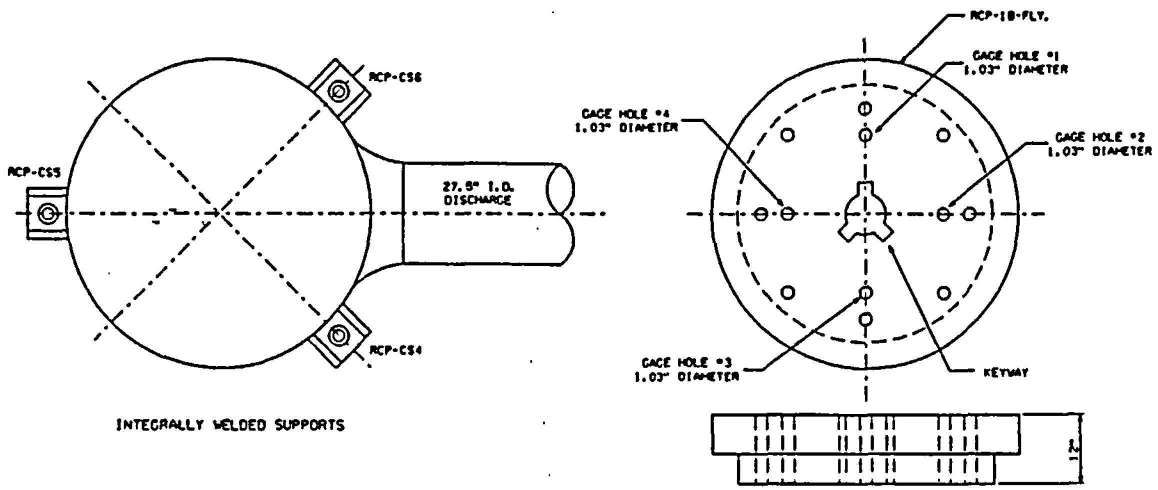
M-1204



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 A533 TP.B CL.1
RCP-1B-FLY.	12"	ASTM A533 TP.B CL.1

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
RCP-CS1	4.0"	304SST, A351-65 CF 8
RCP-CS2	4.0"	304SST, A351-65 CF 8
RCP-CS3	4.0"	304SST, A351-65 CF 8
RCP-CS4	4.0"	304SST, A351-65 CF 8
RCP-CS5	4.0"	304SST, A351-65 CF 8
RCP-CS6	4.0"	304SST, A351-65 CF 8

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 1

REVISION

REV.	DESCRIPTION
A	POO 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 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: (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 REF NO'S. 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

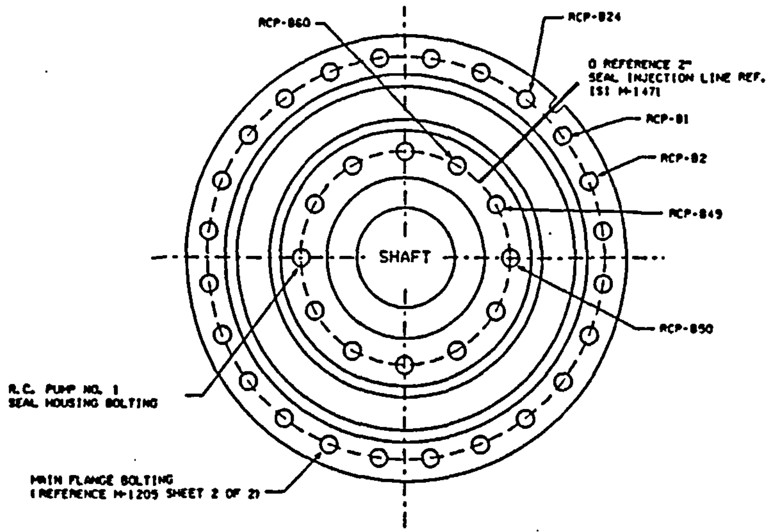
REACTOR COOLANT PUMPS RCP-1A AND RCP-1B FLYWHEEL & SUPPORTS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/16/93
CHECKED		PROJECT APPROVED	
D. M.	6/17/93		
DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1204	E
SCALE			
NONE			

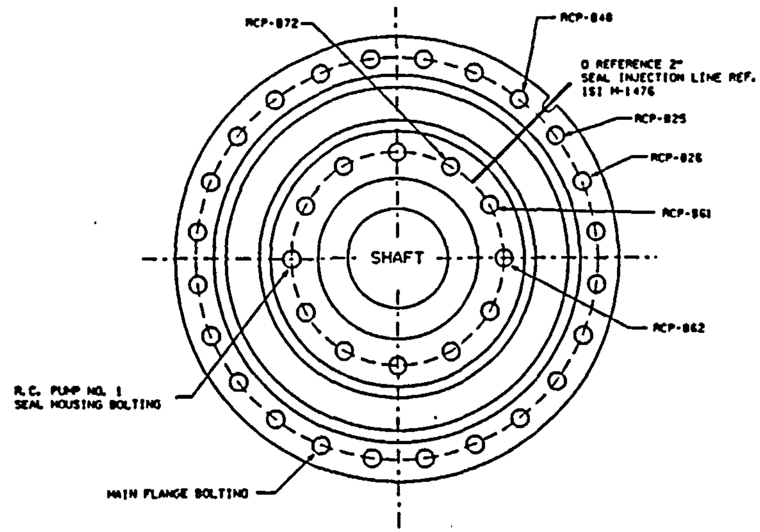
CADD

M-1205 SH. 1



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 ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1

NO. 1 SEAL HOUSING BOLTING DATA

BOLTS/ DIA. /LGTH.	NUTS	MATERIAL
12 / 2.0" /9.0"	N/A	SA-193 GR. B7

MAIN FLANGE BOLTING DATA

BOLTS/ DIA. /LGTH.	NUTS	MATERIAL
24 / 4.5" /30.5"	N/A	SA-540 GR. B24 CL. 4

LOCATION: CONTAINMENT

CADD

REVISION
A
PDO 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 DWN: 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 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)

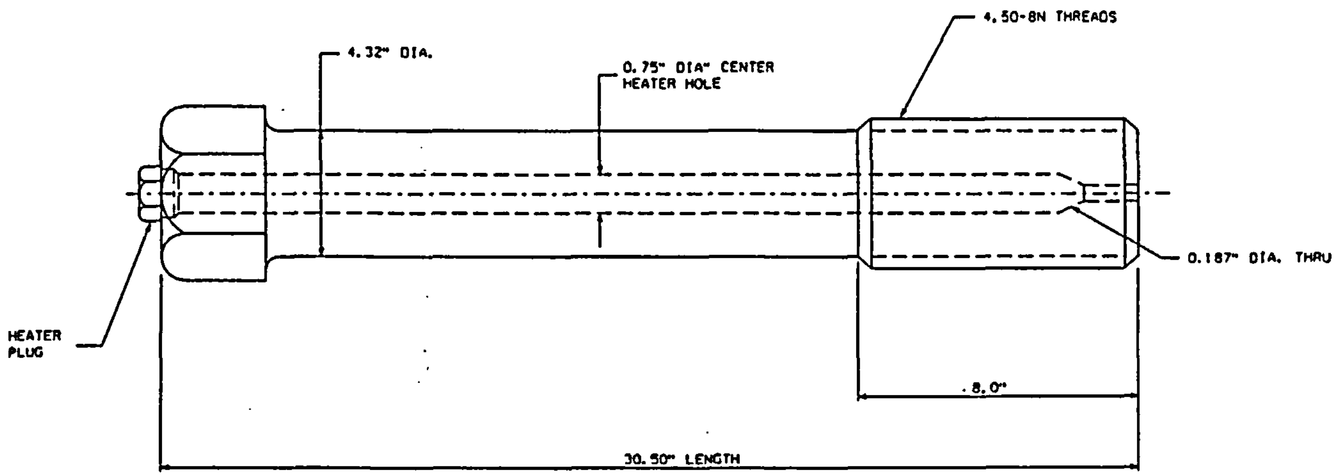
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

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	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D.H.	1/17/83		
DRAWN		DWG. NO.	REV.
D.R./D.S	1/13/83	M-1205 SHT. 1 OF 2	D
SCALE			
NONE			

M-1205 SH. 2



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'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 1

MAIN FLANGE BOLTING DATA EACH REACTOR COOLANT PUMP

BOLTS/ DIA. /LGTH.	NUTS	MATERIAL
24 / 4.9" /30.5"	N/A	SA-540 GR. B24 CL. 4

CALIBRATION BLOCK

I.D.	DIAMETER/LENGTH	MATERIAL
WPS-41	4.5" / 30.5"	SA-540-68A GR. B24

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

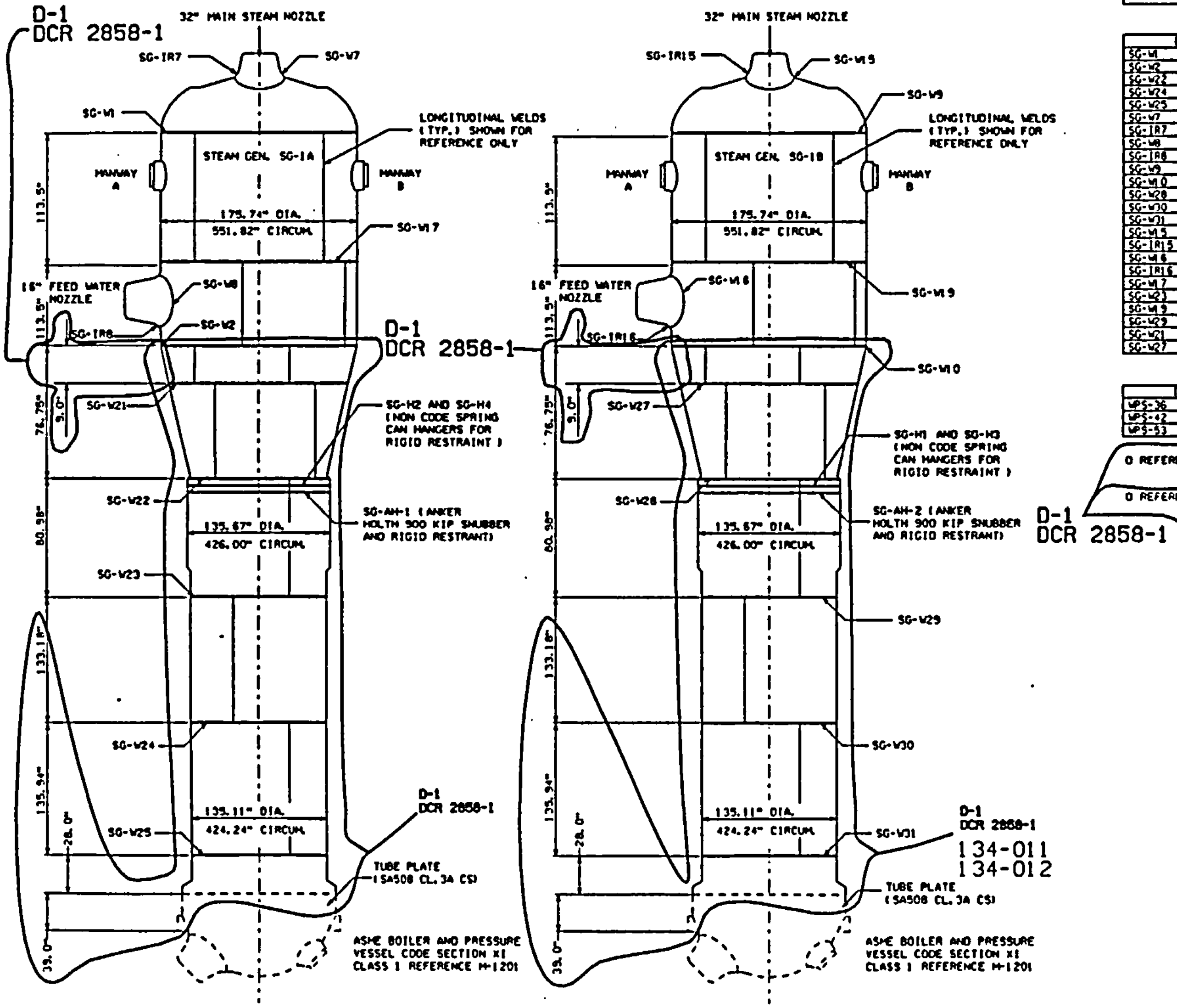
DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		

	DRAWN	DWG. NO.	REV.
	O. R. /O. S 1/13/83	M-1205 SHT. 2 OF 2	C
	SCALE NONE		

LOCATION: CONTAINMENT

CADD

M-1206



MANWAY BOLTING DATA EACH MANWAY

BOLTS / DIA. / LGTH	NUTS
20 /1.25" / 8.0"	N/A

COMPONENT DATA

I.D.	THICKNESS	MATERIAL
SG-W1	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-W2	3.90"	SA533 GR.A CL.1CS
SG-W22	3.15"	SA533 TYP.B CL.2CS
SG-W24	2.87"	SA533 TYP.B CL.2CS
SG-W25	2.87"	SA533 TYP.B CL.2CS
SG-W7	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-IR7	INNER RADIUS SECTION	SA508 CL.2 CS
SG-W8	3.90"	SA533 GR.A CL.1CS
SG-IR8	INNER RADIUS SECTION	SA508 CL.2 CS
SG-W9	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-W10	3.90"	SA533 GR.A CL.1CS
SG-W28	3.15"	SA533 TYP.B CL.2CS
SG-W30	2.87"	SA533 TYP.B CL.2CS
SG-W31	2.87"	SA533 TYP.B CL.2CS
SG-W15	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-IR15	INNER RADIUS SECTION	SA508 CL.2 CS
SG-W16	3.90"	SA533 GR.A CL.1CS
SG-IR16	INNER RADIUS SECTION	SA508 CL.2 CS
SG-W17	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-W23	2.87"	SA533 TYP.B CL.2CS
SG-W19	3.62" (MIN.)	SA533 GR.A CL.1CS
SG-W29	2.87"	SA533 TYP.B CL.2CS
SG-W21	3.66"	SA533 TYP.B CL.2CS
SG-W27	3.66"	SA533 TYP.B CL.2CS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-36	3.5"T×10.25"L×6.0"W	SA533 GR.B CL.1CS
WPS-42	16" FW NOZZLE FORGING	SA508 CLASS 2A CS
WPS-53	3.15"T×3.62"L×7.59"W	SA533 TYP.B CL.2 CS

0 REFERENCE: SG-W24, SG-W25, SG-W30 AND SG-W31
CENTERLINE OF CLASS 1 SIDE HOTLEG MANWAY.
(REFERENCE M1201)

0 REFERENCE: SG-W1, SG-W2, SG-W22*, SG-W7, SG-IR7, SG-W8, SG-IR8,
SG-W9, SG-W10, SG-W28*, SG-W15, SG-IR15, SG-W16,
SG-IR16, SG-W17, SG-W23, SG-W19, SG-W21, SG-W27,
AND SG-W29.
CENTERLINE OF 16" FEEDWATER NOZZLE.

*FOR PRESERVICE EXAMS 0 REFERENCE CENTERLINE OF CLASS 1 SIDE HOTLEG MANWAY (REFERENCE M-1201)

D-1
DCR 2858-1

D-1
RE PUR

DRAWING APPLICABLE FOR 3rd & 4th ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

LOCATION: CONTAINMENT

REVISION

A
PDD 0011 COMPL
SEE REV O-1
APP'D: CAT 10/23/89
FILM'D: (WPS) 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 8-4-93

B ESR 92-177 COMP.
SEE REV. A-1
FILMED: WPS 8-17-93

B-1 PDR 0149
ADDED CODE SPRING AND CAN HANGER NOTES.
900 KIP WAS 900 K.
BY: J.SPICE 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
FILMED: (WPS)

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

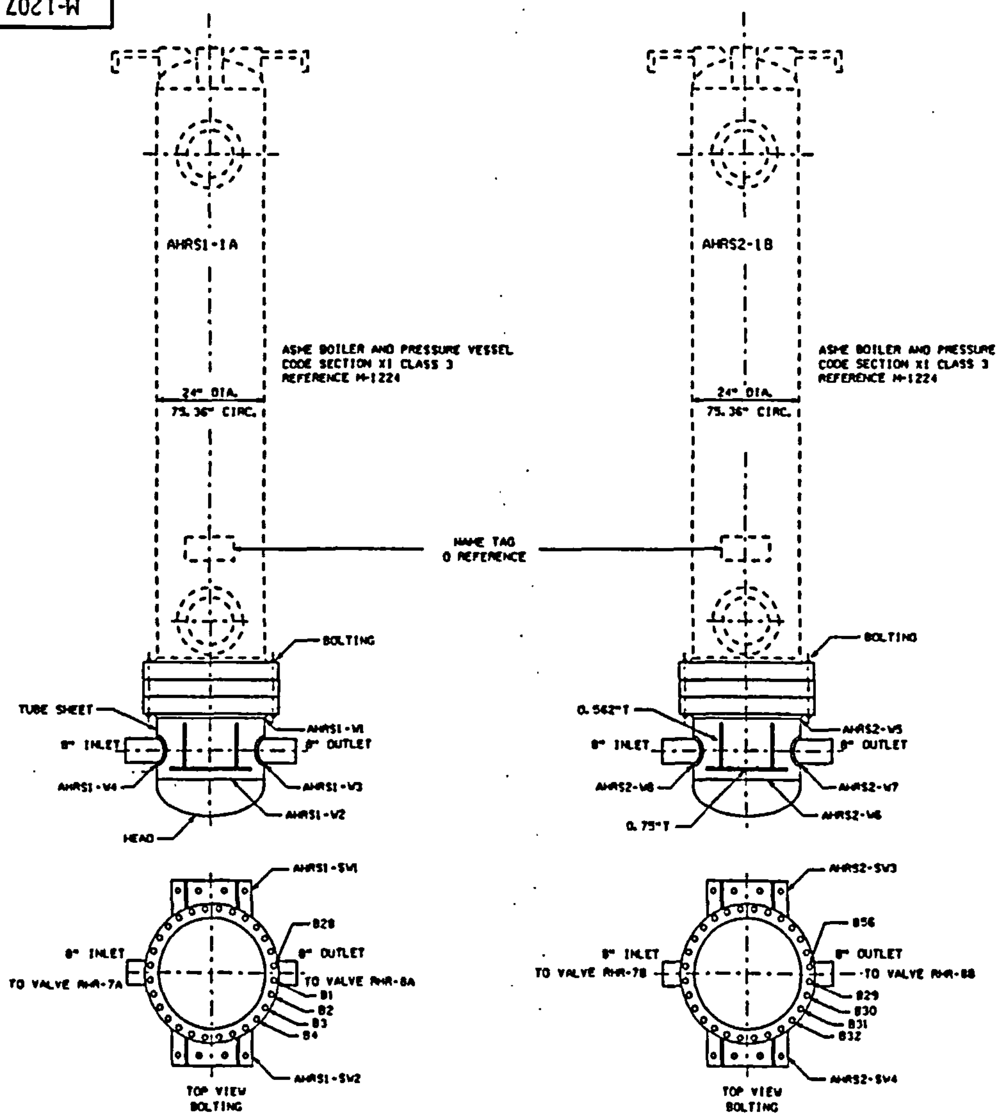
STEAM GENERATORS EXISTING AND REPLACEMENT SG-1A AND SG-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

CADD	DRAWN		DWG. NO.	REV.
	ESS	4/1/93	M-1206	E
	SCALE: NONE			

M-1207



BOLTING DATA EACH HEAT EXCHANGER

STUDS / DIA. / LGTH	NUTS
28 /1.125"/ 8.0"	56

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AHRS1-W1	0.5"	A240 TP304SS
AHRS1-W2	0.5"	A240 TP304SS
AHRS1-W3	0.5"	A240 TP304SS
AHRS1-W4	0.5"	A240 TP304SS
AHRS2-W5	0.5"	A240 TP304SS
AHRS2-W6	0.5"	A240 TP304SS
AHRS2-W7	0.5"	A240 TP304SS
AHRS2-W8	0.5"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AHRS1-SW1	.562" & .75"	A285 GR.C
AHRS1-SW2	.562" & .75"	A285 GR.C
AHRS2-SW3	.562" & .75"	A285 GR.C
AHRS2-SW4	.562" & .75"	A285 GR.C

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-30	0.5"T=3.0"L=2.5"W	SA240 TP304SS

D-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

135-051
135-052

LOCATION: AUXILIARY BUILDING 606'; RESIDUAL HEAT EXCHANGER AHRS1-1A GATE 256 AND RESIDUAL HEAT EXCHANGER AHRS2-1B GATE 173

CADD

REVISION

B
PDO 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
DWN: 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
FILMED: WPS 8-17-93

C-1 RE PUR 0295
ADDED REF NO'S.
BY: BJD 7-19-99
APP'D: DAK 7-26-99

D RE PUR 0295 COMP.
SEE REV. C-1
FILMED: WPS 8-3-99

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

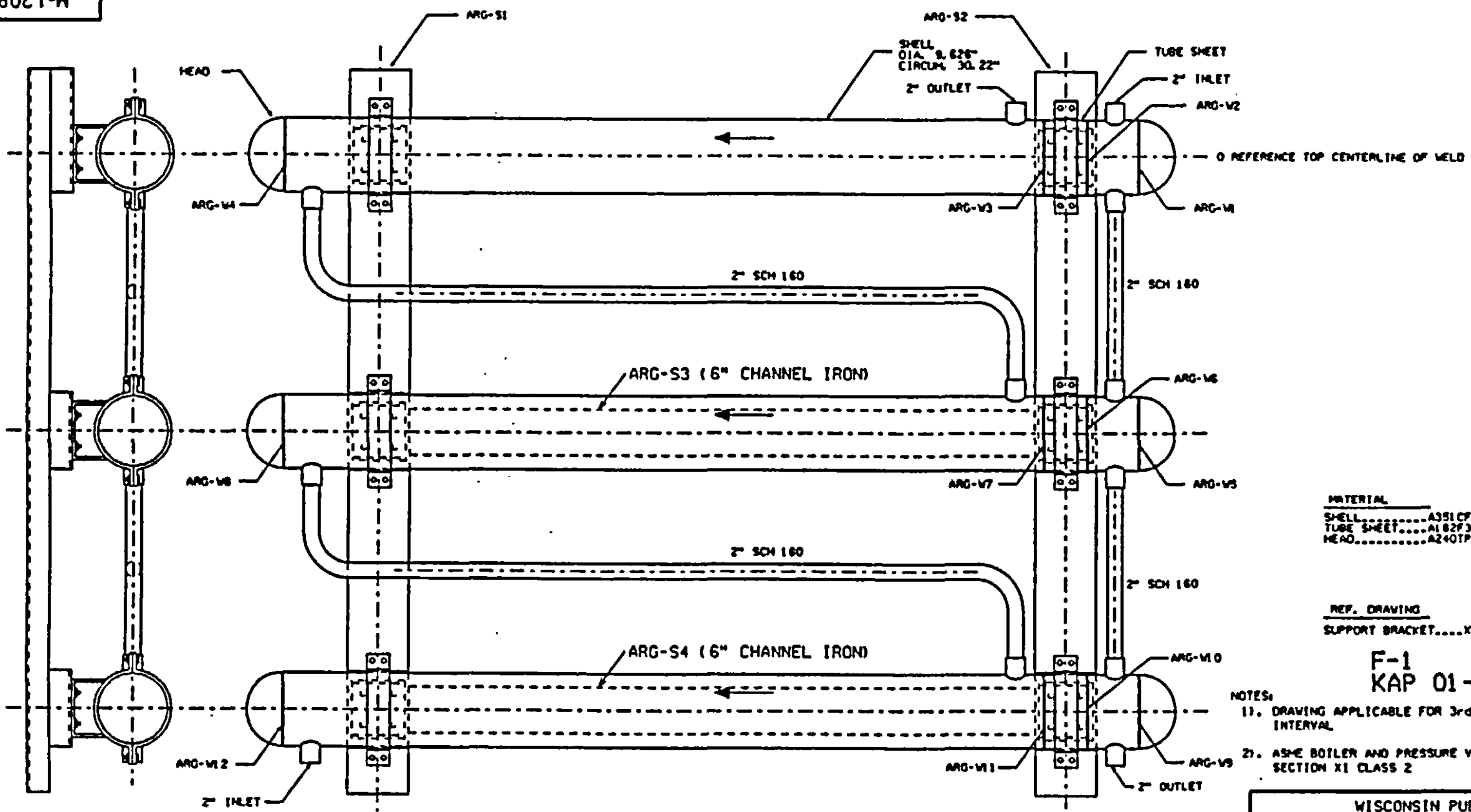
E KAP 01-001639
COMPLETE
SEE REV. D-1.
FILMED: (WPS)

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

RESIDUAL HEAT EXCHANGERS AHRS1-1A AND AHRS2-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED | APPROVED: PHILLIP E. BUKES 6/1/93 | PROJECT APPROVED
CHECKED: D.H. 1/17/93
DRAWN: ESS 4/1/93
SCALE: NONE
DWG. NO. M-1207
REV. E



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 ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

REVISION

E-1	PCR 0175 ADDED ARG-S3 & S4 (6" CHANNEL IRON) BY: JMS 06-06-00 APP'D: DAK 06-09-00
F	PCR 0175 COMP. SEE REV. E-1 FILMED: (WPS) 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: (WPS)
C	ESR 92-177 COMP. SEE REV. B-1 FILMED WPS: 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: WPS 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: WPS 8-3-99

CALIBRATION BLOCK

I.D.	DIAMETER / SCHEDULE		MATERIAL
WPS-27	9.5"	0.875" T	A351 CF8

COMPONENT WELD DATA

I.D.	THICKNESS
ARG-V1	.900"
ARG-V5	.900"
ARG-V9	.900"
ARG-V2	.938"
ARG-V6	.938"
ARG-10	.938"
ARG-V3	.938"
ARG-V7	.938"
ARG-V11	.938"
ARG-V4	.900"
ARG-V8	.900"
ARG-V12	.900"

135-031

LOCATION: CONTAINMENT 593' ELEVATION

CADD

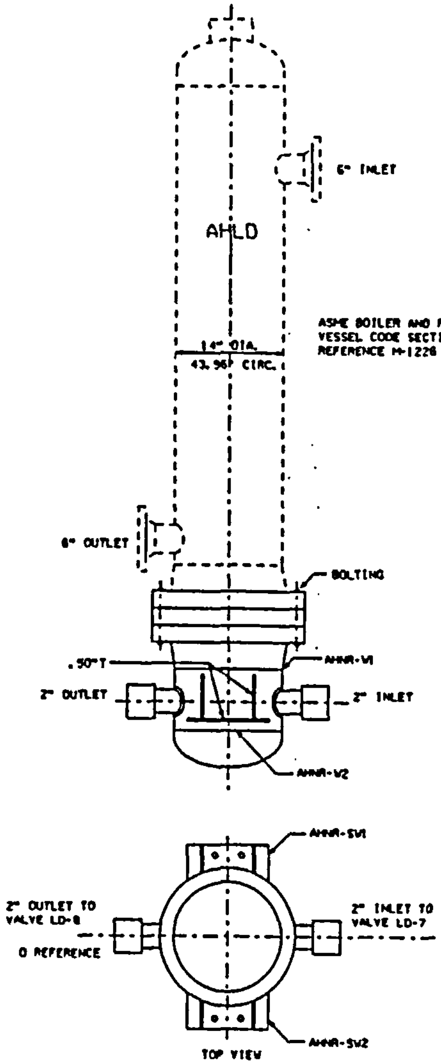
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

REGENERATIVE HEAT EXCHANGER ARG

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		P. E. BUKES	5/13/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		
DRAWN		DWG. NO.	REV.
O. R. /O. S	1/13/83	M-1208	G
SCALE			
NONE			

M-1209



ASME BOILER AND PRESSURE
VESSEL CODE SECTION XI CLASS 3
REFERENCE M-1226

BOLTING DATA

BOLTS / DIA. / LGTH	NUTS
20 / .875" / 8.5"	40

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AHNR-W1	0.375"	A240 TP304SS
AHNR-W2	0.375"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AHNR-SW1	0.50"T	
AHNR-SW2	0.50"T	

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-25	14" SCH 40S 0.375"T	A358 CL2 T304SS

REVISION

A
POO 0011 COMPL
SEE REV O-1
APP'D: CAT 10/23/89
FILM'D: (WPS) 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 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 7-19-99
APP'D: OAK 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:

0 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	
		PHILLIP E. BUKES	8/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/03		

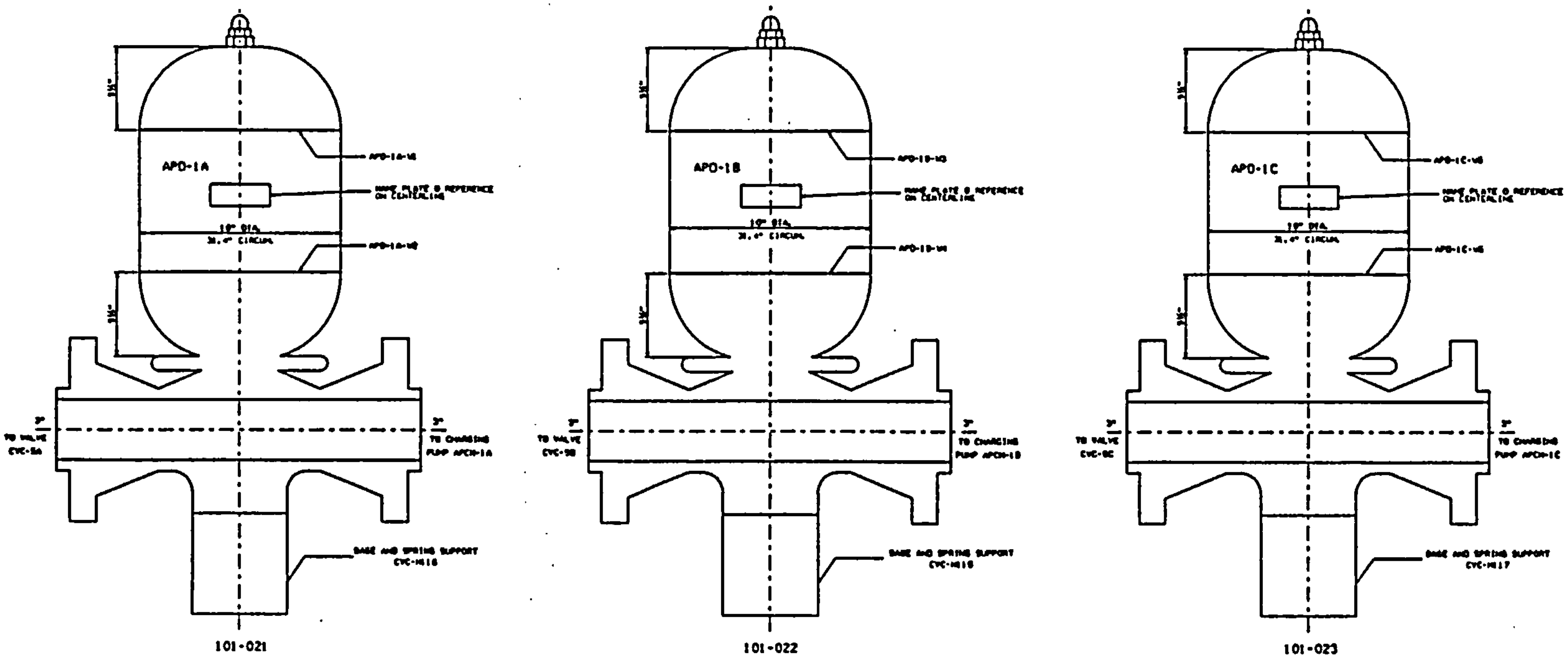
DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1209	0
SCALE			
NONE			

135-041

LOCATION: AUXILIARY BUILDING 606' LETDOWN HEAT EXCHANGER ROOM GATE 53

CADD

M-1210



REVISION
A — PDO 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 DWN: 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 — 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: RMM 3/9/95
C — RE PUR 0283 COMP. SEE REV. B-1 FILMED: 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. FILMED: (WPS)

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
APD-1A-W1	1.0"	SA240 TP304SS
APD-1A-W2	1.0"	SA240 TP304SS
APD-1B-W3	1.0"	SA240 TP304SS
APD-1B-W4	1.0"	SA240 TP304SS
APD-1C-W5	1.0"	SA240 TP304SS
APD-1C-W6	1.0"	SA240 TP304SS

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-10	10" SCH 140 1.0" T	A312 TP304SS

C-1
KAP 01-001639

NOTES:

1. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2
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.
3. NO BOLTING OR INTEGRALLY WELDED ATTACHMENTS ON CHARGING PUMP PULSATION DAMPENERS APD-1A, APD-1B AND APD-1C.

LOCATION: AUXILIARY BUILDING 586' ELEVATION CHARGING PUMP ROOM GATE 208

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

CHARGING PUMP PULSATION DAMPENERS APD-1A, APD-1B AND APD-1C

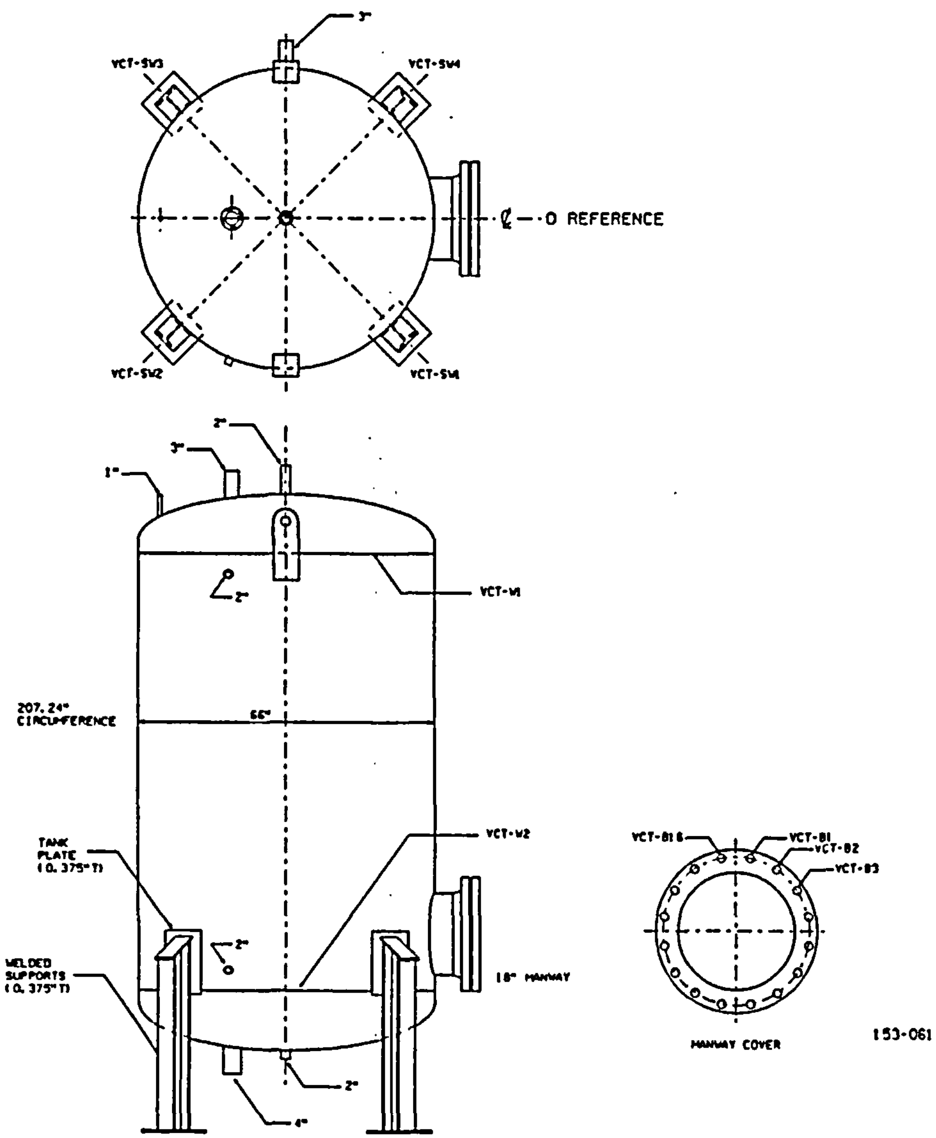
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
	P. E. BUKES 8/13/93
CHECKED	PROJECT APPROVED
D. M. 1/17/93	

CADD

DRAWN	DWG. NO.	REV.
D. R. /D. S 1/13/93	M-1210	D
SCALE: NONE		

M-1211



BOLTING DATA

BOLTS / DIA. / LGTH	NUTS
16 /1.125"/ 4.75"	16

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
VCT-W1	.312"	A240 TP304SS
VCT-W2	.312"	A240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
VCT-SW1	.375"	A240 TP304SS •
VCT-SW2	.375"	A240 TP304SS •
VCT-SW3	.375"	A240 TP304SS •
VCT-SW4	.375"	A240 TP304SS •

• TANK PLATE

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-24	0.312"T×9.0"×2.5"W	SA240 TP304SS

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

REVISION

REV.	
A	PDO 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 DWN: 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	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 FILMED: 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 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)

LOCATION: AUXILIARY BUILDING 606' ELEVATION GATE 211

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

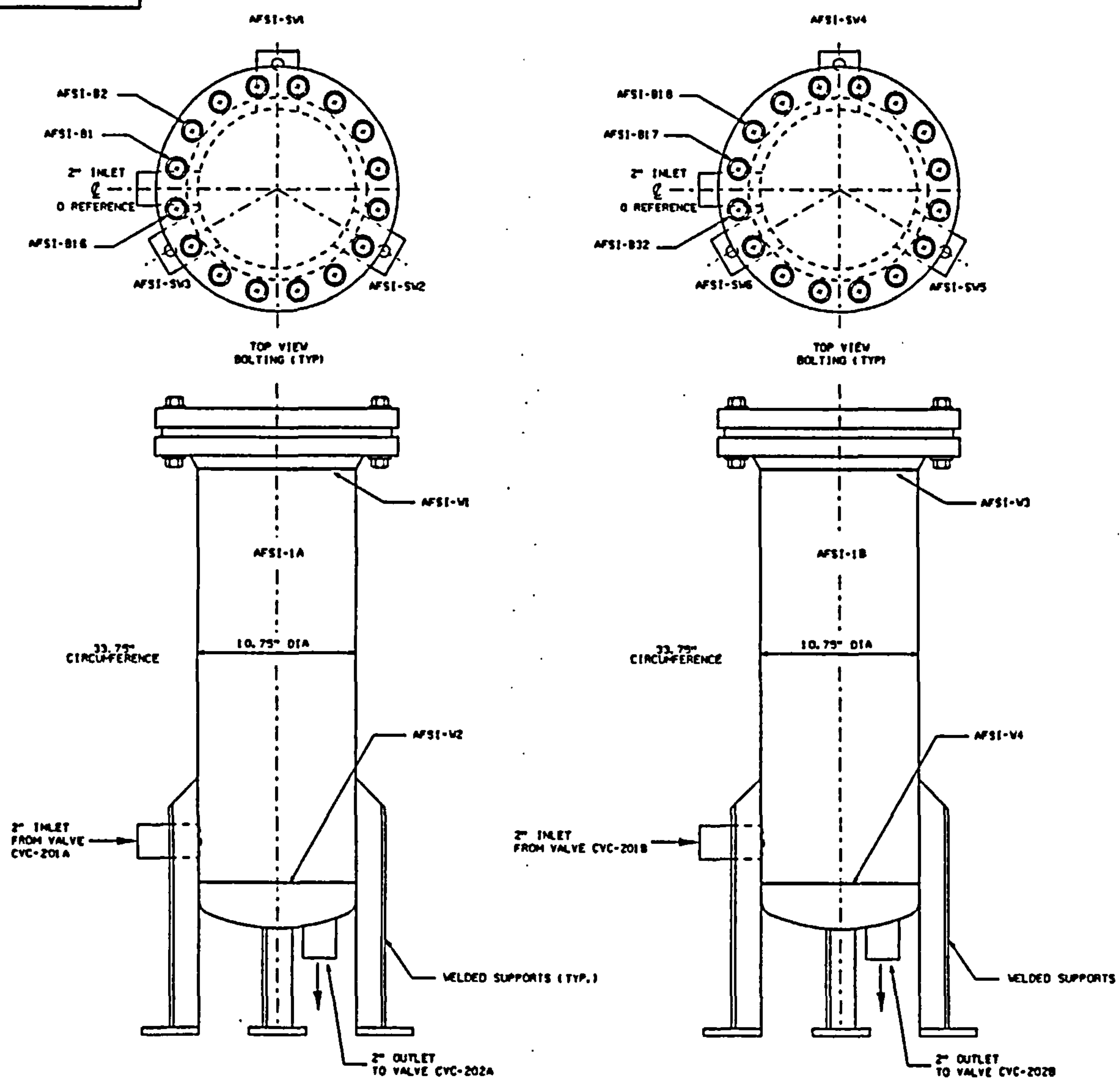
VOLUME CONTROL TANK - VCT

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		P. E. BUKES	6/13/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		
DRAWN		DWG. NO.	REV.
Q. R. /D. S	1/13/83	M-1211	E
SCALE			
NONE			

CADD

M-1212



LOCATION: AUXILIARY BUILDING ELEVATION 606' FILTER ROOM GATE 257

BOLTING DATA

BOLTS / DIA. / LGTH	NUTS
16 / 1.25" / 8.5"	16

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AFSI-V1	1.00"	SA240 TP304SS
AFSI-V2	1.00"	SA240 TP304SS
AFSI-V3	1.00"	SA240 TP304SS
AFSI-V4	1.00"	SA240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AFSI-SV1	0.40"	
AFSI-SV2	0.40"	
AFSI-SV3	0.40"	
AFSI-SV4	0.40"	
AFSI-SV5	0.40"	
AFSI-SV6	0.40"	

CALIBRATION BLOCK

I.D.	DIAMETER/SCHEDULE	MATERIAL
WPS-10	10" SCH 140 1.0"T	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

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
DWN: 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 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)

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

SEAL WATER INJECTION FILTERS AFSI-1A AND AFSI-1B

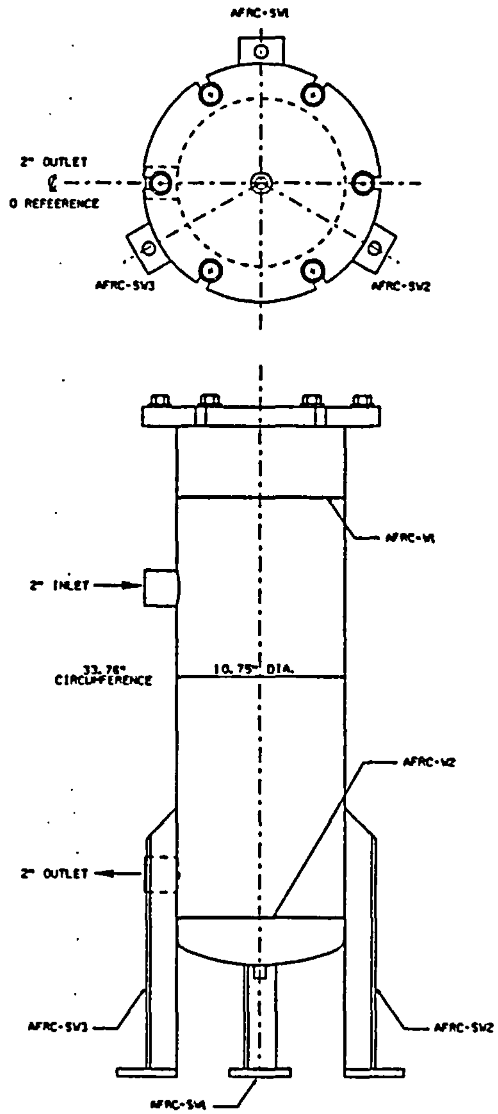
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/03		

CADD

DRAWN		DWG. NO.	REV.
ESS	6/1/93	M-1212	D
SCALE			
NONE			

M-1213



BOLTING DATA

BOLTS / DIA. / LGTH	NUTS
6 / .625" / 4.5"	N/A

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AFRC-W1	.165"	TP304SS
AFRC-W2	.165"	TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AFRC-SW1	.25"	
AFRC-SW2	.25"	
AFRC-SW3	.25"	

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

LOCATION: AUXILIARY BUILDING 606' ELEVATION FILTER ROOM GATE 257

REVISION

A
POD 0011 COMPL
SEE REV O-1
APP'D: CAT 10/23/89
FILM'D: (WPS) 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 8-4-93

B ESR 92-177 COMP.
SEE REV. A-1
FILMED: 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
FILMED: 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
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 FILTER AFRC

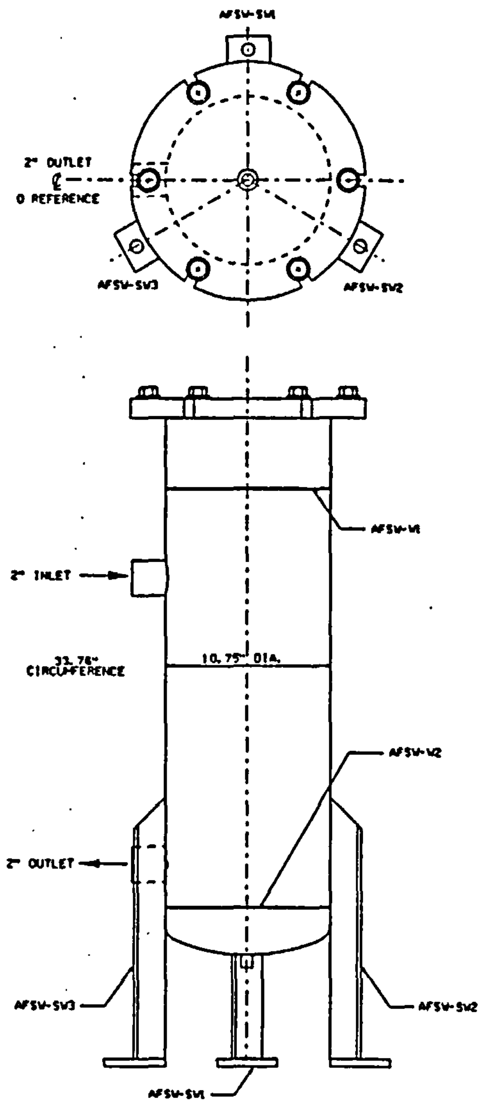
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		P. E. BUKES	5/13/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		

CADD

DRAWN		DWG. NO.	REV.
D. R. / D. S	1/13/83	M-1213	E
SCALE			
NONE			

M-1214



BOLTING DATA

BOLTS / DIA. / LGTH	NUTS
6 /.625"/ 4.5"	N/A

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AFSV-W1	.165"	TP304SS
AFSV-W2	.165"	TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AFSV-SW1	.25"	
AFSV-SW2	.25"	
AFSV-SW3	.25"	

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

169-051

LOCATION: AUXILIARY BUILDING 606' ELEVATION FILTER ROOM GATE 257

REVISION

A
PDO 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
DWN: 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
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
FILMED: 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
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

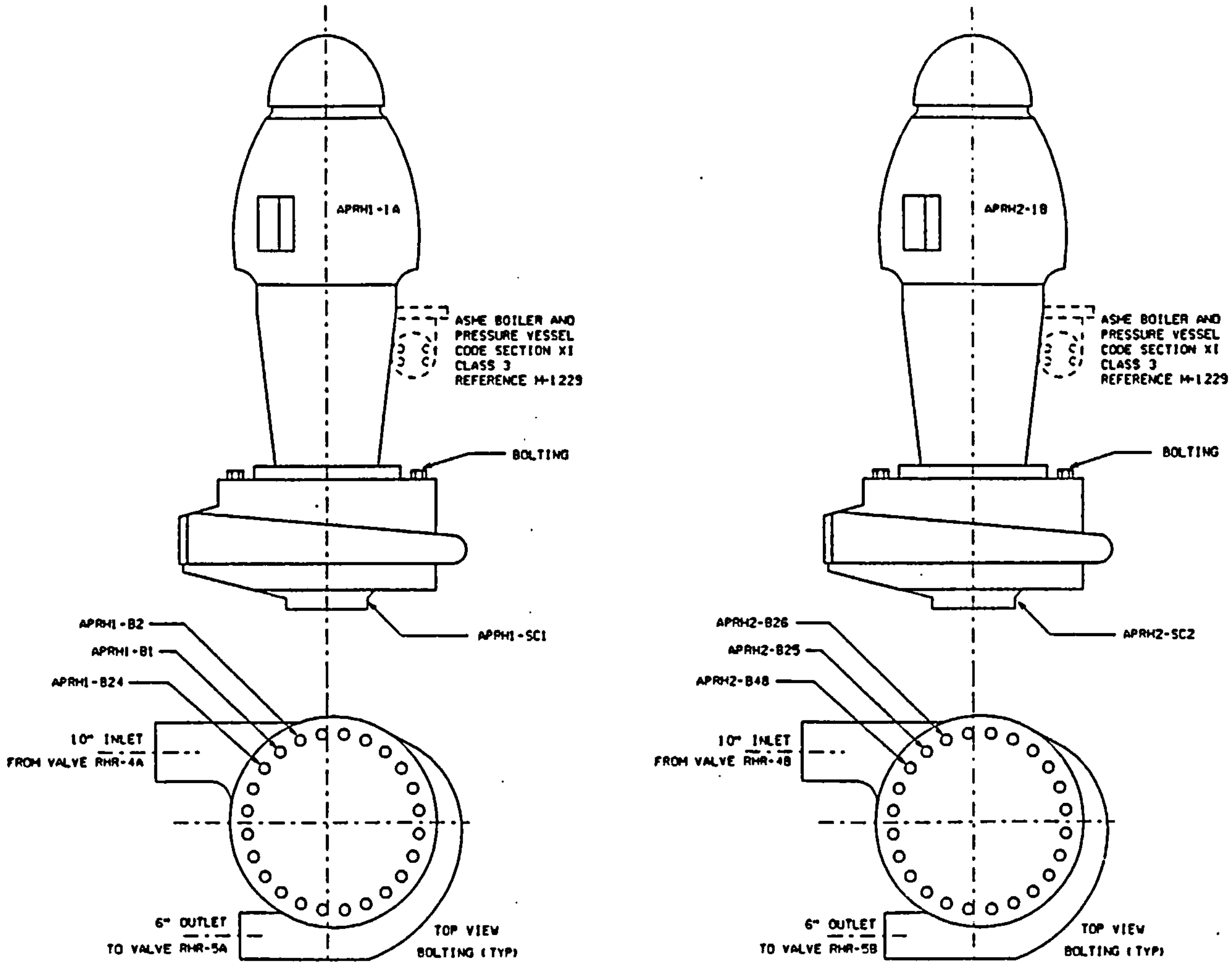
SEAL WATER FILTER AFSW

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		P. E. BUKES	5/13/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		
DRAWN		DWG. NO.	REV.
G. R. /D. S	1/13/83	M-1214	E
SCALE			
NONE			

CADD

M-1215



C-1
KAP 01-001639

BOLTING DATA EACH PUMP

BOLTS / DIA. / LGTH	NUTS
24 / 1.125" / 4.5"	24

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

LOCATION: AUXILIARY BUILDING ELEVATION 566'-6" RHR PUMP PITS 1A AND 1B

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 DWN: 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 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 ADDED 4TH INTERVAL, REVISED QUANTITY OF BOLTS. BY: MTM 02-12-02 APP'D: PEB 04-05-02
D	KAP 01-001639 COMPLETE. SEE REVISION C-1. FILMED: (WPS) 04-16-02

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

RESIDUAL HEAT REMOVAL PUMPS APRH1-1A AND APRH2-1B

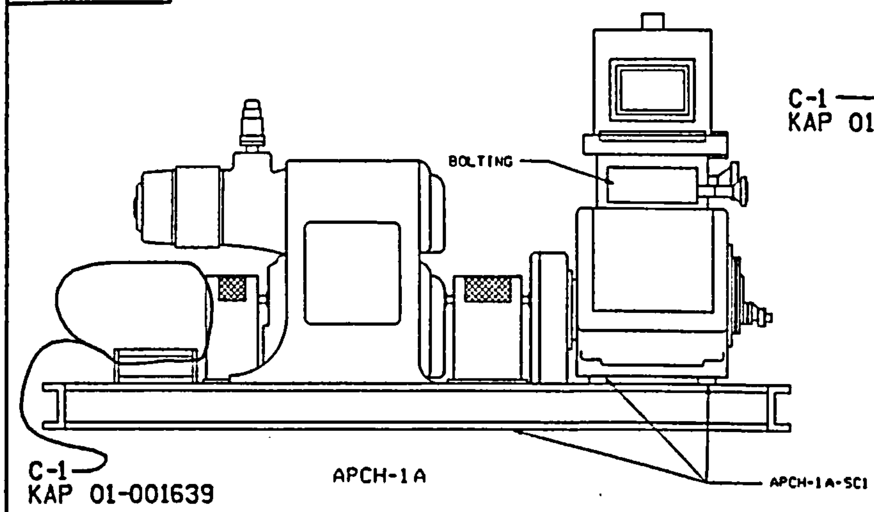
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

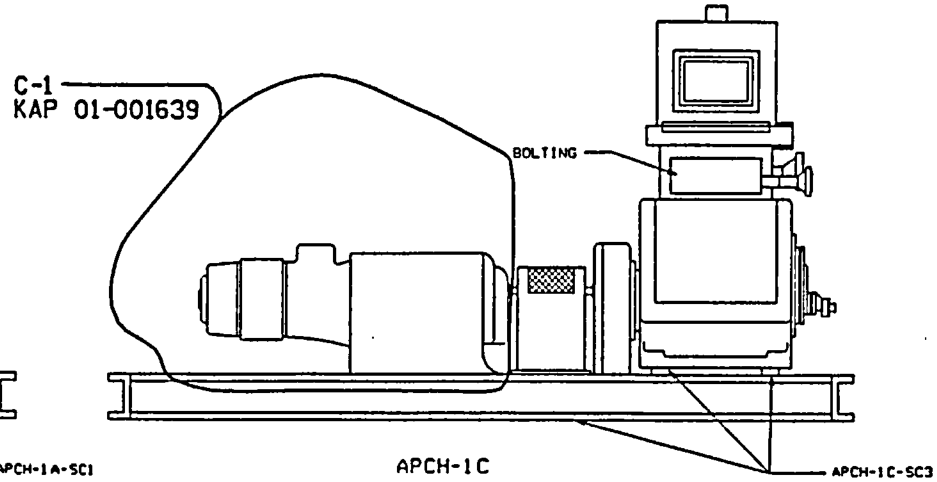
CADD

DRAWN	SCALE	DWG. NO.	REV.
ESS 4/1/93	NONE	M-1215	D

M-1216

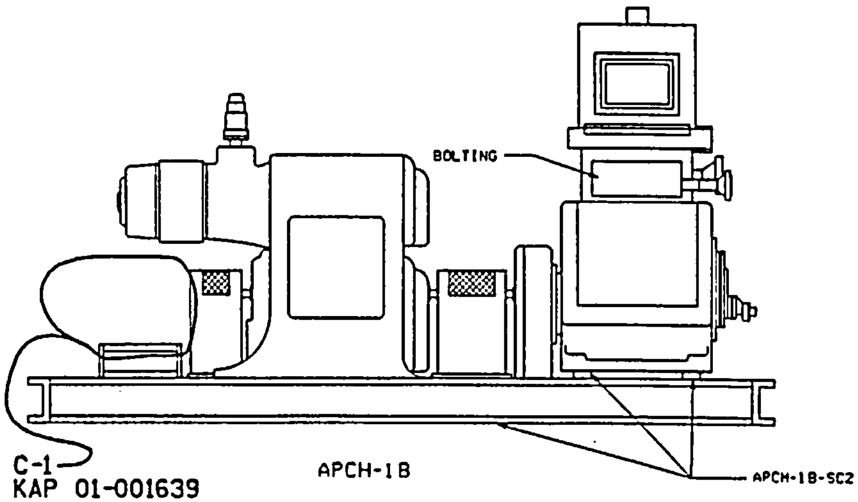


APCH-1A



APCH-1C

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 DWN: 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 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 ADDED 4TH INTERVAL. REMOVED MOTOR. BY: NTH 02-12-02 APP'D: PEB 04-05-02
D	KAP 01-001639 COMPLETE. SEE REVISION C-1. FILMED: (WPS) 04-16-02



APCH-1B

BOLTING DATA EACH PUMP

STUDS / DIA. / LGTH	NUTS
12 / 1.25" / 23"	24

NOTE: NO PUMP CASING WELDS OR INTEGRALLY WELDED ATTACHMENTS ON CHARGING PUMPS APCH-1A, APCH-1B AND APCH-1C.

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

145-101
145-102
145-103

LOCATION: AUXILIARY BUILDING 586' CHARGING PUMP ROOM GATE 208

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

CHARGING PUMPS
APCH-1A, APCH-1B AND APCH-1C

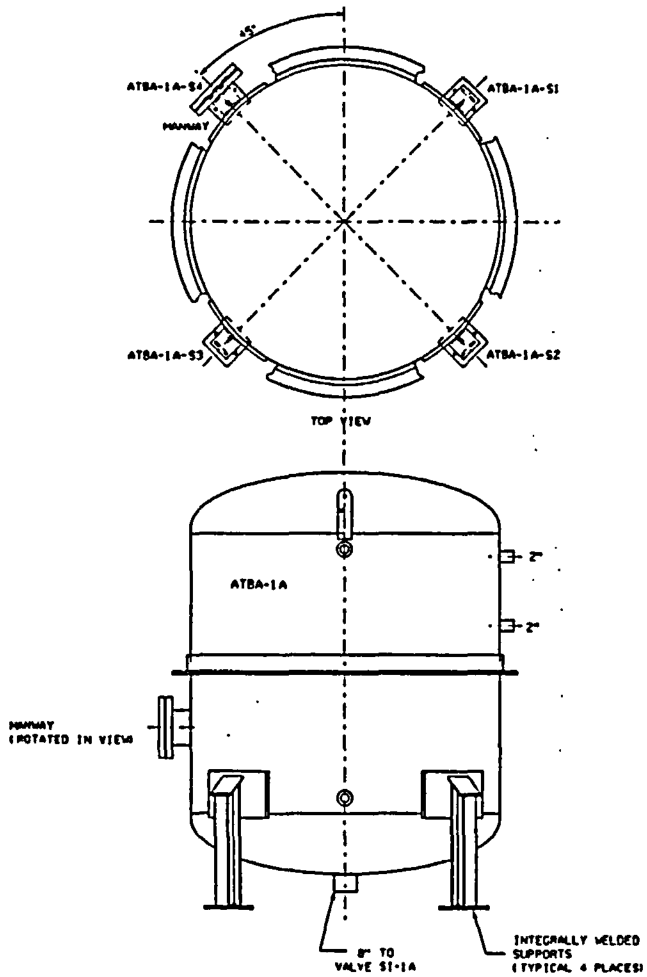
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

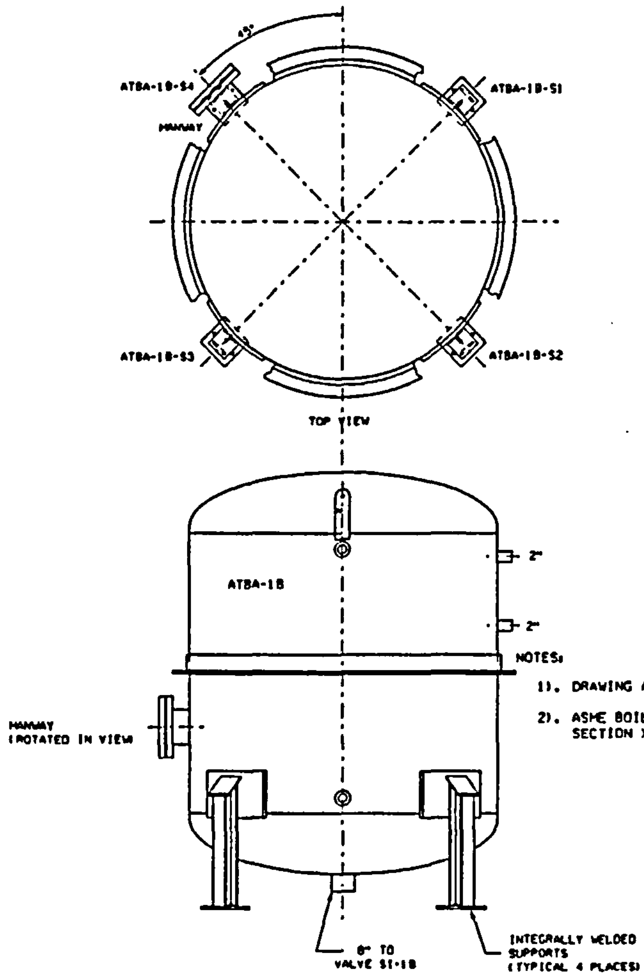
DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/03		

CADD

DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1216	D
SCALE			
NONE			

M-1217





E-1
KAP 01-001639

NOTES:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON-CODE CLASS

153-081
153-082

LOCATION: AUXILIARY BUILDING ELEVATION 633' DOOR 121

CADD

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:(WPS)
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 0256 DWG. REVISED TO REFLECT CORRECT CLASSIFICATION. BY: LAH 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:(WPS) 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:(WPS) 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:(WPS) 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	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/03		
DRAWN		DWG. NO.	REV.
ESS	6/1/93	M-1217	F
SCALE NONE			

M-1218

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

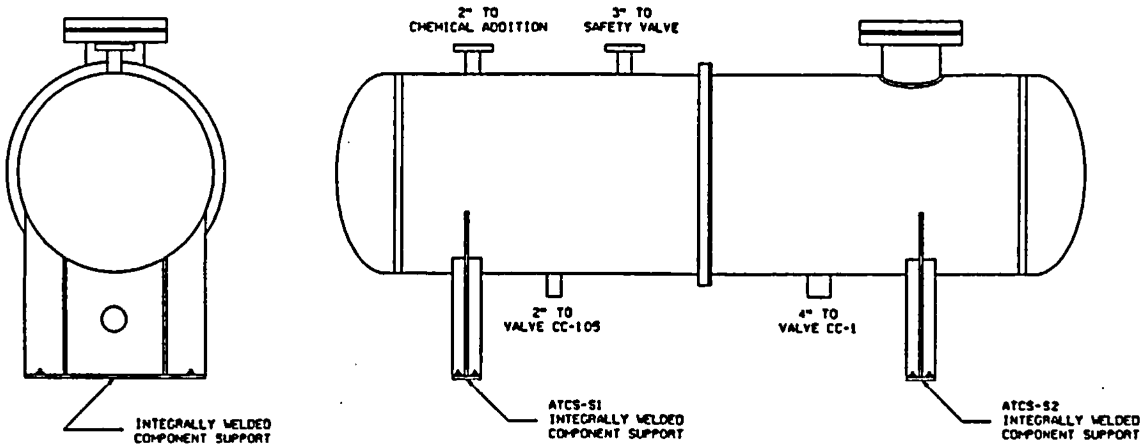
A ESR 92-177
SEE REV. O-1
FILMED: WPS 8-17-93

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)



153-401

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'

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

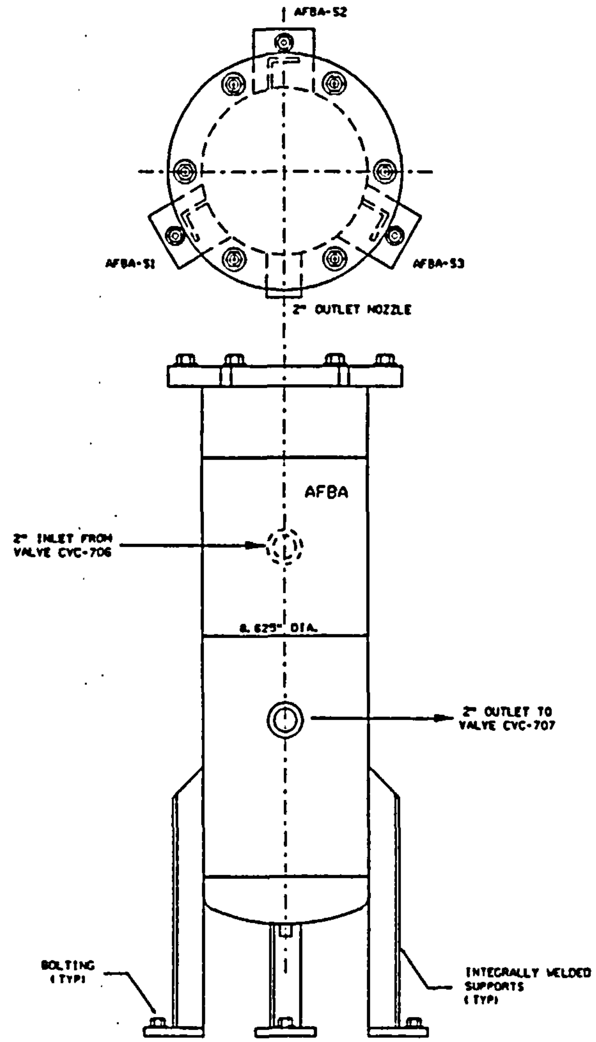
COMPONENT COOLING SURGE TANK ATCS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		
DRAWN		DWG. NO.	REV.
D. R. / D. S	1/13/83	M-1218	C
SCALE			
NONE			

CADD

M-1219



D-1
KAP 01-001639

NOTES:

1). DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL

2). ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON-CODE CLASS

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 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: 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

BORIC ACID FILTER
AFBA

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	4/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		

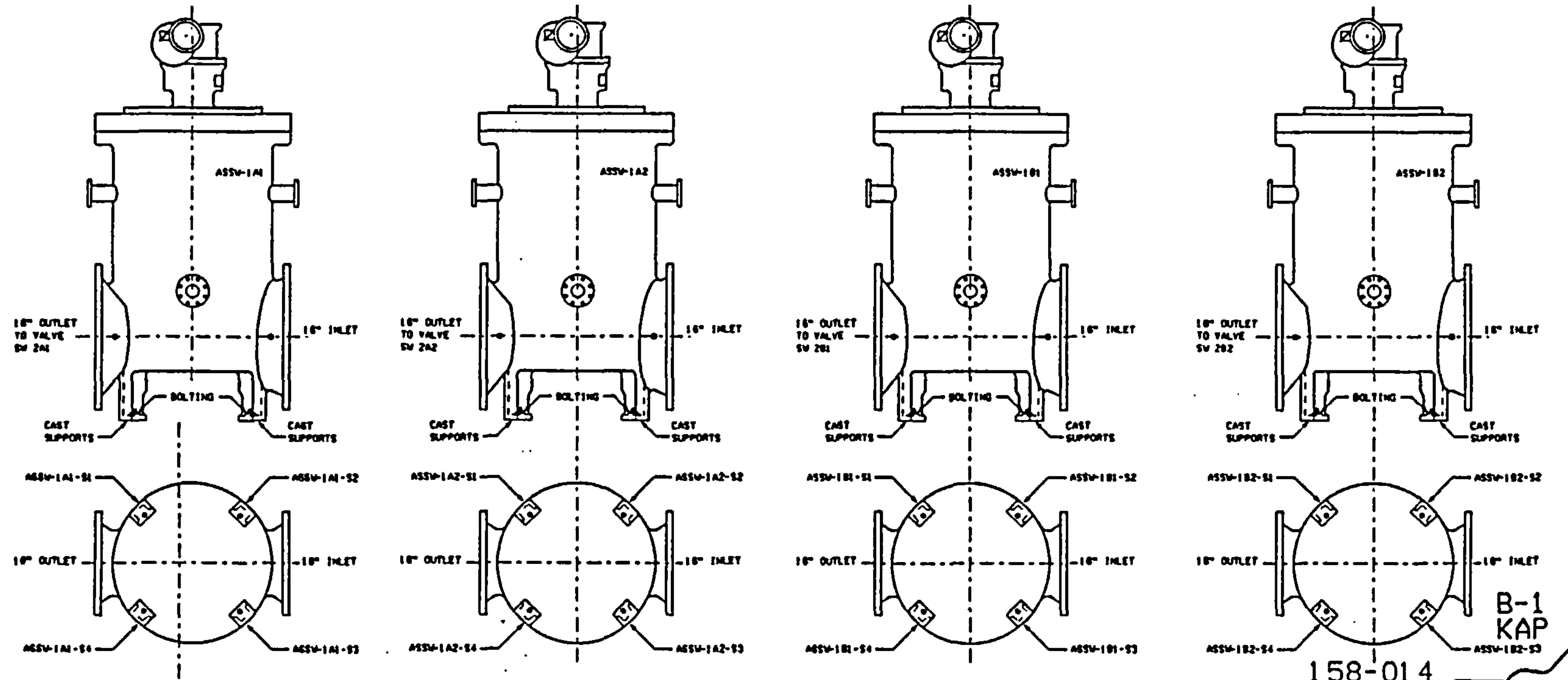
DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1219	E
SCALE: NONE			

169-031

CADD

LOCATION: AUXILIARY BUILDING ELEVATION 586'

M-1220



158-011

158-012

158-013

158-014

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4th ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3

NOTE:
NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: TURBINE BUILDING SCREENHOUSE 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'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)

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

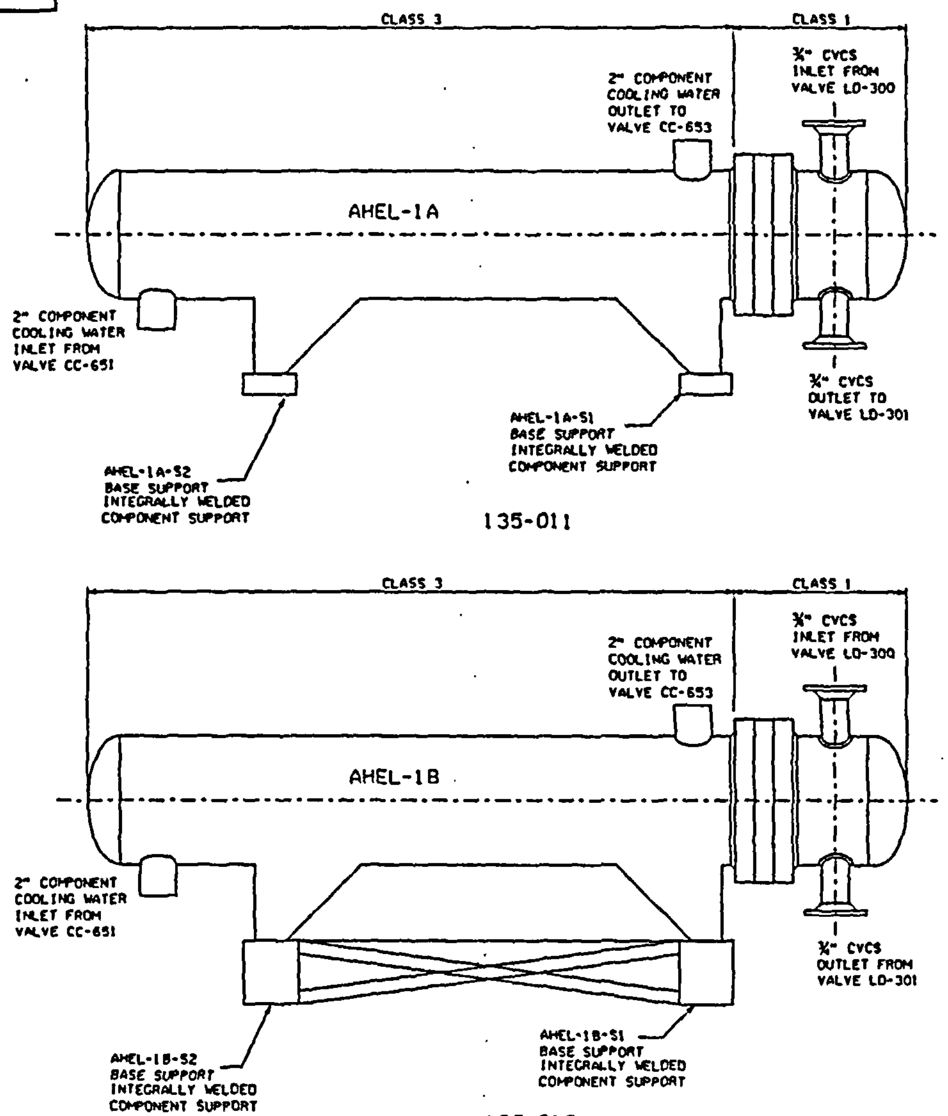
SERVICE WATER PUMP STRAINERS ASSW-1A1, ASSW-1A2, ASSW-1B1, AND ASSW-1B2

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		P. E. BUKES	5/13/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

CADD	DRAWN	DWG. NO.	REV.
	O. R. / D. S 1/13/93	M-1220	C
	SCALE NONE		

M-1221



LOCATION: CONTAINMENT 593'

C-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 1 AND 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: 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: DDG 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)

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

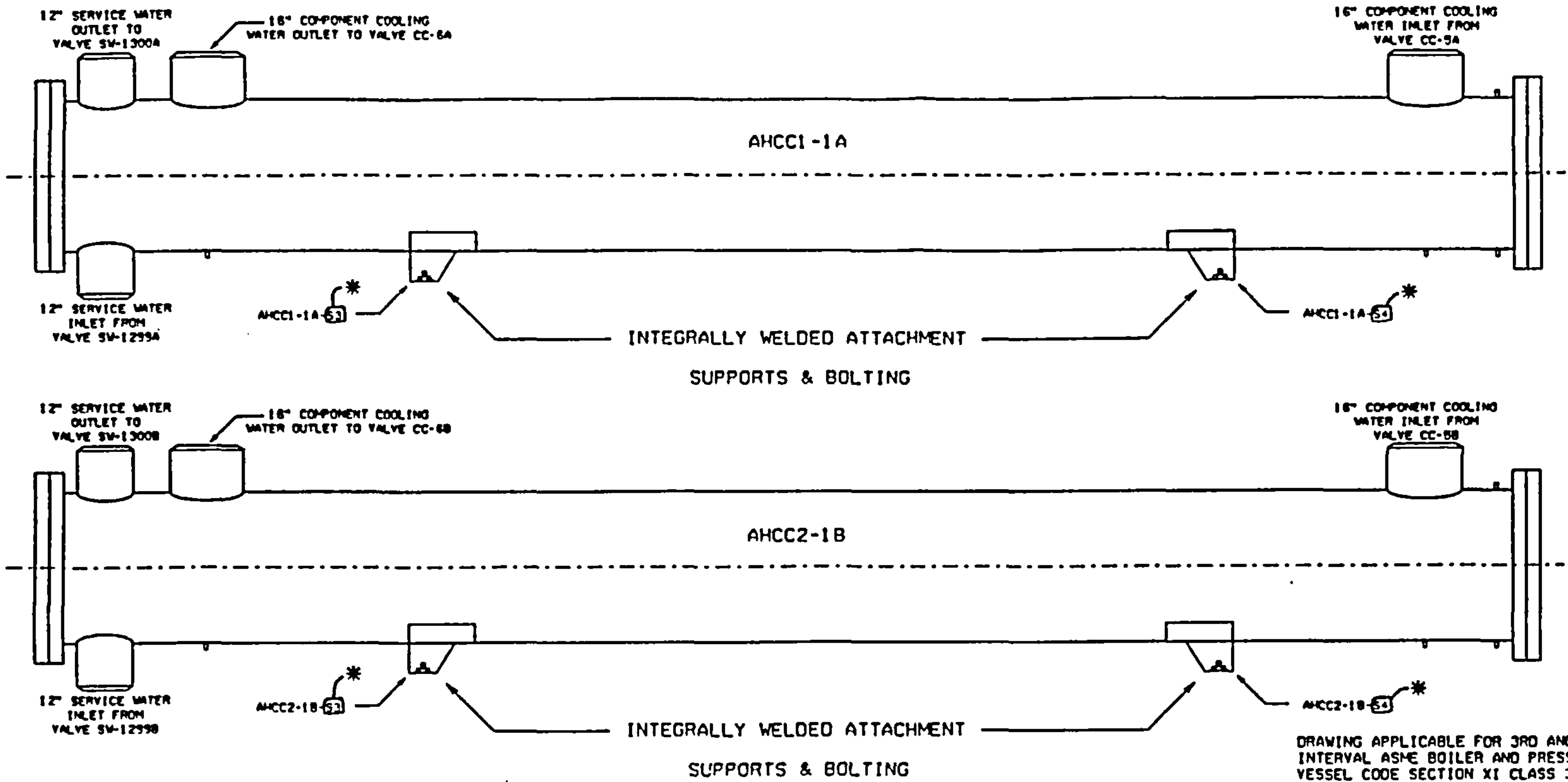
EXCESS LETDOWN HEAT EXCHANGERS AHEL-1A & AHEL-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		
DRAWN: ESS 4/1/93	SCALE: NONE	DWG. NO. M-1221	REV. D

CADD

M-1222



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: TAO 8-4-93
A ESR 92-177 COMP. SEE REV. O-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: PEB 06-04-02
C KAP 01-001639 COMPLETE SEE REV. B-1. FILMED: (WPS) 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: (WPS)

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3

C-1 *
KAP 01-001639

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

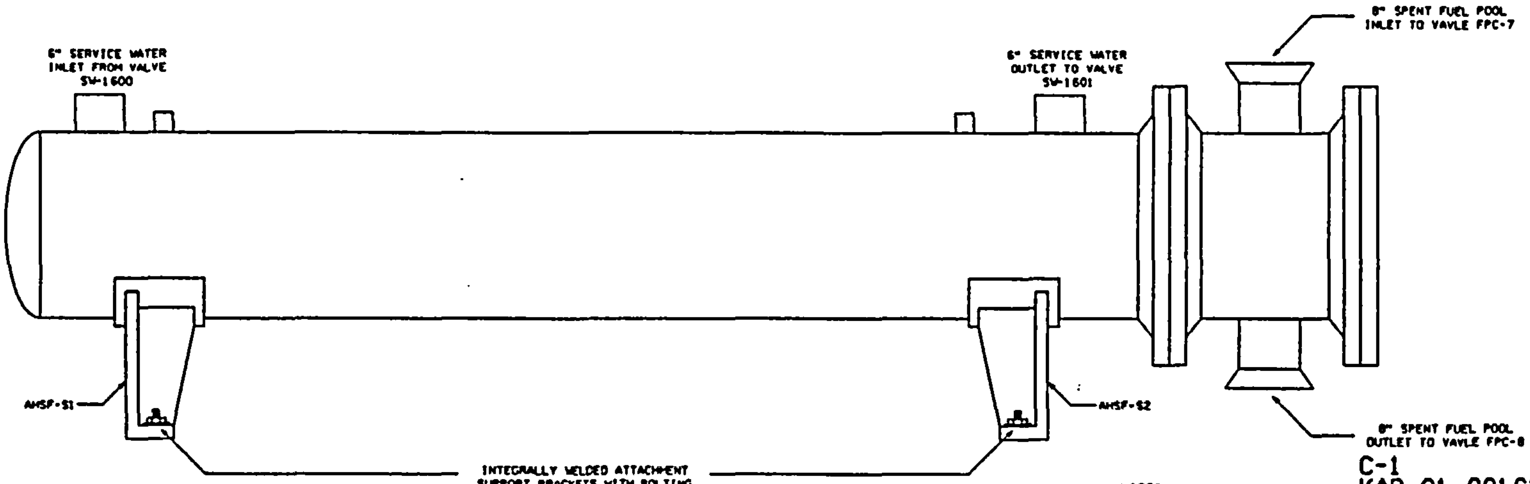
DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		
DRAWN ESS	6/1/93	DWG. NO. M-1222	REV. C
SCALE NONE			

135-081
135-082

LOCATION: AUXILIARY BUILDING 606'

CADD

M-1223



C-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). 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 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: BJO 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	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

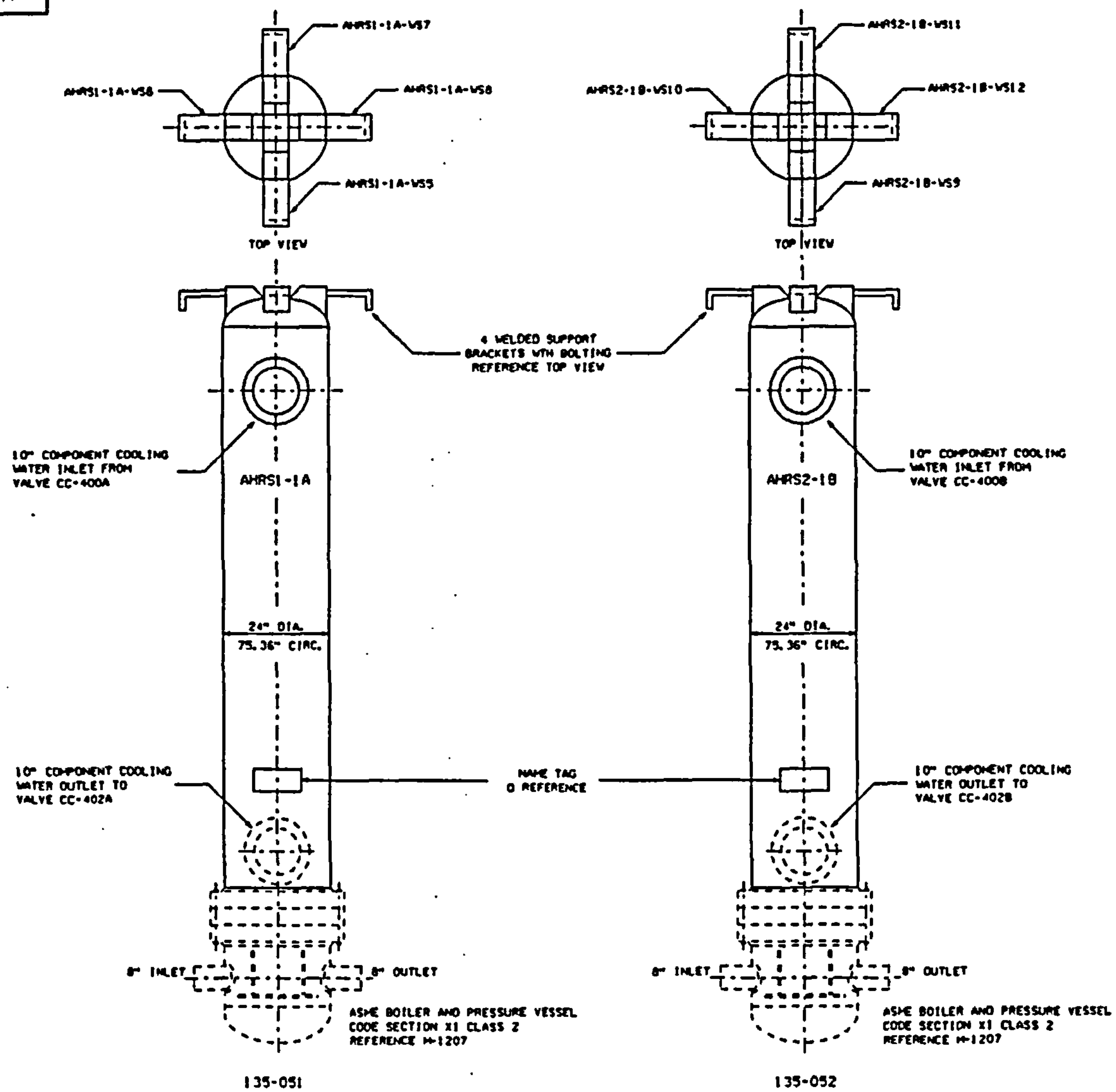
DRAWN		DWG. NO.	REV.
D. R. /D. S	1/13/93	M-1223	D
SCALE			
NONE			

135-091

CADD

LOCATION: AUXILIARY BUILDING ELEVATION 622' SPENT FUEL POOL HEAT EXCHANGER ROOM DOOR 140

M-1224



LOCATION: AUXILIARY BUILDING 606'; RESIDUAL HEAT EXCHANGER AHRS1-1A GATE 256 AND RESIDUAL HEAT EXCHANGER AHRS2-1B GATE 173

B-1
KAP 01-001639

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: 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 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

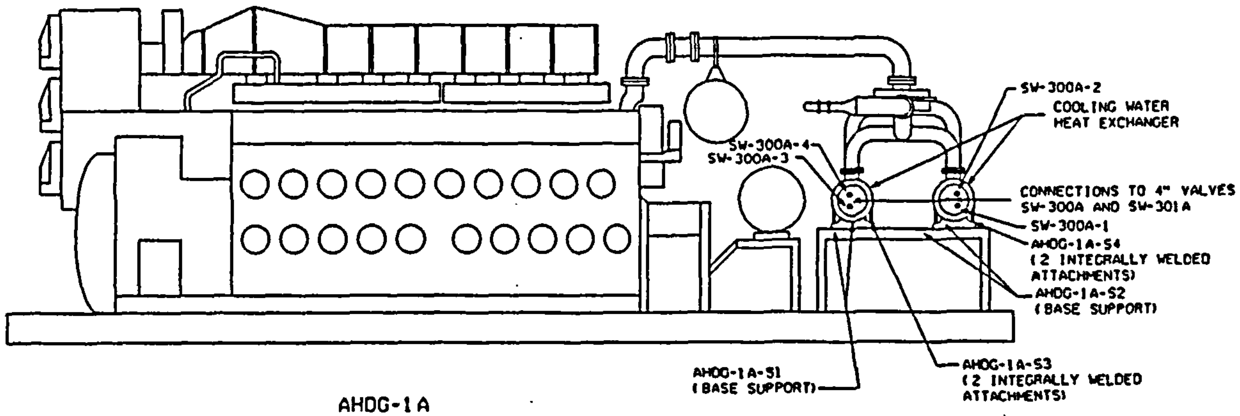
RESIDUAL HEAT EXCHANGERS AHRS1-1A AND AHRS2-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
	PHILLIP E. BUKES 6/1/93
CHECKED	PROJECT APPROVED
D.H. 5/17/93	
DRAWN: ESS 4/1/93	DWG. NO.: M-1224
SCALE: NONE	REV.: C

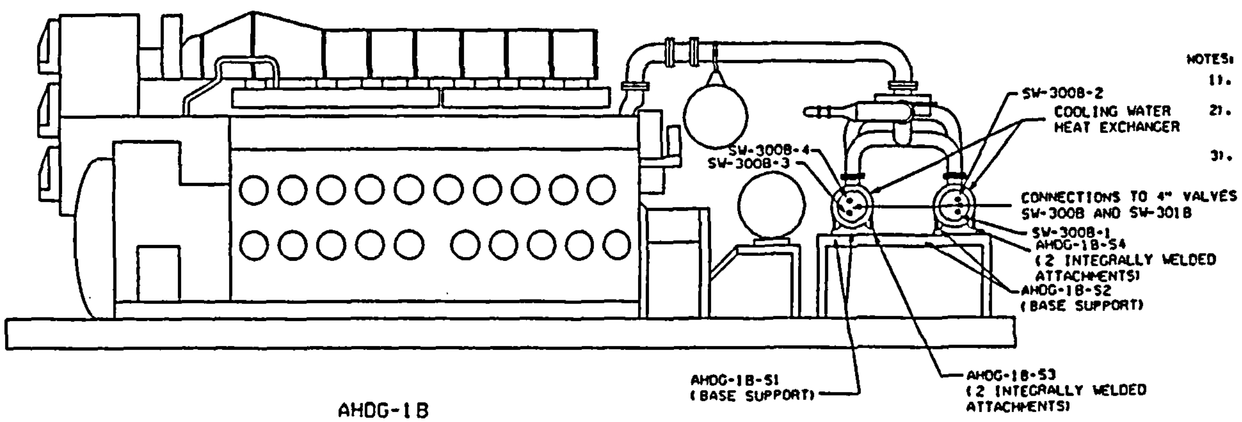
CADD

M-1225



AHDG-1A

134-031



AHDG-1B

134-032

LOCATION: TURBINE BUILDING ELEVATION 586'

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

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 REV. NOTES & BASE SUPPORT LBLS 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'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 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: (WPS) 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: (WPS)

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

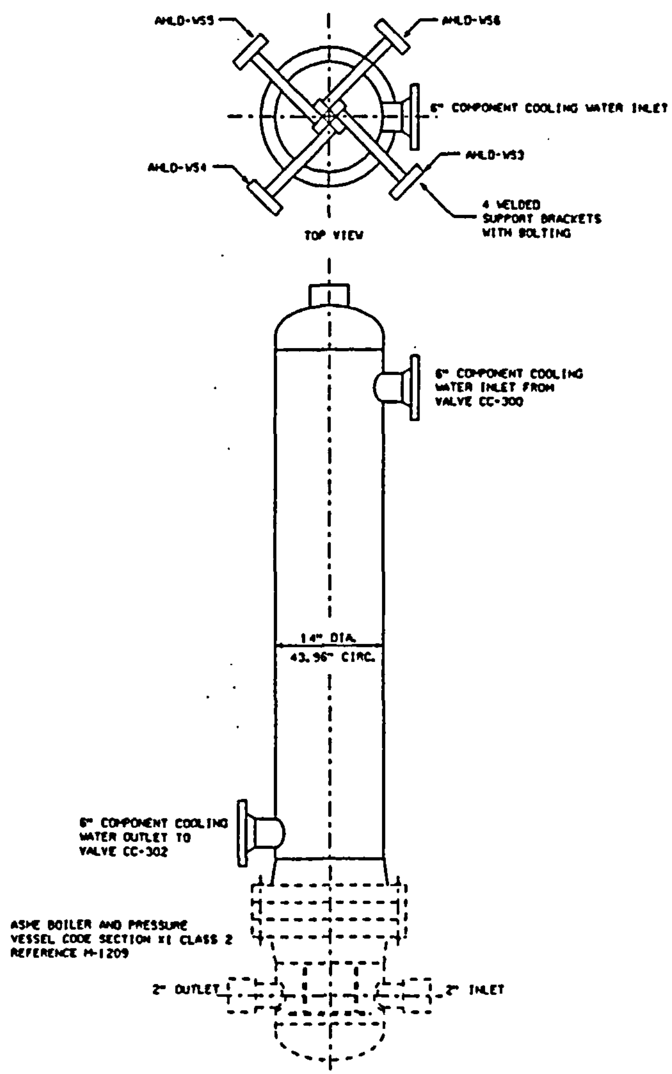
DIESEL GENERATOR AHDG-1A AND AHDG-1B COOLING WATER HEAT EXCHANGERS

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED	
	PHILLIP E. BUKES	1/21/93
CHECKED	PROJECT APPROVED	
D. M. 1/17/93		
DRAWN D. R. /D. S 1/13/93	DWG. NO. M-1225	REV. E
SCALE NONE		

CADD

M-1226



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

135-041

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

LETDOWN HEAT EXCHANGER
AHLD

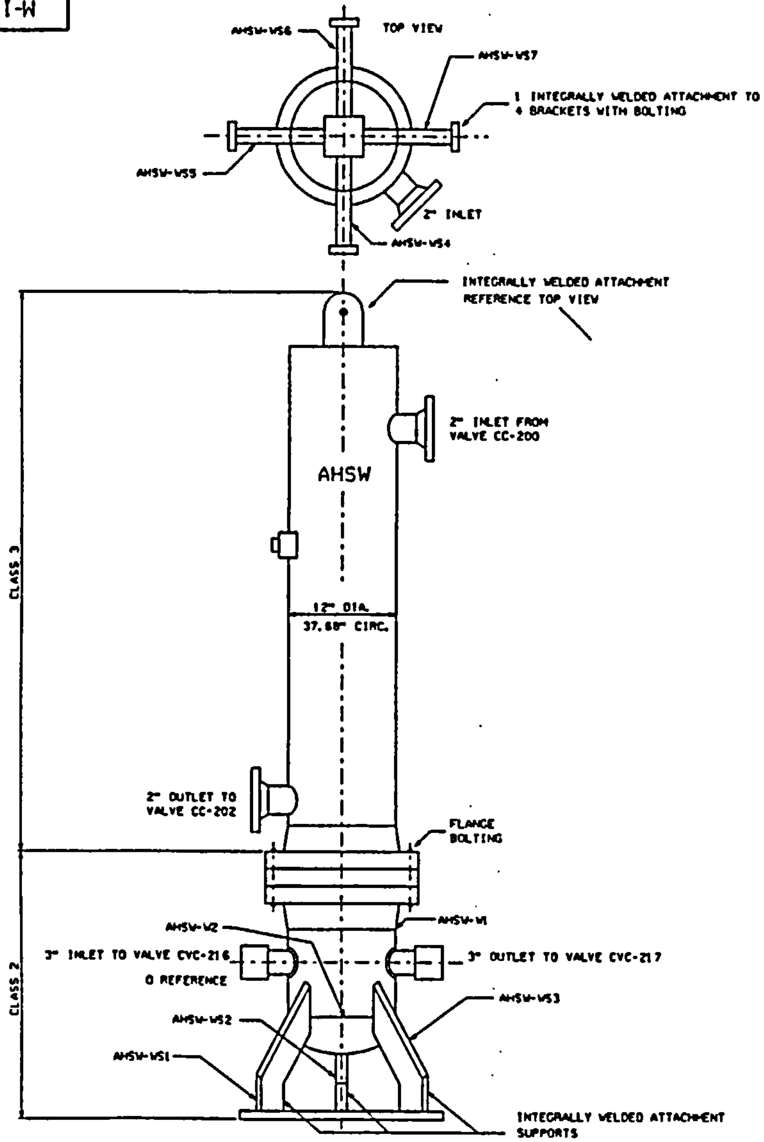
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/93		
DRAWN	ESS 4/1/93	DWG. NO. M-1226	REV. C
SCALE	NONE		

CADD

LOCATION: AUXILIARY BUILDING 606' LETDOWN HEAT EXCHANGER ROOM GATE 53

M-1227



BOLTING DATA

STUDS / DIA. / LGTH	NUTS
12 /.875"/ 7.875"	48

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
AHSW-W1	0.1875"T SHELL	SA240 TP304SS
AHSW-W2	0.1875"T SHELL	SA240 TP304SS
AHSW-W2	0.125"T HEAD	SA240 TP304SS

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
AHSW-WS1	0.375"T	
AHSW-WS2	0.375"T	
AHSW-WS3	0.375"T	

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 AND CLASS 3

3). COMPONENT SUBJECT TO PRESSURE TESTING ONLY

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
DWN: 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
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
FILMED: 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
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)

135-021

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

SEAL WATER HEAT EXCHANGER
AHSW

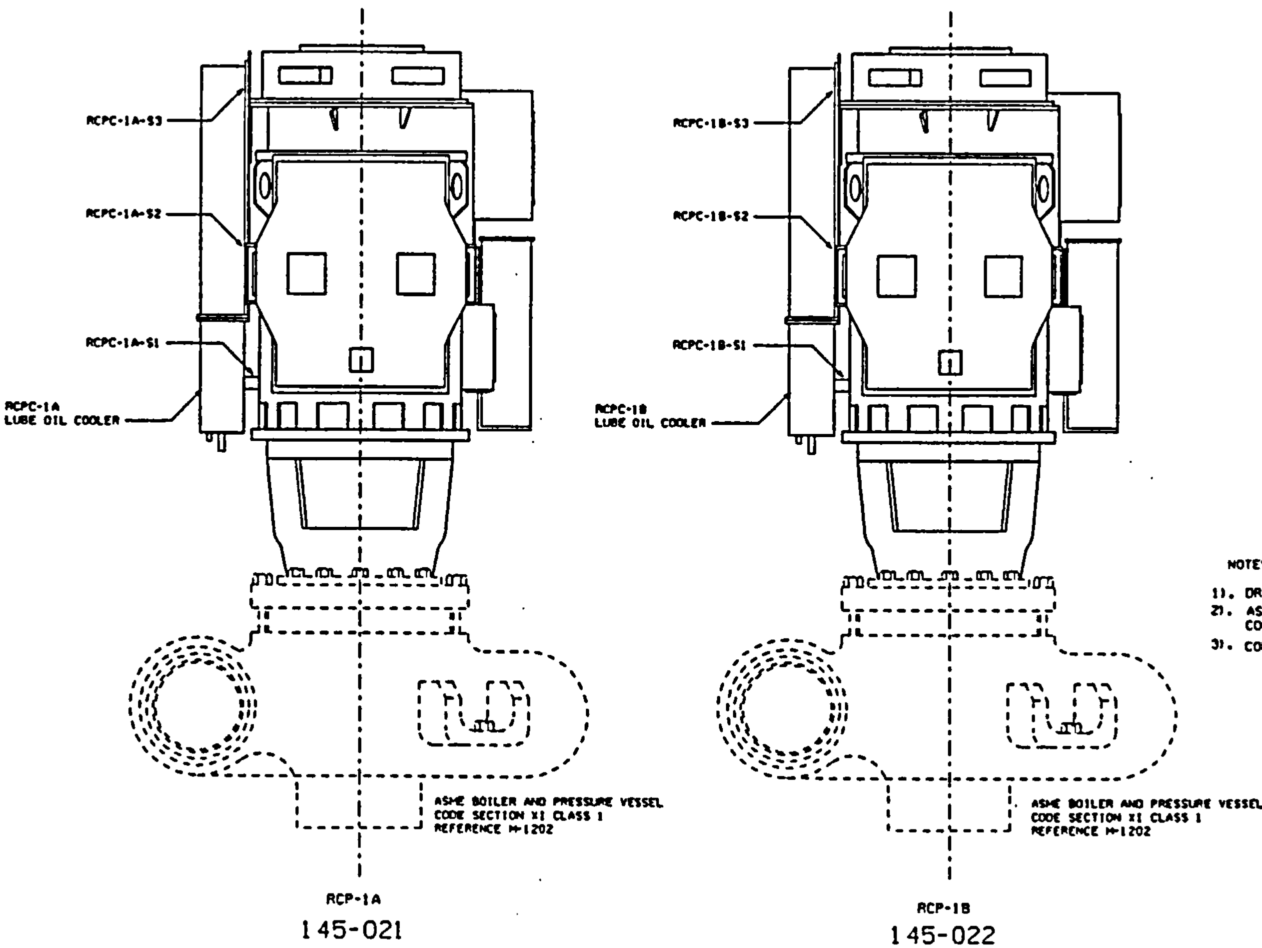
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED PHILLIP E. BUKES 6/1/93
CHECKED D.H. 1/17/83	PROJECT APPROVED
DRAWN ESS 4/1/93	DWG. NO. M-1227
SCALE NONE	REV. E

LOCATION: AUXILIARY BUILDING 606' SEAL WATER HEAT EXCHANGER ROOM GATE 79

CADD

M-1228



NOTE: INTEGRALLY WELDED ATTACHMENTS

RCPC-1A-S1 RCPC-1B-S1
RCPC-1A-S2 RCPC-1B-S3
RCPC-1A-S3

NOTE: RCPC-1B-S2 NOT INTEGRALLY WELDED

LOCATION: CONTAINMENT

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). COMPONENT SUBJECT TO PRESSURE TESTING ONLY.

REVISION

Rev.	Description
0-1	REDRAFTED TO CAD PER ESR 92-177 DWN: E. SAXTON 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: 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 FILM'D: (WPS) 12-25-97
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 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 RCPC-1A AND RCPC-1B LUBE OIL COOLER

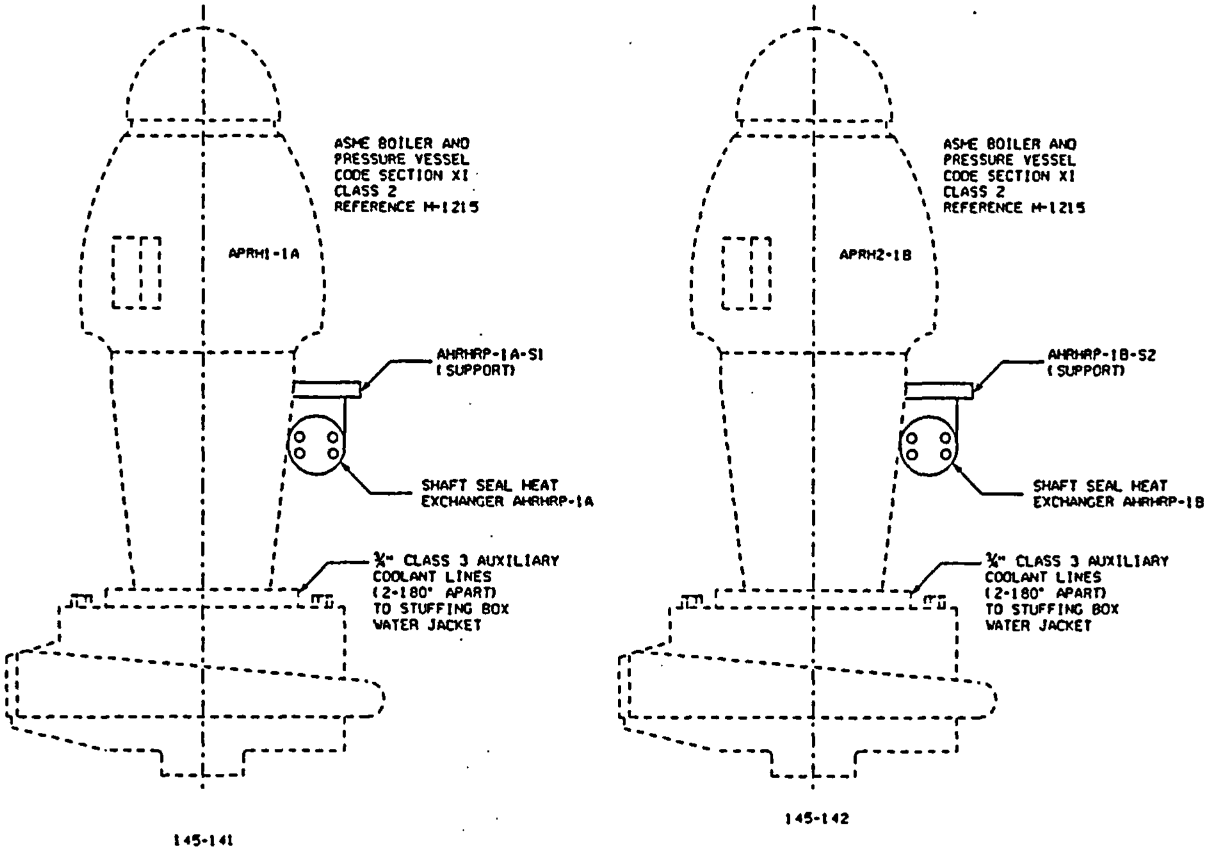
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		
DRAWN		DWG. NO.	REV.
O. R. /D. S	1/13/83	M-1228	E
SCALE			
NONE			

CADD

M-1229

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'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

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: AUXILIARY BUILDING ELEVATION 566'-6" RHR PUMP PITS 1A AND 1B

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

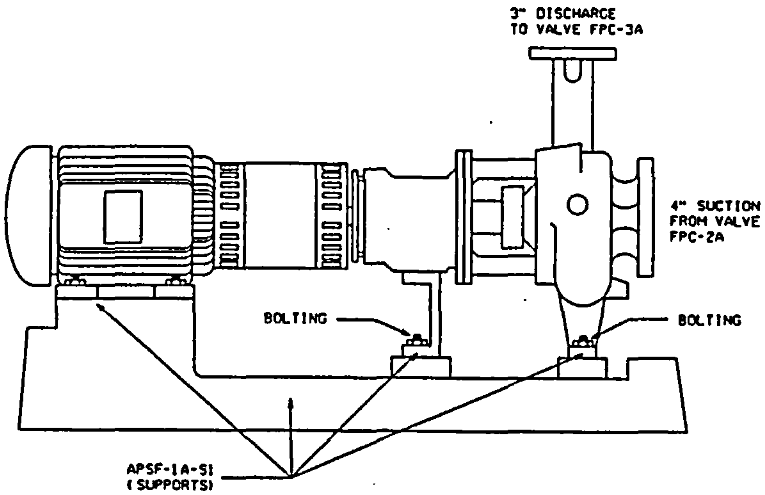
RESIDUAL HEAT REMOVAL PUMPS SHAFT SEAL HEAT EXCHANGERS AHRHRP-1A AND AHRHRP-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	
D.M.	1/17/93		
DRAWN		DWG. NO.	REV.
ESS	4/1/93	M-1229	C
SCALE			
NONE			

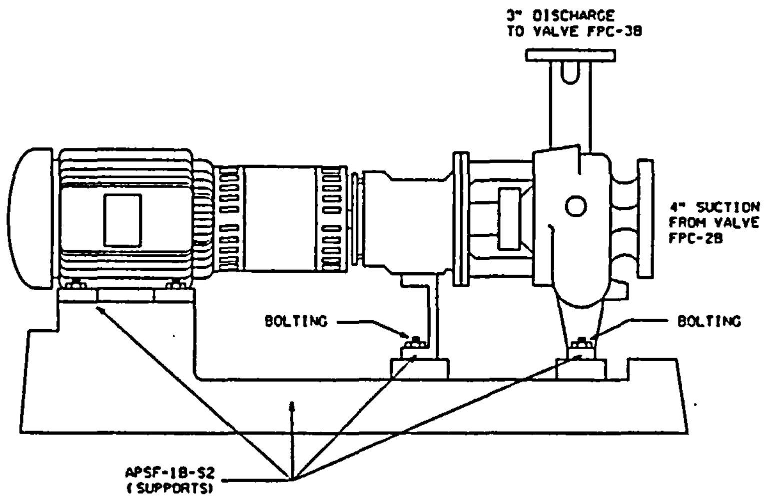
CADD

M-1230



APSF-1A

145-171



APSF-1B

145-172

C-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). COMPONENT SUBJECT TO PRESSURE TESTING ONLY

4). NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

REVISION
0-1 REDRAFTED TO CAD PER ESR 92-177 DWN: E. SAXTON 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: 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'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)

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

SPENT FUEL POOL PUMPS
APSF-1A AND APSF-1B

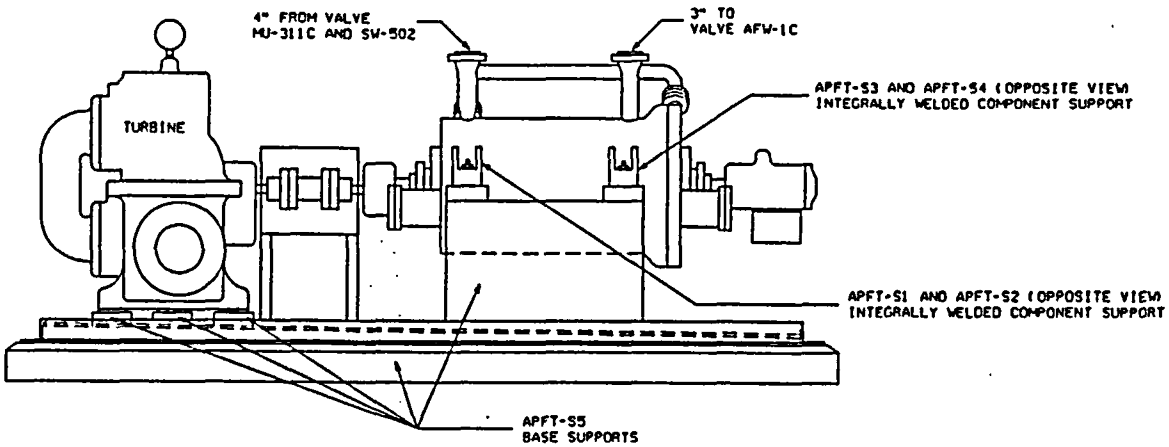
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		
DRAWN: D. R. /D. S	1/13/93	DWG. NO. M-1230	REV. D
SCALE: NONE			

LOCATION: AUXILIARY BUILDING ELEVATION 622' SPENT FUEL POOL HEAT EXCHANGER ROOM DOOR 140

CADD

M-1231



145-413

B-1
KAP 01-001639

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: 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)

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

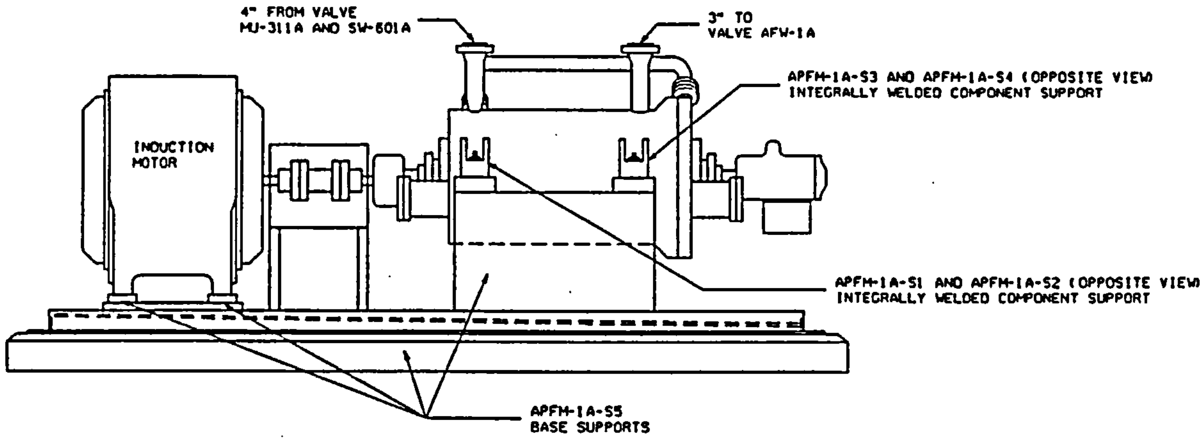
DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/03
CHECKED		PROJECT APPROVED	
D. M.	1/17/03		

DRAWN		DWG. NO.	REV.
D. R. /D. S	1/13/03	M-1231	C
SCALE			
NONE			

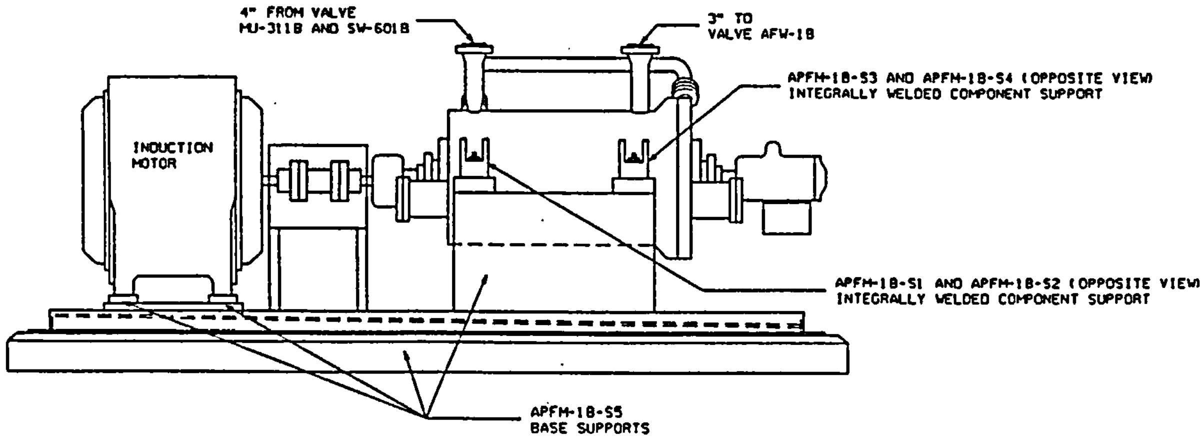
CADD

LOCATION: TURBINE BUILDING ELEVATION 586'

M-1232



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: WPS 8-17-93

A-1 RE PUR 0295
ADDED REF NO'S.
BY: 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 PUMPS
MOTOR DRIVEN
APFM-1A AND APFM-1B

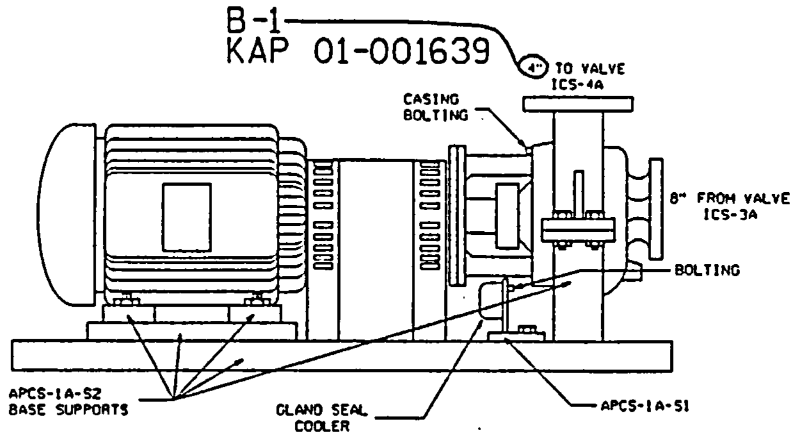
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	1/21/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

DRAWN		DWG. NO.	REV.
D. R. / D. S	1/13/93	M-1232	C
SCALE			
NONE			

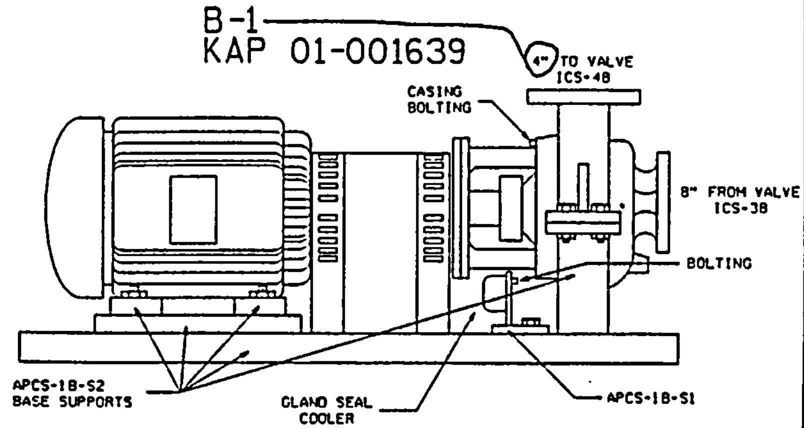
CADD

M-1233



APCS-1A

145-131



APCS-1B

145-132

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 2

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 2-½" CLASS 2 SEAL PIPING AND 2-½" CLASS 3 AUXILIARY COOLANT PIPING

LOCATION: AUXILIARY 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'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 FALNGE DIAMETER. BY: NTH 02-12-02 APP'D: PEB 04-05-02	
C	KAP 01-001639 COMPLETE.
SEE REVISION B-1. FILMED: WPS: 04-16-02	

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

CONTAINMENT SPRAY PUMPS AND GLAND SEAL COOLERS APCS-1A AND APCS-1B

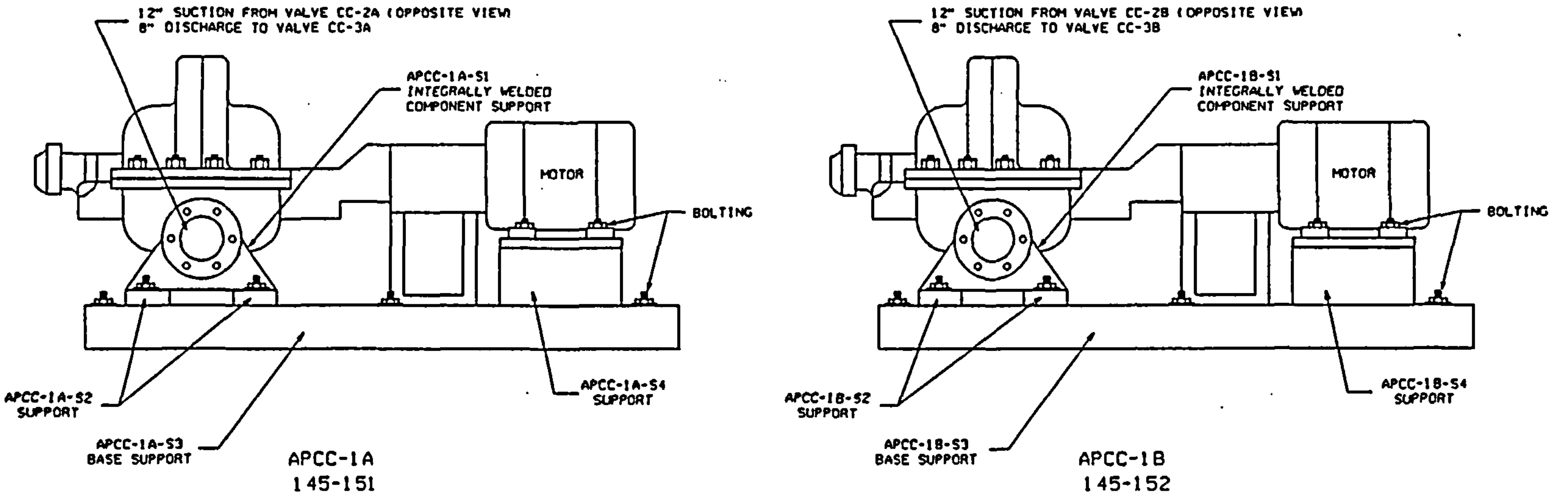
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	
CHECKED		PROJECT APPROVED	
D. M.	1/17/83		1/21/93

DRAWN		DWG. NO.	REV.
D. R. / D. S	1/13/83	M-1233	C
SCALE			
NONE			

CADD

M-1234



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'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 ISI 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

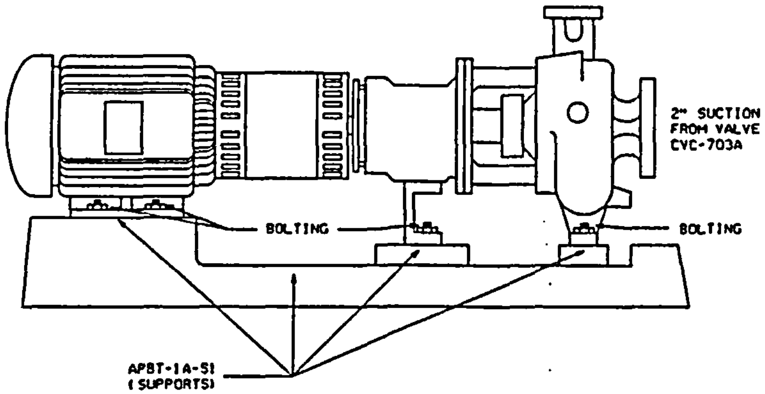
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED: PHILLIP E. BUKES 7/21/93
CHECKED: D. H. 1/17/83	PROJECT APPROVED
DRAWN: D. R. /D. S 1/13/83	DWG. NO.: M-1234
SCALE: NONE	REV.: C

LOCATION: AUXILIARY BUILDING ELEVATION 606'

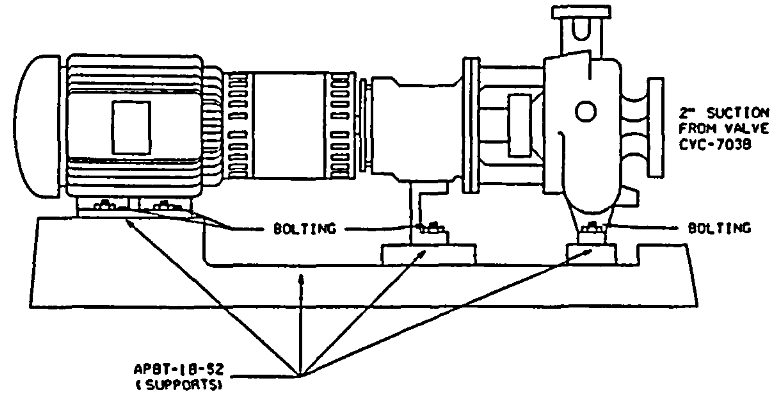
CADD

M-1235



APBT-1A

145-111



APBT-1B

145-112

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:
A ESR 92-177 COMP. SEE REV. 0-1 FILMED: WPS 8-17-93
A-1 DCF 2786-2/3 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) 01-21-97
B-1 RE PUR 0295 ADDED REF NO'S. BY: BJD 7-19-99 APP'D: DAK 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)

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

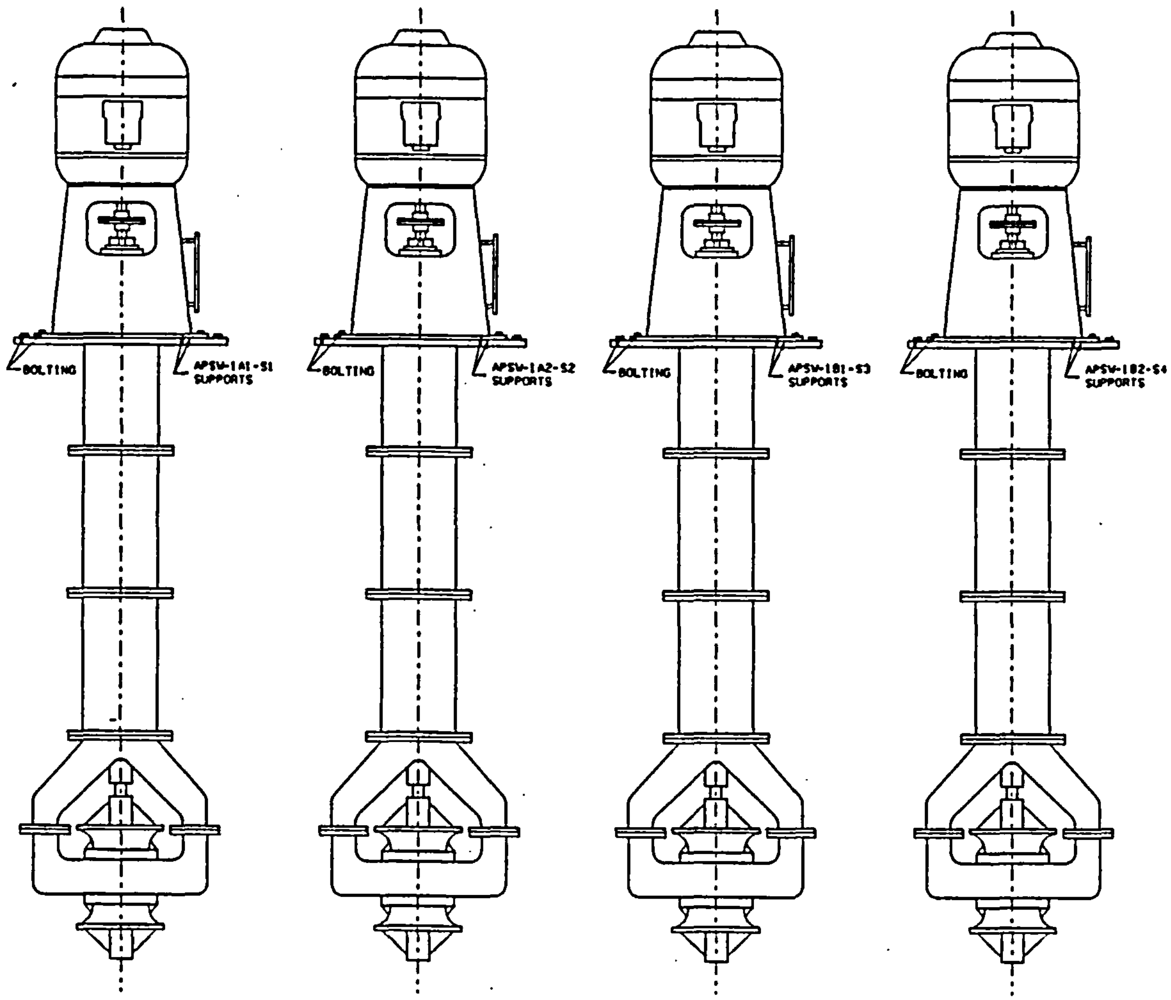
DESIGNED		APPROVED	
		PHILLIP E. BUKES	1/21/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/93		

DRAWN	SCALE	DWG. NO.	REV.
D. R. /D. S 1/13/93	NONE	M-1235	D

LOCATION: AUXILIARY BUILDING ELEVATION 606'

CADD

M-1236



APSW-1A1 145-441 — APSW-1A2 145-442

APSW-1B1 145-443

APSW-1B2 145-444

LOCATION: TURBINE BUILDING SCREEN HOUSE 586'

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

B-1
KAP 01-001639

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: 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)

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

SERVICE WATER PUMPS APSW-1A1, APSW-1A2, APSW-1B1 AND APSW-1B2

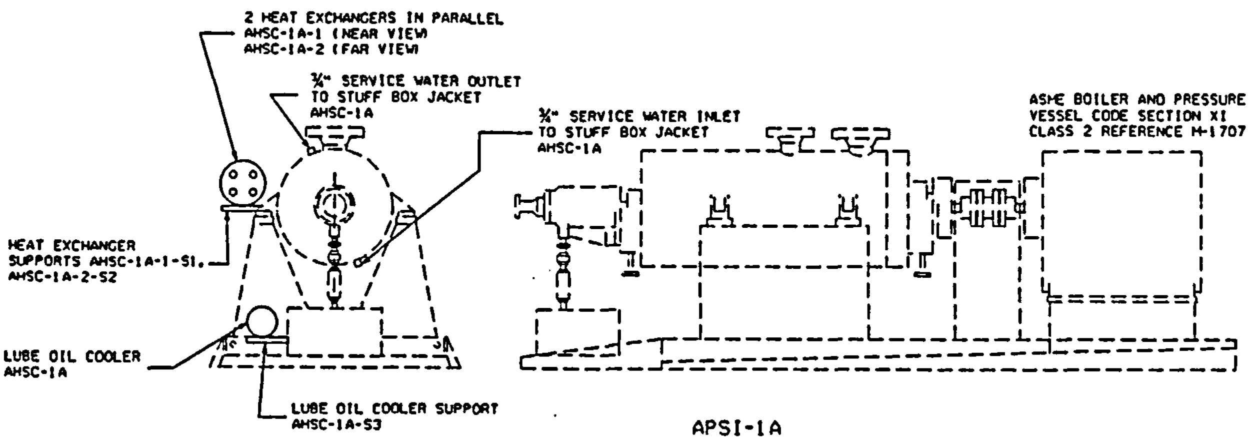
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED	APPROVED
	PHILLIP E. BUKES 7/21/93
CHECKED	PROJECT APPROVED
D. M. 1/17/83	

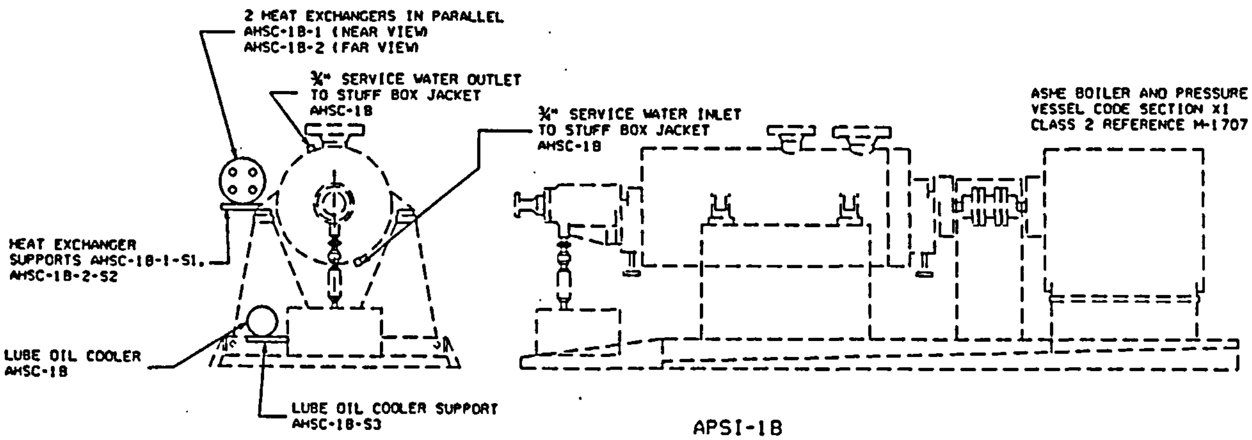
DRAWN	DWG. NO.	REV.
Q. R. / D. S. 1/13/83	M-1236	C
SCALE NONE		

CADD

M-1237



APSI-1A
145-031



APSI-1B
145-032

NOTE:

NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

LOCATION: AUXILIARY BUILDING ELEVATION 586'

B-1
KAP 01-001639

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: 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: BJO 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

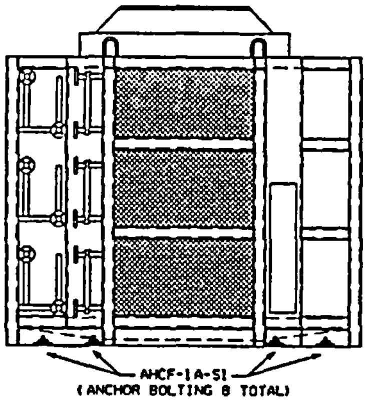
SAFETY INJECTION PUMP
HEAT EXCHANGERS (2), LUBE
OIL COOLER AND STUFF BOX
JACKET AHSC-1A AND AHSC-1B

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

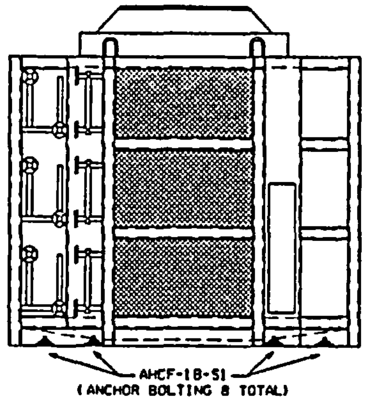
DESIGNED		APPROVED	
		PHILLIP E. BUKES	1/21/93
CHECKED		PROJECT APPROVED	
D. H.	1/17/83		
DRAWN		DWG. NO.	REV.
D.R./D.S	1/13/83	M-1237	C
SCALE			
NONE			

CADD

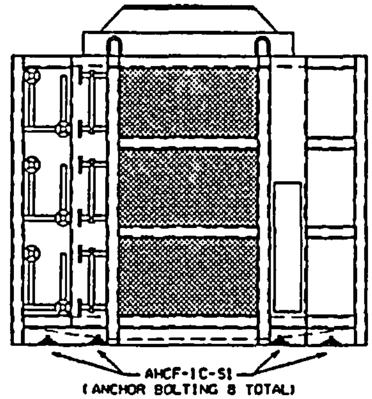
M-1239



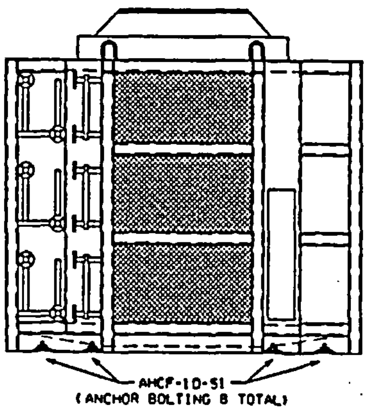
AHCF-1A
155-011



AHCF-1B
155-012



AHCF-1C
155-013



AHCF-1D
155-014

LOCATION: CONTAINMENT BUILDING ELEVATION 606' (AHCF-1C AND AHCF-1D) AND 626' (AHCF-1A AND AHCF-1B)

NOTE: NO CLASS 3 INTEGRALLY WELDED ATTACHMENTS

B-1
KAP 01-001639

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3

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. O-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)

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

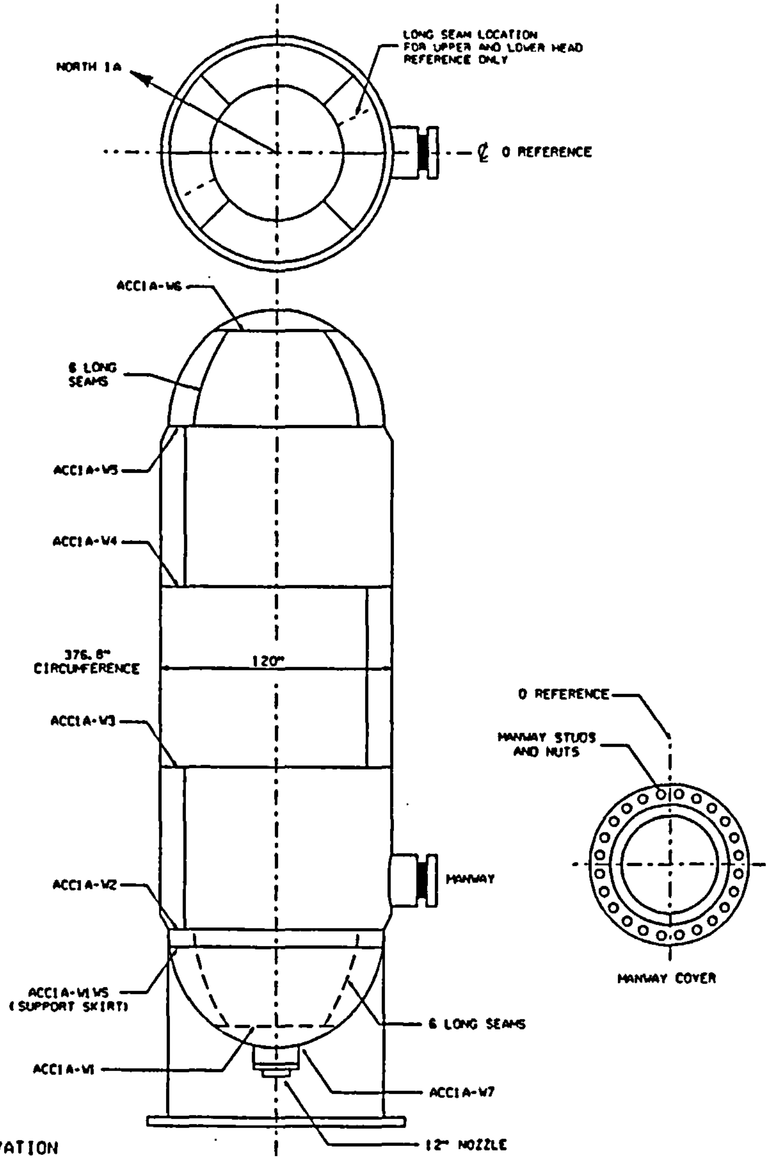
CONTAINMENT FAN COOLERS AHCF-1A, AHCF-1B, AHCF-1C AND AHCF-1D

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	1/21/93
CHECKED		PROJECT APPROVED	
D. M.	1/17/93		

	DRAWN	DWG. NO.	REV.
CADD	D. R. /D. S 1/13/93	M-1239	C
	SCALE NONE		

M-1705



LOCATION: CONTAINMENT 606' ELEVATION

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: BJO 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)

BOLTING DATA

STUDS / DIA. / LGTH	NUTS
24 /1.375"/ 7.5"	24

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
ACC1A-W1	1.5"	NOTE 1
ACC1A-W2	2.9"	NOTE 1
ACC1A-W3	2.9"	NOTE 1
ACC1A-W4	2.9"	NOTE 1
ACC1A-W5	2.9"	NOTE 1
ACC1A-W6	1.5"	NOTE 1
ACC1A-W7	1.5"	NOTE 1

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
ACC1A-W1WS	0.6"	NOTE 1

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

B-1
KAP 01-001639

4). MATERIAL

SHELL, HEAD AND NOZZLE: SA264 CARBON STEEL WITH 0.156"T TP304 STAINLESS STEEL CLADDING

SUPPORT SKIRT: SA * CARBON STEEL

* VERIFICATION REQUIRED

101-011

CADD

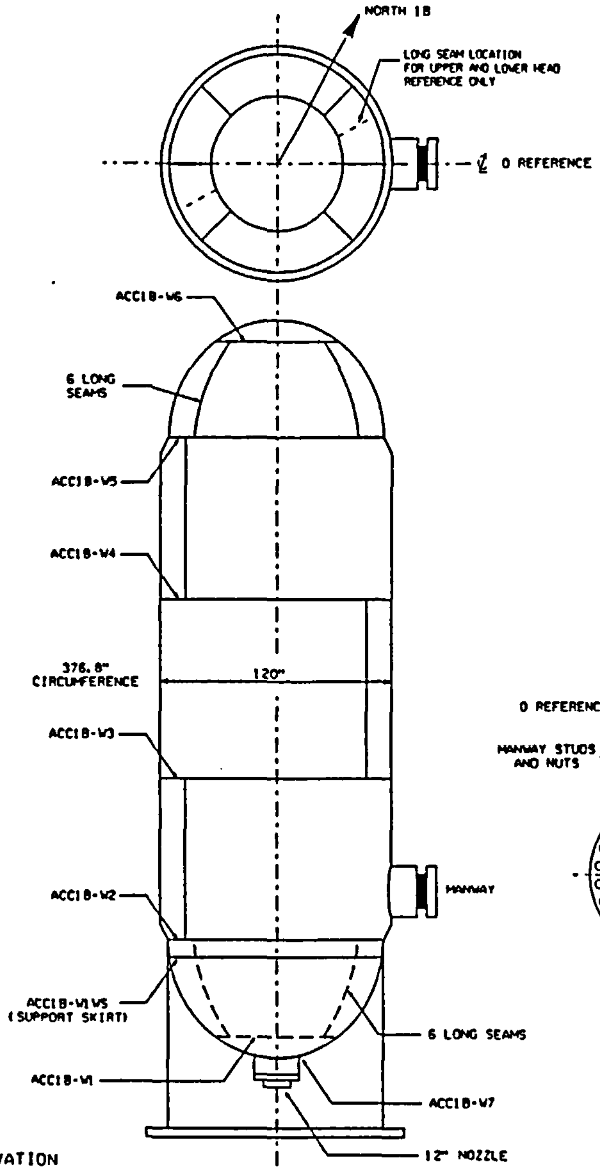
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

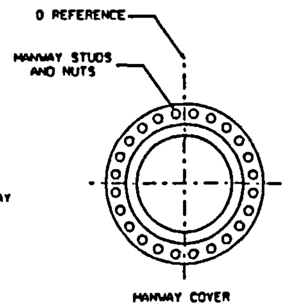
ACCUMULATOR TANK ACC-1A

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED | APPROVED PHILLIP E. BUKES
CHECKED | PROJECT APPROVED 6/16/93
DRAWN ESS 4/1/93 | SCALE
DWG. NO. M-1705 | REV. C

M-1706





LOCATION: CONTAINMENT 606' ELEVATION

BOLTING DATA

STUDS / DIA. / LGTH	NUTS
24 /1.375"/ 7.5"	24

COMPONENT WELD DATA

I.D.	THICKNESS	MATERIAL
ACC1B-W1	1.5"	NOTE 1
ACC1B-W2	2.9"	NOTE 1
ACC1B-W3	2.9"	NOTE 1
ACC1B-W4	2.9"	NOTE 1
ACC1B-W5	2.9"	NOTE 1
ACC1B-W6	1.5"	NOTE 1
ACC1B-W7	1.5"	NOTE 1

INTEGRALLY WELDED ATTACHMENT DATA

I.D.	THICKNESS	MATERIAL
ACC1B-W1WS	0.60"	NOTE 1

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

B-1
KAP 01-001639

4). MATERIAL

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)

101-012

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

ACCUMULATOR TANK ACC-1B

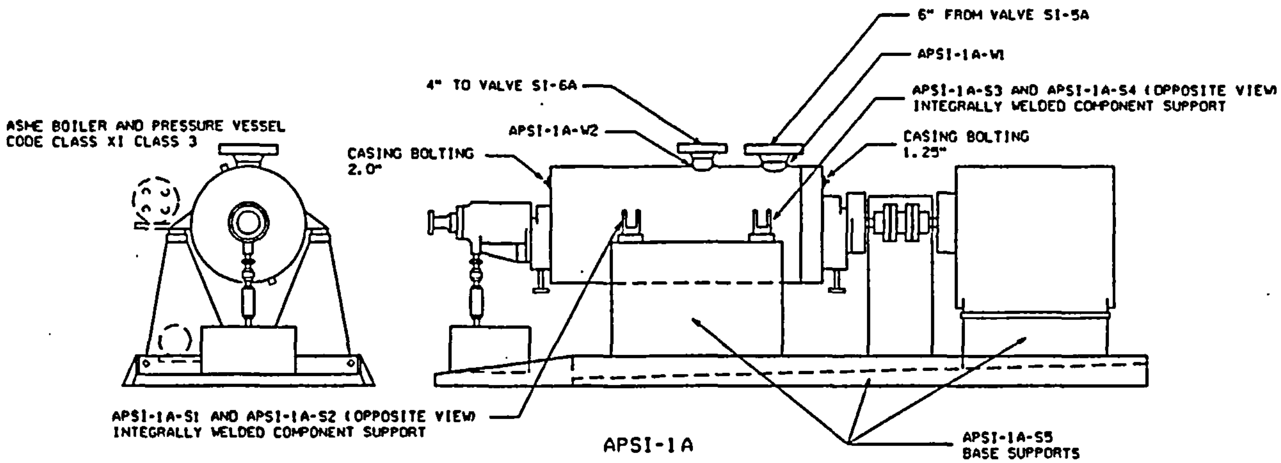
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	6/1/93
CHECKED		PROJECT APPROVED	

DRAWN		DWG. NO.	REV.
ESS	6/1/93	M-1706	C
SCALE			

CADD

M-1707



APSI-1A

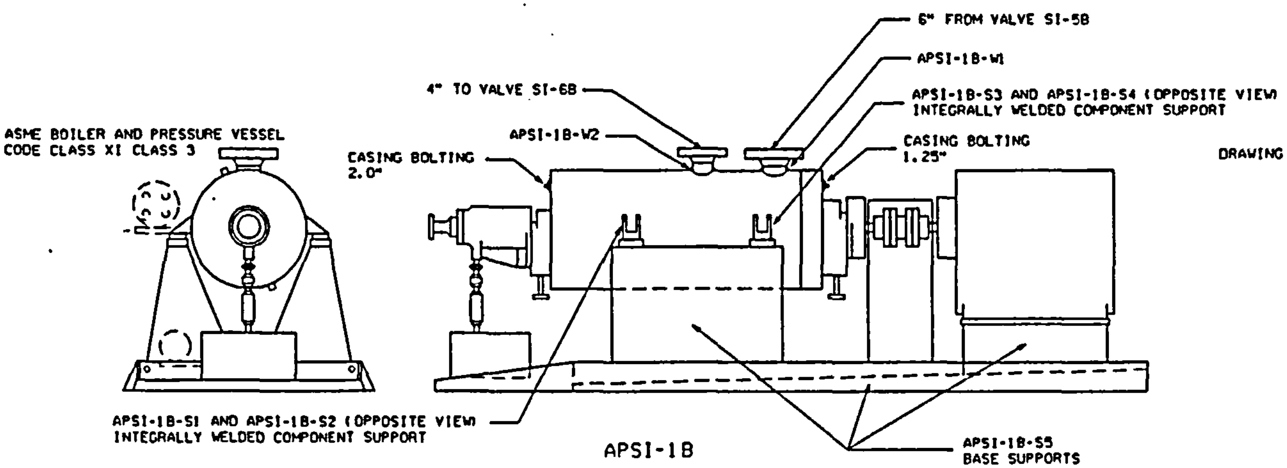
145-031

CASING BOLTING DATA EACH PUMP	
STUDS / DIA. / LGTH.	NUTS
16 / 2.0" / 8.0"	16
16 / 1.25" / 8.0"	16

COMPONENT NOZZLE CASING WELD DATA		
I.D.	THICKNESS	MATERIAL
APSI-1A-W1	NOZZLE TO CASING	ASTM A266 CL.1
APSI-1A-W2	NOZZLE TO CASING	ASTM A266 CL.1
APSI-1B-W1	NOZZLE TO CASING	ASTM A266 CL.1
APSI-1B-W2	NOZZLE TO CASING	ASTM A266 CL.1

INTEGRALLY WELDED ATTACHMENT DATA		
I.D.	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)



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

LOCATION: AUXILIARY BUILDING ELEVATION 586'

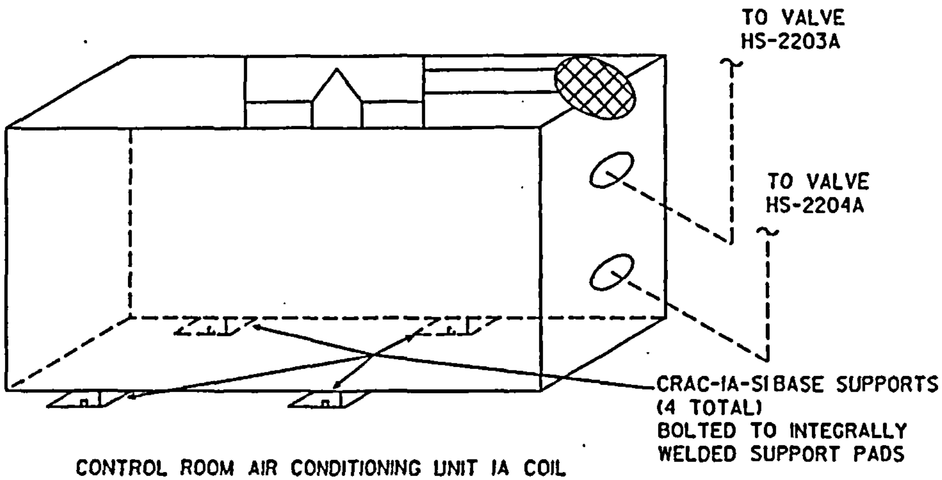
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN

SAFETY INJECTION PUMPS APSI-1A AND APSI-1B

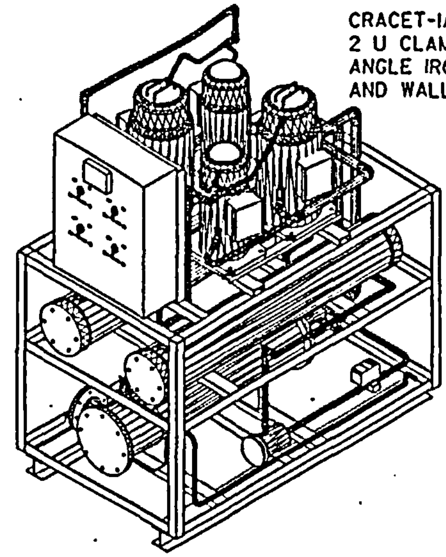
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

DESIGNED		APPROVED	
		PHILLIP E. BUKES	7/21/93
CHECKED		PROJECT APPROVED	
B. TROTTER	8/12/93		

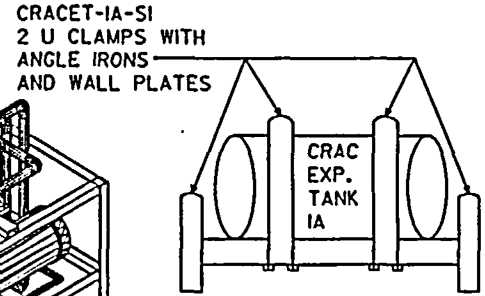
	DRAWN		DWG. NO.	REV.
CADD	ESS	4/1/93	M-1707	B
	SCALE NONE			



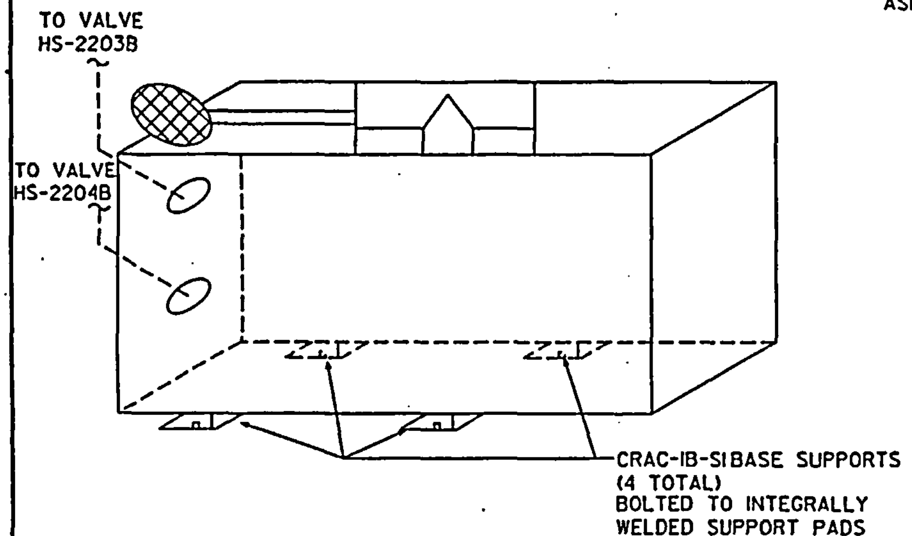
CONTROL ROOM AIR CONDITIONING UNIT IA COIL
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3



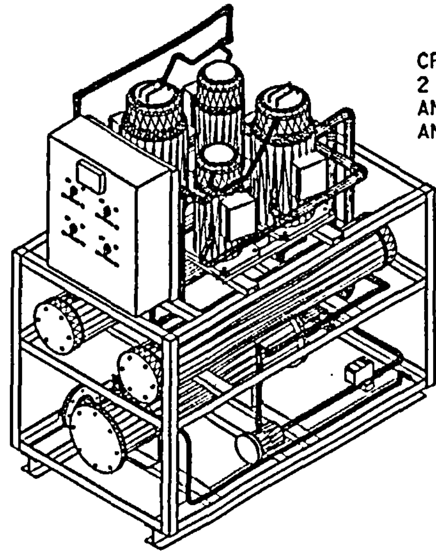
CONTROL ROOM AIR CONDITIONING CHILLER UNIT IA
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON CODE CLASS
1-463 145-471



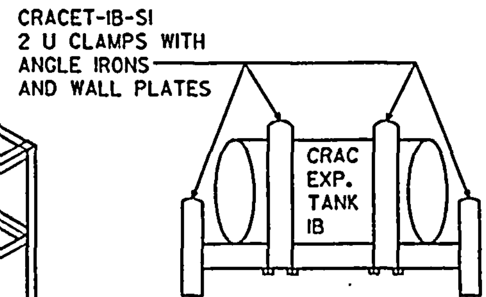
CONTROL ROOM AIR
CONDITIONING EXPANSION
TANK IA ASME BOILER AND
PRESSURE VESSEL CODE
SECTION XI CLASS 3
153-945



CONTROL ROOM AIR CONDITIONING UNIT IB COIL
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI CLASS 3



CONTROL ROOM AIR CONDITIONING CHILLER UNIT IB
ASME BOILER AND PRESSURE VESSEL CODE SECTION XI NON CODE CLASS
1-464 145-472



CONTROL ROOM AIR
CONDITIONING EXPANSION
TANK IB ASME BOILER AND
PRESSURE VESSEL CODE
SECTION XI CLASS 3
153-944

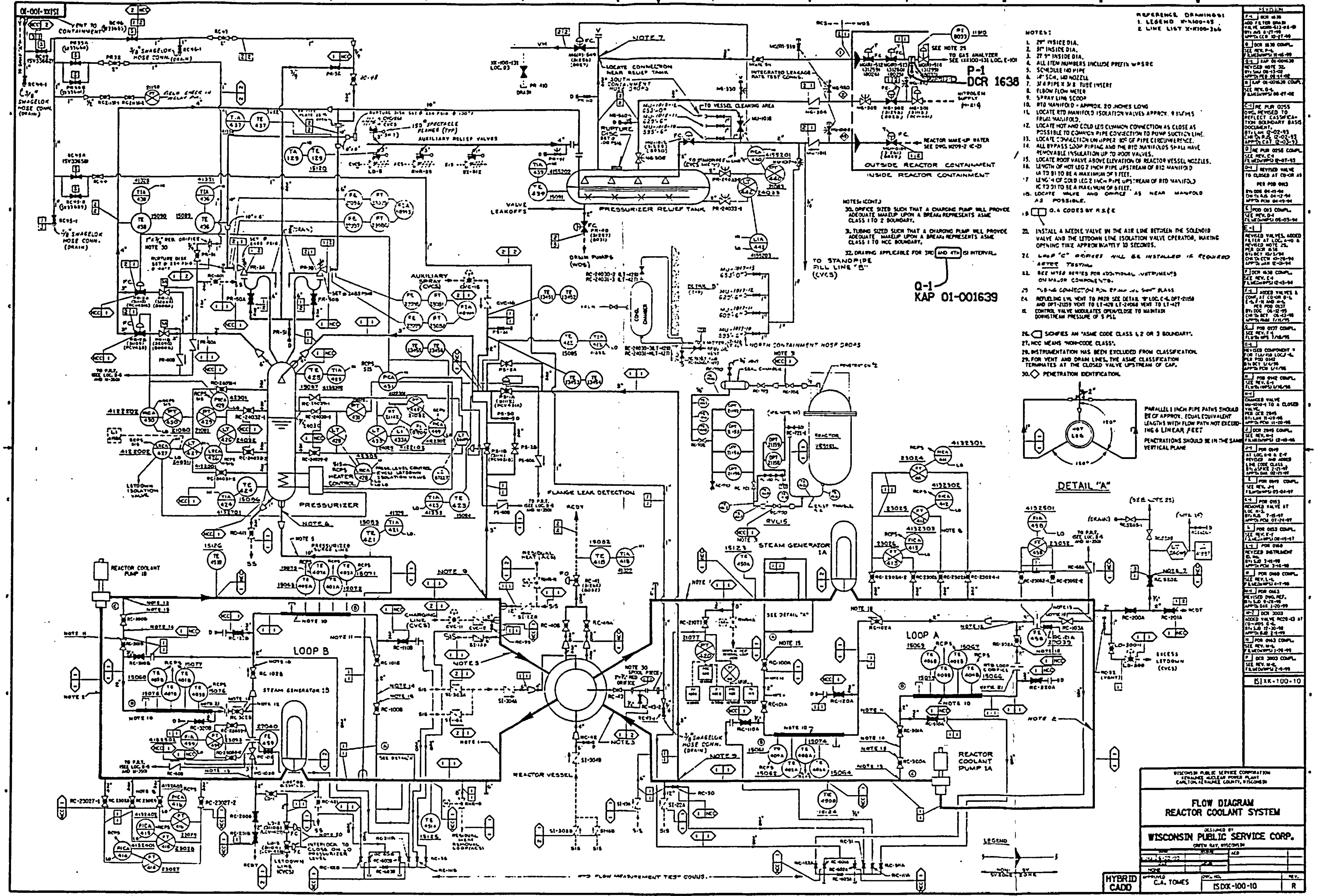
LOCATION: AUXILARY BUILDING ELEVATION 642' ABOVE CONTROL ROOM DOOR 141

DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL

WISCONSIN PUBLIC SERVICE CORP.

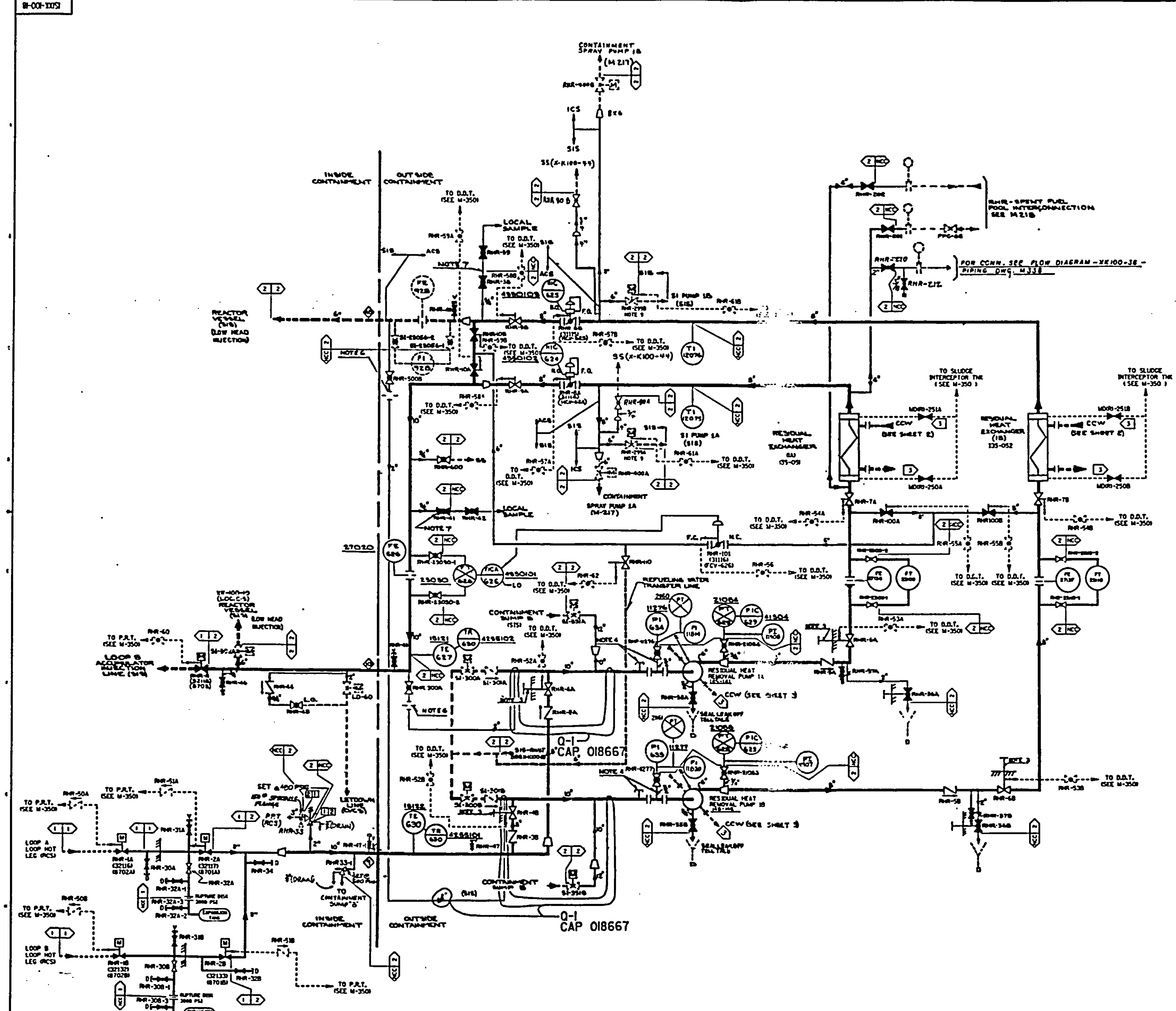
HYBRID CADD

M-1709



REFERENCE DRAWINGS:
1. LEGEND X-K100-45
2. LINE LIST X-K100-366
NOTES:
1. 29" INSIDE DIA.
2. 31" INSIDE DIA.
3. 27 5" INSIDE DIA.
4. ALL ITEM NUMBERS INCLUDE PREFIX WPSRC
5. SCHEDULE 140 PIPE
6. 14" SCH. 140 NOZZLE
7. 3/4 PIPE X 3/8 TUBE INSERT
8. ELBOW FLOW METER
9. SPRAY LINE SCOOP
10. RTD MANIFOLD - APPROX. 20 INCHES LONG
11. LOCATE RTD MANIFOLD ISOLATION VALVES APPROX. 9 INCHES FROM MANIFOLD.
12. LOCATE HOT AND COLD LEG COMMON CONNECTION AS CLOSE AS POSSIBLE TO COMMON PIPE CONNECTION TO PUMP SUCTION LINE.
13. LOCATE CONNECTION ON UPPER 180° OF PIPE CIRCUMFERENCE.
14. ALL BYPASS LOOP PIPING AND THE RTD MANIFOLDS SHALL HAVE REMOVABLE INSULATION UP TO ROOT VALVES.
15. LOCATE ROOT VALVE ABOVE ELEVATION OF REACTOR VESSEL NOZZLES.
16. LENGTH OF HOT LEG 2 INCH PIPE UPSTREAM OF RTD MANIFOLD (A TO B) TO BE A MAXIMUM OF 3 FEET.
17. LENGTH OF COLD LEG 2 INCH PIPE UPSTREAM OF RTD MANIFOLD (C TO D) TO BE A MAXIMUM OF 6 FEET.
18. LOCATE VALVE AND ORIFICE AS NEAR MANIFOLD AS POSSIBLE.
19. Q.A CODES BY R.S.&E
20. INSTALL A NEEDLE VALVE IN THE AIR LINE BETWEEN THE SOLENOID VALVE AND THE LETDOWN LINE ISOLATION VALVE OPERATOR, MAKING OPENING TIME APPROXIMATELY 10 SECONDS.
21. LOOP "C" ORIFICES WILL BE INSTALLED IF REQUIRED AFTER TESTING
22. SEE M758 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
24. REFUELING LVL VENT TO PRZR SEE DETAIL "F" LOC. C-6. DPT-21158 AND DPT-21159 VENT TO LT-428 LT-24068 VENT TO LT-427
25. CONTROL VALVE MODULATES OPEN/CLOSE TO MAINTAIN DOWNSTREAM PRESSURE OF 5 PSI.
26. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
27. NCC MEANS "NON-CODE CLASS".
28. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
29. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
30. PENETRATION IDENTIFICATION.
PARALLEL 1 INCH PIPE PATHS SHOULD BE OF APPROX. EQUAL EQUIVALENT LENGTHS WITH FLOW PATH NOT EXCEEDING 6 LINEAR FEET
DETAIL "A"
P-1 DCR 1638
Q-1 KAP 01-001639
PRESSURIZER
PRESSURIZER RELIEF TANK
LOOP A
LOOP B
STEAM GENERATOR 1A
STEAM GENERATOR 1B
REACTOR VESSEL
REACTOR COOLANT PUMP 1A
REACTOR COOLANT PUMP 1B
OUTSIDE REACTOR CONTAINMENT
INSIDE REACTOR CONTAINMENT
FLANGE LEAK DETECTION
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
FLOW DIAGRAM
REACTOR COOLANT SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISDX-100-10
REV. R

ISI-XX-100-18



REFERENCE DRAWINGS:
1. LEGEND X-K100-46
2. LINE LIST X-K100-371, 372 & 373

NOTES:
1.
2. ALL ITEM NUMBERS INCLUDE PREFIX WPSAC.
3. BEVEL GEAR OPERATED VALVE.
4. 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.
5. ALL PIPING IS (P.S.&E.) QUALITY ASSURANCE TYPE I.
6. MINIFLOW ORIFICE PROVIDED BY PUMP VENDOR.
7. 3/4 PIPE X 3/8 TUBE INSERT.

ALL PIPING ON THIS DRAWING OUTSIDE CONTAINMENT IS IN SW ZONE

8. SEE M720 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
9. DCR 2920 RENUMBERED VALVES. RHR-300A BECAME RHR-299A & RHR-300B BECAME RHR-299B.

ISI NOTES:
12. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 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. PENETRATION IDENTIFICATION.
17. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.

REVISION

M-1 DCR AB 2911 REMOVED RUPTURE DISK TEMPERATURE VALUE, ADDED EQUIPMENT NUMBERS. BY: NTH 01-09-03 APP'D: CJH 01-21-03
N DCR AB 2911 COMPL. SEE REV. M-1. FILMED: (WPS) 01-28-03
N-1 KAP 01-00632 REVISED ASME CODE CLASS BOUNDARY LEADERS. BY: NTH 02-27-03 APP'D: PEB 02-28-03
P KAP 01-00632 COMPL. SEE REV. N-1. FILMED: (WPS) 03-04-03
P-1 RE PUR 03-009 REVISED DRAWING TITLE. BY: NTH 08-18-03 APP'D: TJA 08-19-03
Q RE PUR 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: KPB 11-06-03
R CAP 018667 COMPL. SEE REVISION Q-1. FILMED: (WPS) 11-18-03

E-1 REMOVED NOTES 9, 10 & 11, ADDED VALVES AND CONT. INFO OVERALL DWG. PER PDD 037 BY: DOG 06-12-95 CHK'D: BCY 06-13-95 APP'D: RMM 7/11/95
F PDD 037 COMPL. SEE REV. E-1 FILMED: WPS 7/18/95
F-1 REVISED VALVE NUMBERS RHR-58B, 41304 & 41306. PER PDD 043 BY: BCY 3/13/96 APP'D: PCM 3/18/96
G PDD 043 COMPL. SEE REV. F-1 FILMED: (WPS) 3/26/96
G-1 DCR 2918 ADDED VALVES, EXPANSION TANKS AND RUPTURE DISK AT DWG. CO-ORD H-L BY: RJS 7-28-97 APP'D: JBS 08-07-97
H DCR 2918 COMPL. SEE REV. G-1. FILMED: (WPS) 08-12-97
H-1 DCR 2920 ADDED NOTE 9. BY: SJD 9-22-98 APP'D: BJM 10-6-98
INFO TRANSFERRED FROM FIELD BY WPS PER DCR 2920. BY: SJD 8-5-98 APP'D: BJM 8-10-98
J DCR 2920 COMPL. SEE REV. H-1. FILMED: (WPS) 8-17-99
J-1 DCR 2920 REVISED NOTES BY: JMS 07-12-99 APP'D: BJM 07-13-99
K DCR 2920 COMPL. SEE REV. J-1. FILMED: (WPS) 07-20-99
K-1 DCR 3214 REMOVED INTERLOCKS. BY: JMS 02-05-01 APP'D: VAH 06-25-01
L DCR 3214 COMPL. SEE REVISION K-1. FILMED: (WPS) 07-03-01
L-1 KAP 01-001639 REVISED NOTE 17. BY: SMJ APP'D: PEB 08-14-02
M KAP 01-001639 COMPL. SEE REV. L-1. FILMED: (WPS) 09-03-02

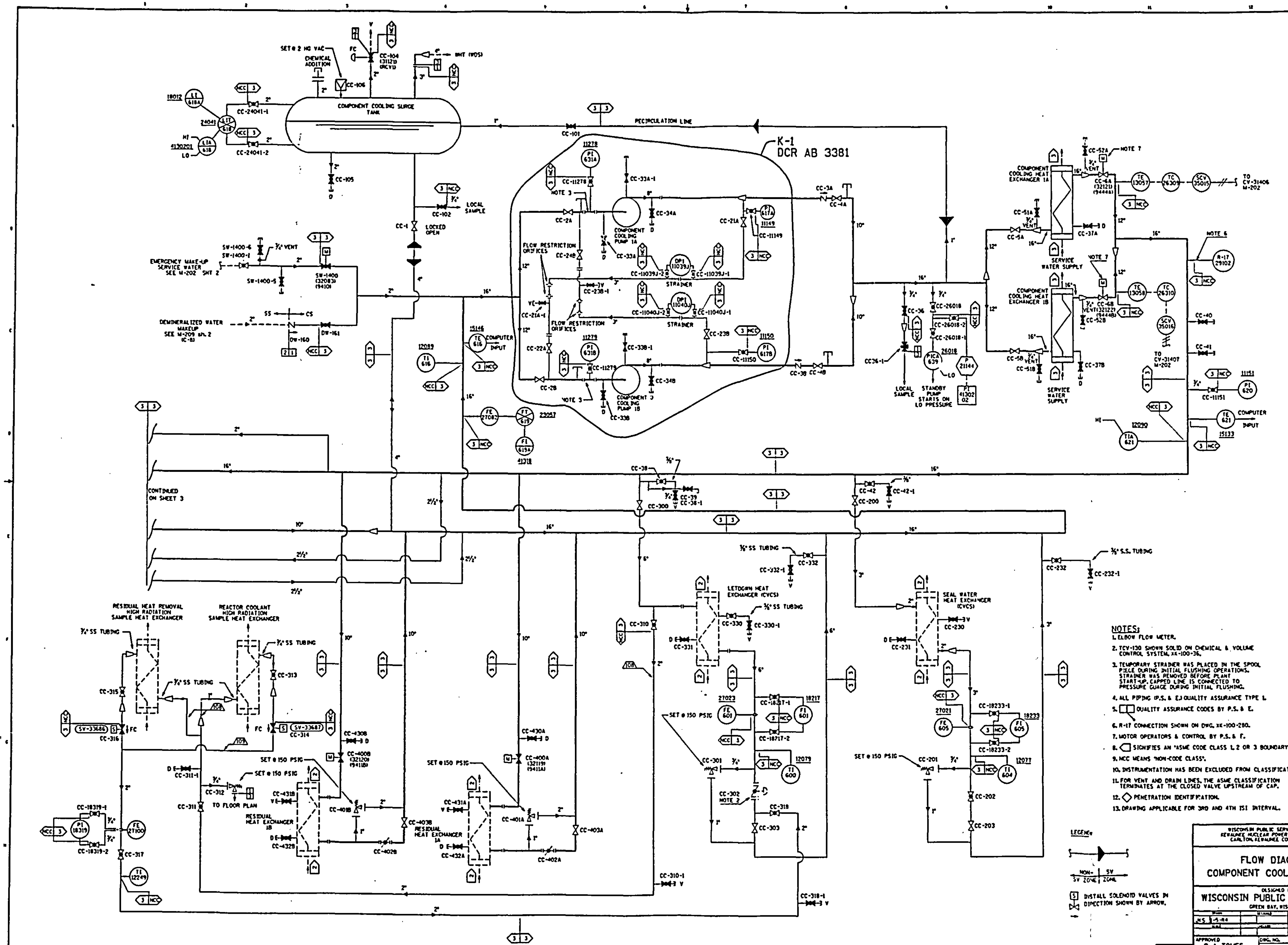
ISI XX-100-18

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

ISI FLOW DIAGRAM
RESIDUAL HEAT REMOVAL SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

LJ,ALL 06-26-93			ACD
SCALE NONE			
HYBRID CADD	APPROVED C.A. TOMES	DWG. NO. ISIXX-100-18	REV. R



NOTES:

1. ELBOW FLOW METER.
2. TCV-130 SHOWN SOLID ON CHEMICAL & VOLUME CONTROL SYSTEM, XK-100-36.
3. 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 GUAGE DURING INITIAL FLUSHING.
4. ALL PIPING (P.S. & E.) QUALITY ASSURANCE TYPE 1.
5. QUALITY ASSURANCE CODES BY P.S. & E.
6. R-17 CONNECTION SHOWN ON DWG. XK-100-280.
7. MOTOR OPERATORS & CONTROL BY P.S. & F.
8. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
9. NCC MEANS "NON-CODE CLASS".
10. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
11. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
12. PENETRATION IDENTIFICATION.
13. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.

LEGEND:

NON-SV ZONE | SV ZONE

S INSTALL SOLENOID VALVES IN DIRECTION SHOWN BY ARROW.

REVISION

B PO0004 COMP. SEE REV. 0-1 APP'D: C.A.T. 7/6/93 FILMED: WPS 7/13/93

B-1 REDRAFTED TO CADD PER ESR 92-177 DWN: LML 6-28-93 CHK'D: BPT 10-19-93 APP'D: CAT 10-2-93

C ESR 92-177 COMPL. SEE REV. B-1 FILMED(WPS) 10-26-93

C-1 REVISED INSTRUMENT NO. AT RE-17. REMOVED RRCA-17. ADDED COMMENTS FROM WPS REVIEW MEETING OF 6-29-93. PER DCR 2172 BY: BCY 8/2/94 CHK'D: CCW 08-04-94 APP'D: TLM 12-07-94

D DCR 2172 COMPL. SEE REV. C-1 FILMED(WPS) 01-10-95

D-1 REVISED 2" CHEMICAL ADDITION LINE ON COMP. COOLING SURGE TANK. PER DCR 2738 BY: BCY 2/28/95 CHK'D: DDG 2/28/95 APP'D: RLS 2/28/95

E DCR 2738 COMPL. SEE REV. D-1 FILMED(WPS) 3/7/95

E-1 PDR 0161 ADDED VALVES CC-26018-1 & CC-26018-2. BY: LAH 05-14-98 APP'D:

F PDR 0161 COMPL. SEE REV. E-1 FILMED(WPS) 06-29-98

F-1 KAP 01-001639 REVISED NOTE 13. BY: SMJ 08-09-02 APP'D: PEB 08-14-02

G KAP 01-001639 COMPL. SEE REV. F-1. FILMED(WPS) 08-27-02

G-1 DCR 3413 ADDED VALVES CC-51A, CC-51B, CC-52A AND CC-52B. BY: ABF 05-29-02 APP'D: TJP 07-28-02
RE PUR CORRECTED PIPE CROSSOVERS AND LINEWEIGHTS. APP'D: JAS 05-29-02

H DCR 3413 COMPLETE. SEE REVISION G-1. FILMED(WPS) 10-22-02

H-1 CAP 013457 REVISED VALVES CC-51A, CC-51B, CC-52A AND CC-52B. BY: NTH 08-05-03 APP'D: TGB 08-08-03

J CAP 013457 COMPL. SEE REVISION H-1. FILMED(WPS) 08-26-03

J-1 RE PUR 03-009 REVISED DRAWING TITLE. BY: NTH 08-18-03 APP'D: TJA 08-19-03

K RE PUR 03-009 COMPL. SEE REV. J-1. FILMED(WPS) 09-02-03

K-1 DCR AB 3391 ADDED CCW PUMP RECIRC. LINES. BY: NTH 11-07-03 APP'D: RPB 11-11-03

L DCR AB 3381 COMPL. SEE REVISION K-1. FILMED(WPS) 11-18-03

ISI-XX-100-19

DESIGN SECTION APPROVALS

WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT - UNIT NO. 1
CARLTON, KEWAUNEE COUNTY, WISCONSIN

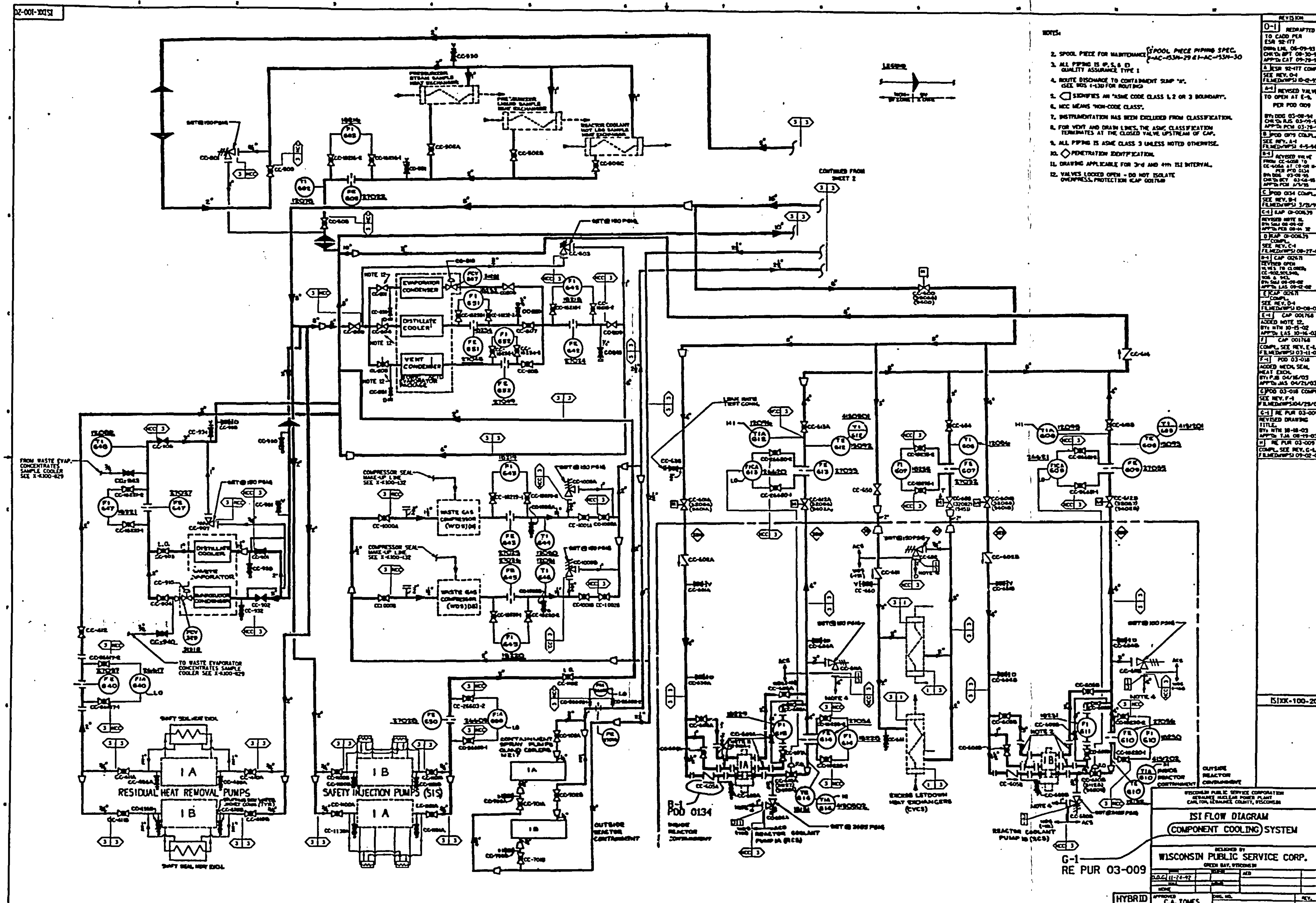
FLOW DIAGRAM
COMPONENT COOLING SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

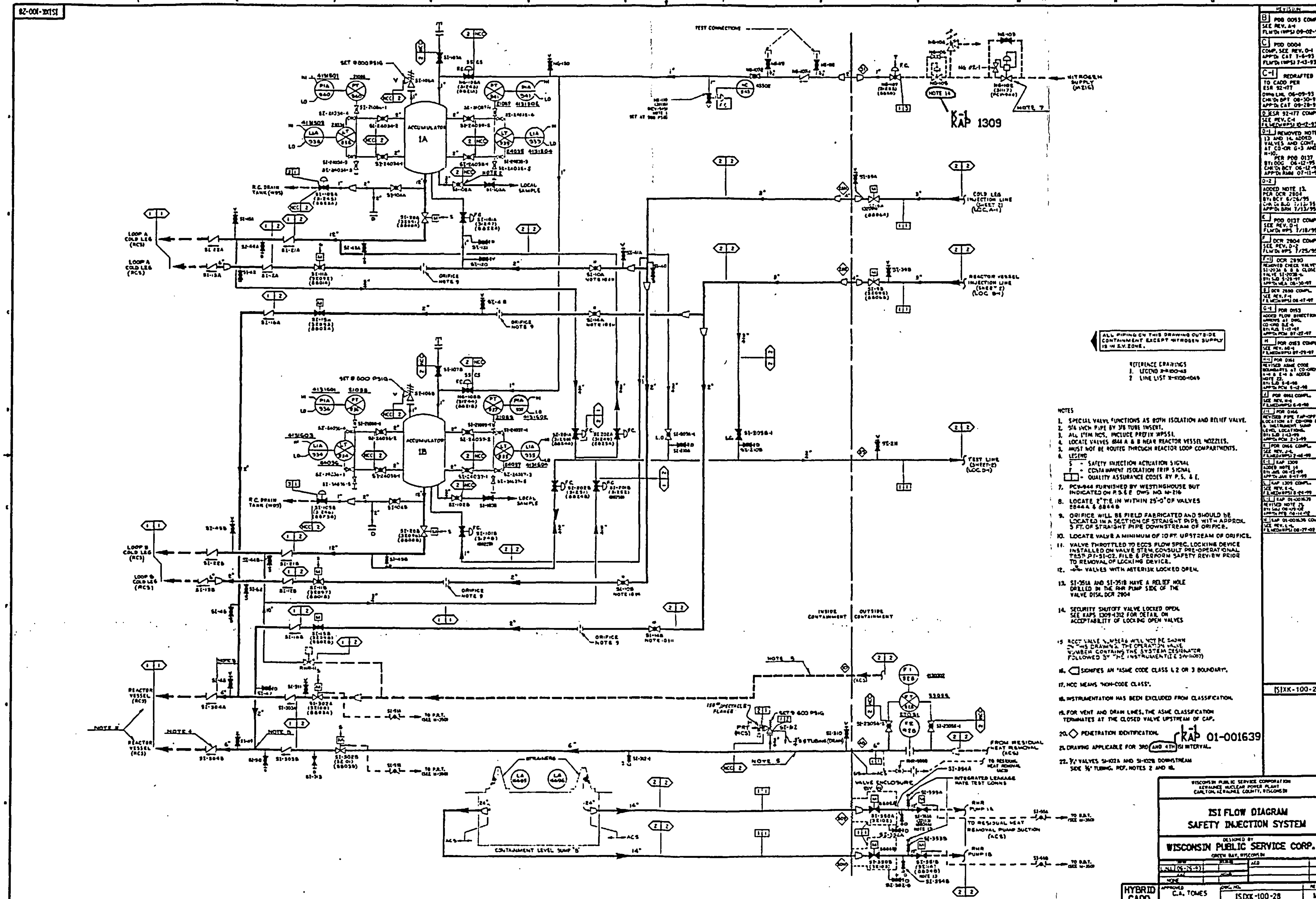
JKS 1-5-84

CADD

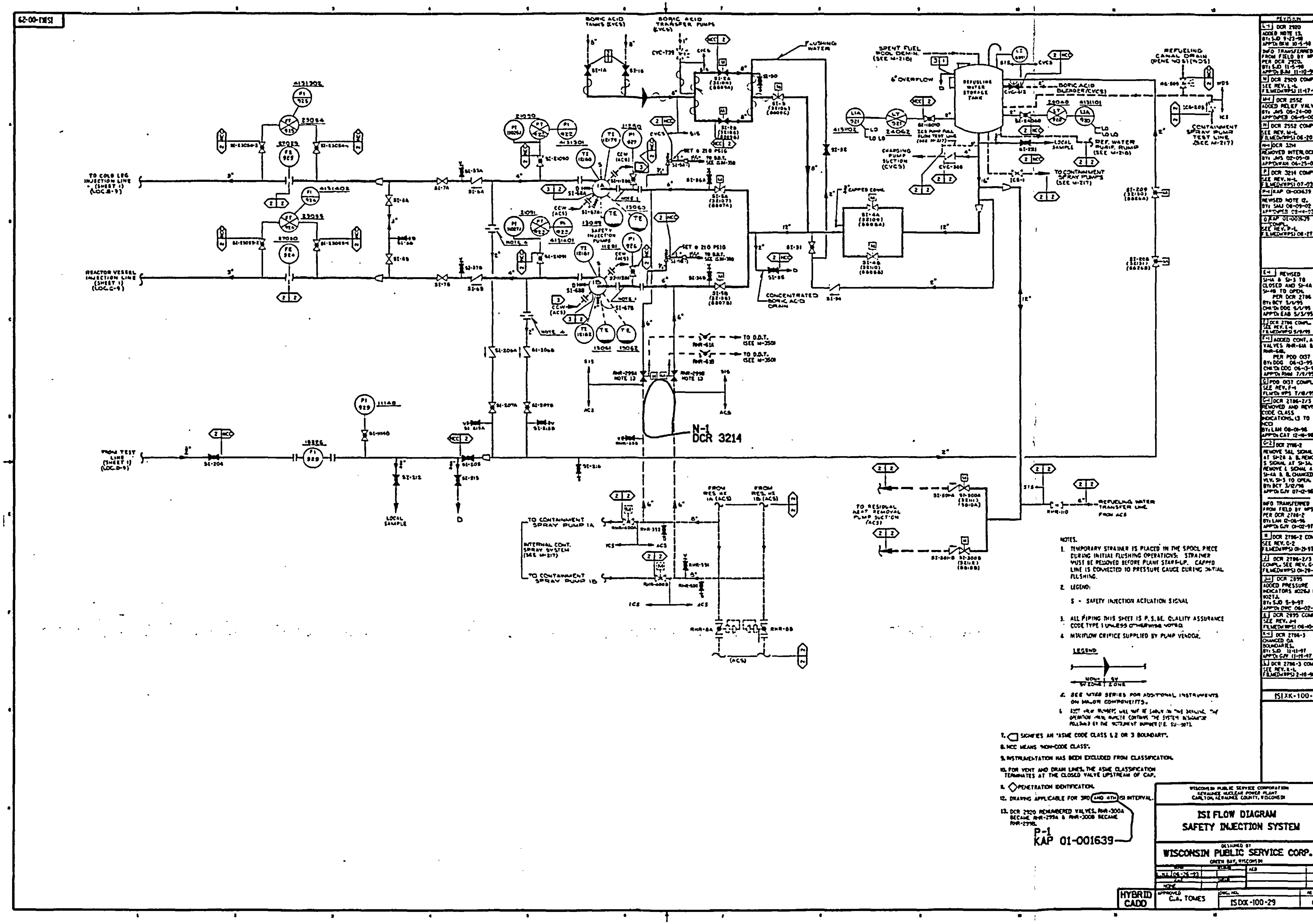
APPROVED	DWG. NO.	REV.
C. A. TOMES	ISI-XK-100-19	L

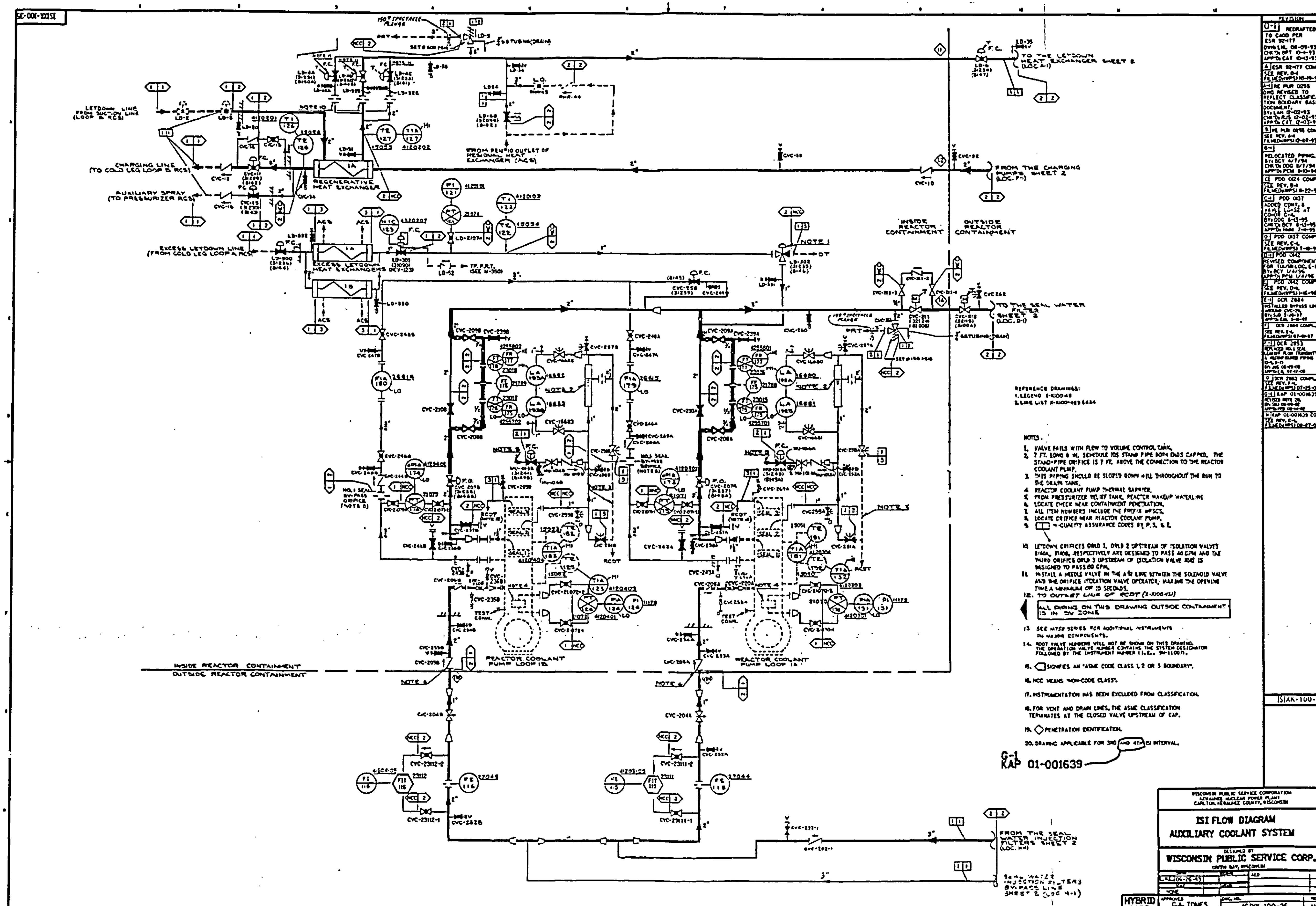


NOTES:
2. SPOOL PIECE FOR MAINTENANCE
SPOOL PIECE PIPING SPEC. 1-AC-153N-29 & 1-AC-153N-30
3. ALL PIPING IS P, S, & D QUALITY ASSURANCE TYPE I
4. ROUTE DISCHARGE TO CONTAINMENT SUMP "A". (SEE WDS 1-130 FOR ROUTING)
5. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
6. NCC MEANS "NON-CODE CLASS".
7. 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. PENETRATION IDENTIFICATION.
11. DRAWING APPLICABLE FOR 3rd AND 4th ISI INTERVAL.
12. VALVES LOCKED OPEN - DO NOT ISOLATE OVERPRESS. PROTECTION (CAP 001768)
LEGEND
REVISION
RESIDUAL HEAT REMOVAL PUMPS
SAFETY INJECTION PUMPS (SIS)
IA
IB
B-1
POD 0134
G-1
RE PUR 03-009
OUTSIDE REACTOR CONTAINMENT
INSIDE REACTOR CONTAINMENT
REACTOR COOLANT PUMP 1A (RCS)
REACTOR COOLANT PUMP 1B (RCS)
EXCESS LETDOWN HEAT EXCHANGERS (CVCS)
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
COMPONENT COOLING SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
D.O.C. 11-24-92
NONE
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISDX-100-20
REV. H

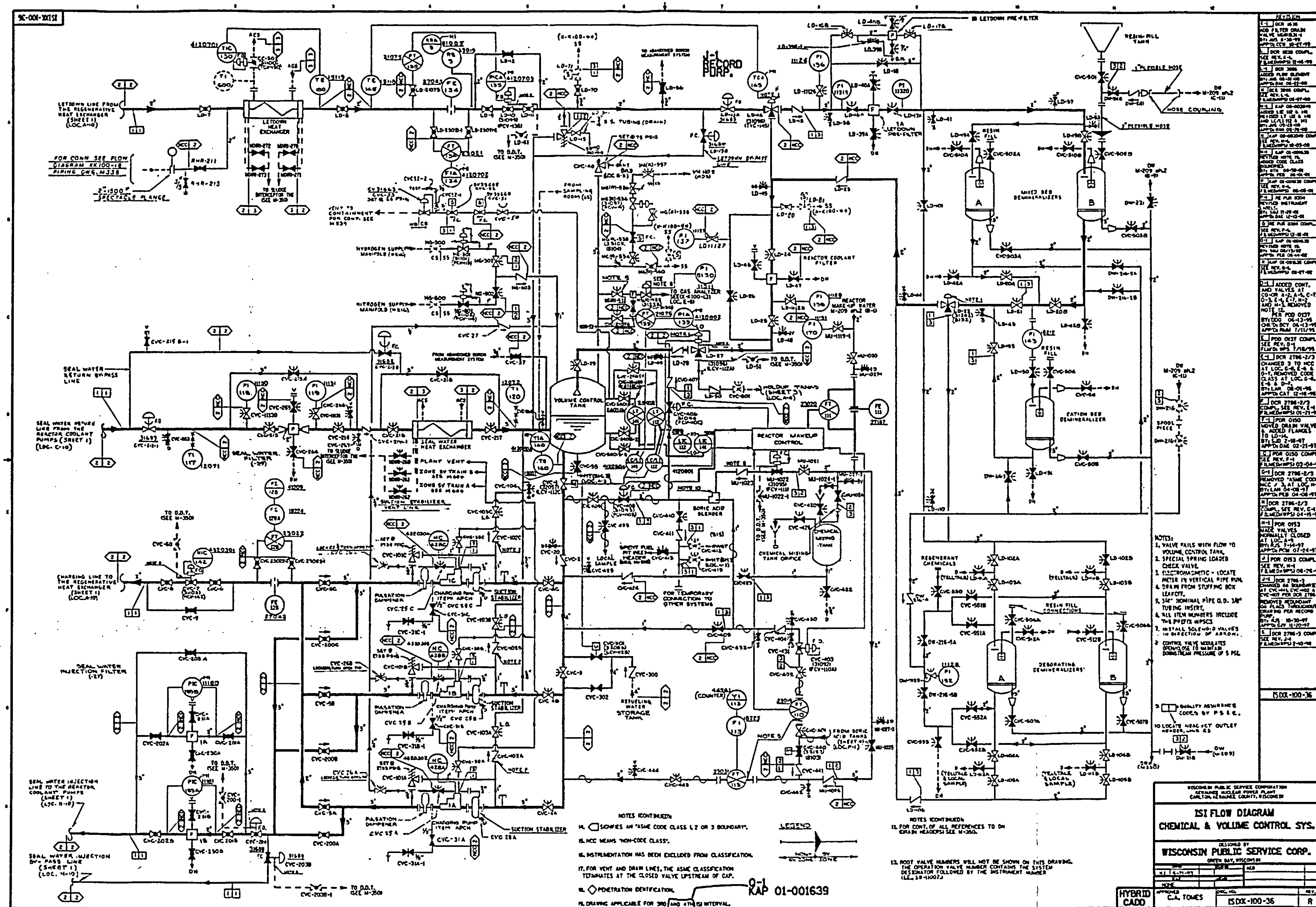


ALL PIPING ON THIS DRAWING OUTSIDE CONTAINMENT EXCEPT NITROGEN SUPPLY IS IN S.V. ZONE.
REFERENCE DRAWINGS
1. LEGEND X-K100-45
2. LINE LIST X-K100-1049
NOTES
1. SPECIAL VALVE FUNCTIONS AS BOTH ISOLATION AND RELIEF VALVE.
2. 3/4 INCH PIPE BY 3/8 TUBE INSERT.
3. ALL ITEM NOS. INCLUDE PREFIX WPSSI.
4. LOCATE VALVES 8844 A & B NEAR REACTOR VESSEL NOZZLES.
5. MUST NOT BE ROUTED THROUGH REACTOR LOOP COMPARTMENTS.
6. LEGEND
S - SAFETY INJECTION ACTUATION SIGNAL
T - CONTAINMENT ISOLATION TRIP SIGNAL
- QUALITY ASSURANCE CODES BY P.S. & E.
7. PCV-944 FURNISHED BY WESTINGHOUSE BUT INDICATED ON P.S.&E. DWG NO. M-216
8. LOCATE 2" TIE IN WITHIN 25'-0" OF VALVES 8844A & 8844B
9. ORIFICE WILL BE FIELD FABRICATED AND SHOULD BE LOCATED IN A SECTION OF STRAIGHT PIPE WITH APPROX. 5 FT. OF STRAIGHT PIPE DOWNSTREAM OF ORIFICE.
10. LOCATE VALVE A MINIMUM OF 10 FT. UPSTREAM OF ORIFICE.
11. VALVE THROTTLED TO ECCS FLOW SPEC. LOCKING DEVICE INSTALLED ON VALVE STEM. CONSULT PRE-OPERATIONAL TEST PT-SI-02. FILE & PERFORM SAFETY REVIEW PRIOR TO REMOVAL OF LOCKING DEVICE.
12. VALVES WITH ASTERISK LOCKED OPEN.
13. SI-351A AND SI-351B HAVE A RELIEF HOLE DRILLED IN THE RHR PUMP SIDE OF THE VALVE DISK. DCR 2904
14. SECURITY SHUTOFF VALVE LOCKED OPEN. SEE KAPS 1309-1312 FOR DETAIL ON ACCEPTABILITY OF LOCKING OPEN VALVES
15. ACCT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT (I.E. SA-1007)
16. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
17. NCC 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 ISI INTERVAL.
22. 3/4" VALVES SI-102A AND SI-102B DOWNSTREAM SIDE 3/8" TUBING. REF. NOTES 2 AND 18.
L-1 KAP 01-001639
K-1 KAP 1309
ACCUMULATOR 1A
ACCUMULATOR 1B
NITROGEN SUPPLY
TEST CONNECTIONS
CONTAINMENT LEVEL SUMP "B"
STRAINERS
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
RHR PUMP 1A
RHR PUMP 1B
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SAFETY INJECTION SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISIXK-100-28
REV. M
ISIXK-100-28

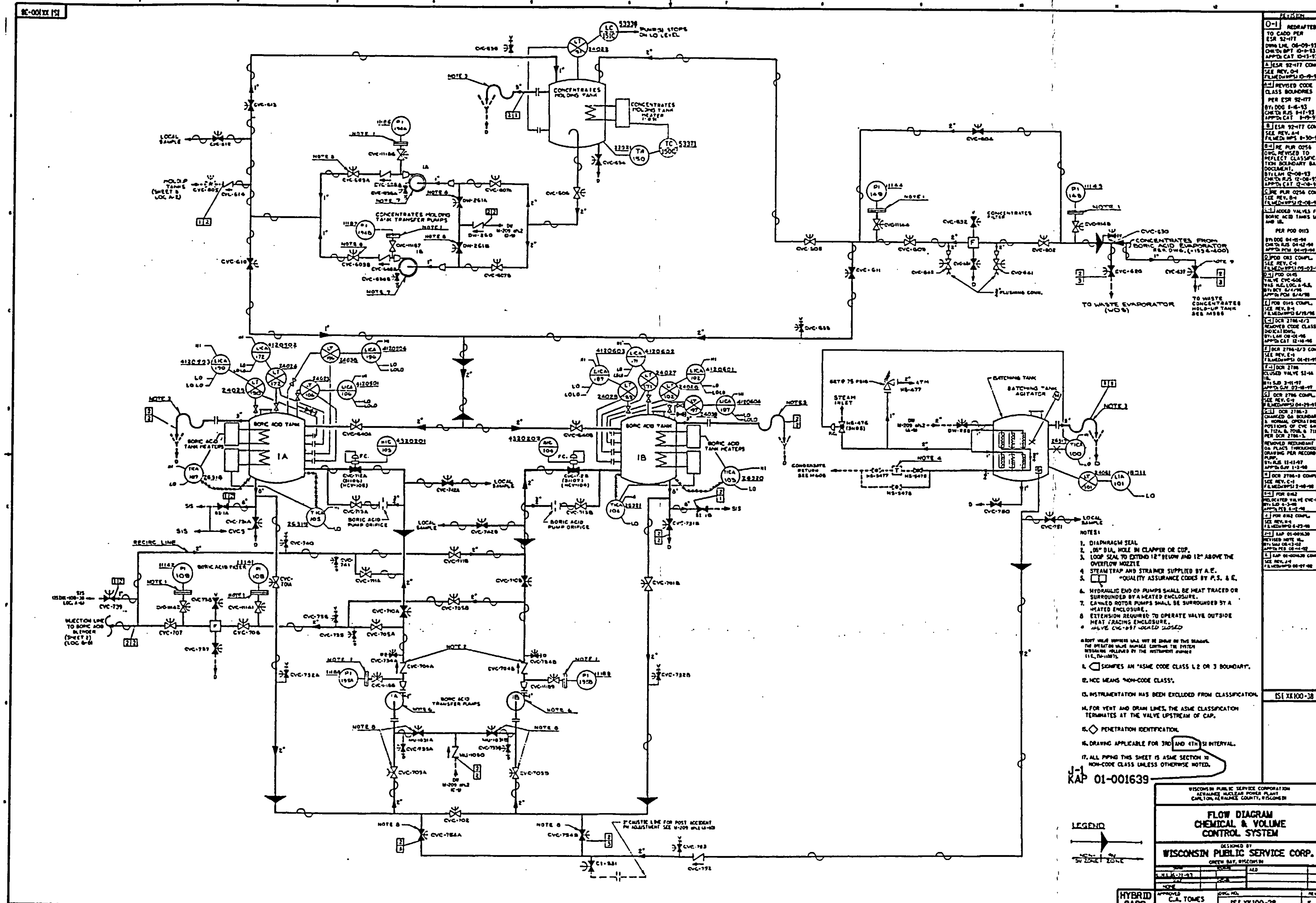

NOTES.
1. TEMPORARY STRAINER IS PLACED IN THE SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.
2. LEGEND:
S - SAFETY INJECTION ACTUATION SIGNAL
3. ALL PIPING THIS SHEET IS P.S.&E. QUALITY ASSURANCE CODE TYPE I UNLESS OTHERWISE NOTED.
4. MINIFLOW ORIFICE SUPPLIED BY PUMP VENDOR.
LEGEND
NON-SW ZONE | SW ZONE
5. SEE M-168 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
7. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
8. NCC 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. PENETRATION IDENTIFICATION.
12. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
13. DCR 2920 RENUMBERED VALVES. RHR-300A BECAME RHR-299A & RHR-300B BECAME RHR-299B.
P-1
KAP 01-001639
N-1
DCR 3214
ISIXK-100-29
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SAFETY INJECTION SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED
C.A. TOMES
DWG. NO.
ISDK-100-29
REV.
Q



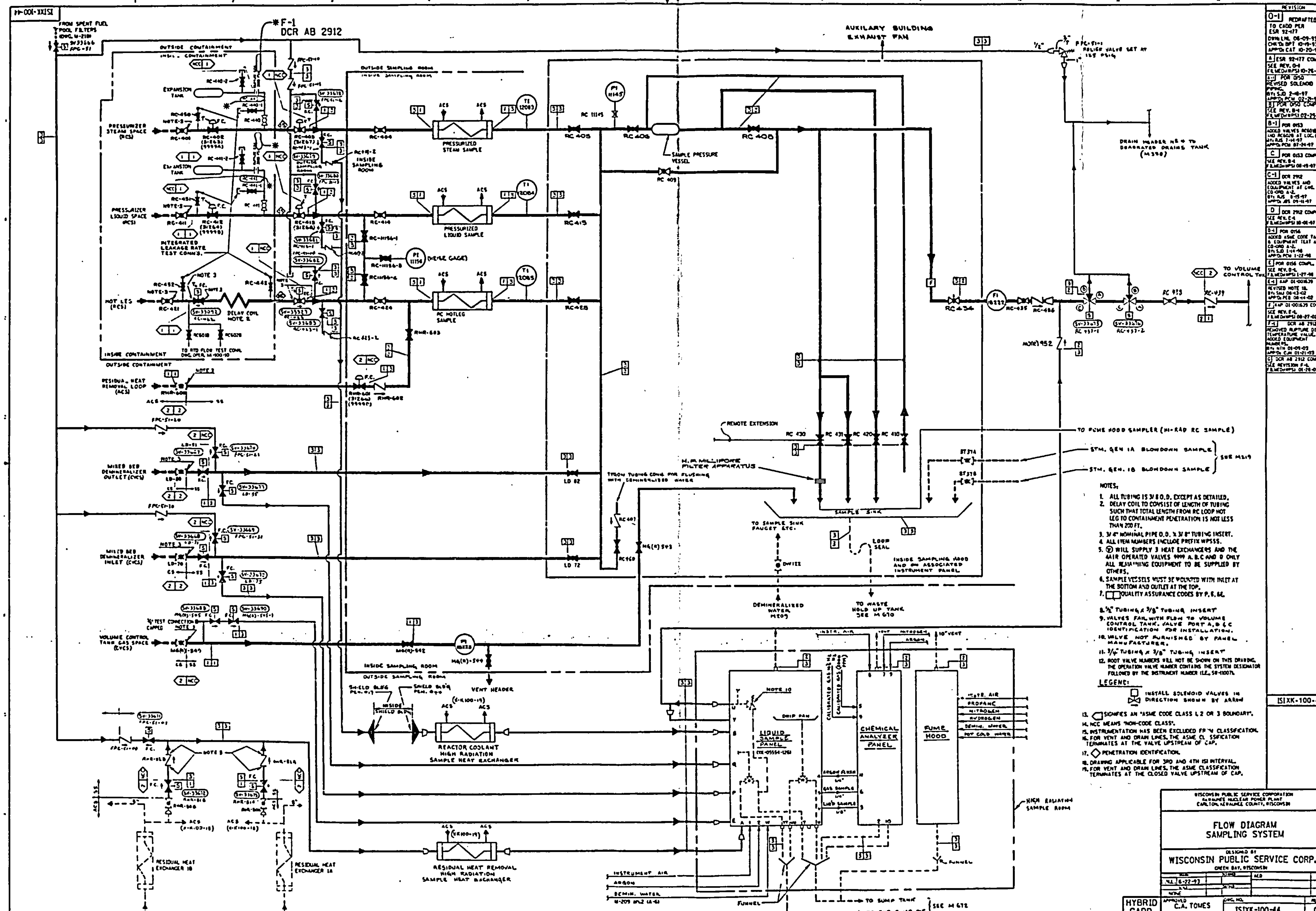
LETDOWN LINE FROM SUCTION LINE (LOOP B RCS)
CHARGING LINE (TO COLD LEG LOOP B RCS)
AUXILIARY SPRAY (TO PRESSURIZER RCS)
EXCESS LETDOWN LINE (FROM COLD LEG LOOP A RCS)
REGENERATIVE HEAT EXCHANGER
EXCESS LETDOWN HEAT EXCHANGERS
FROM PEN. 10 OUTLET OF RESIDUAL HEAT EXCHANGER (ACS)
TO THE LETDOWN HEAT EXCHANGER SHEET 2 (LOC A-1)
FROM THE CHARGING PUMPS SHEET 2 (LOC. F-1)
INSIDE REACTOR CONTAINMENT
OUTSIDE REACTOR CONTAINMENT
TO THE SEAL WATER FILTER SHEET 2 (LOC. D-1)
REACTOR COOLANT PUMP LOOP 1B
REACTOR COOLANT PUMP LOOP 1A
FROM THE SEAL WATER INJECTION FILTERS SHEET 2 (LOC. H-1)
SEAL WATER INJECTION FILTERS BY-PASS LINE SHEET 2 (LOC H-1)
REFERENCE DRAWINGS:
1. LEGEND E-K100-48
2. LINE LIST X-K100-423 & 424
NOTES.
1. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK.
2. 7 FT. LONG 6 IN. SCHEDULE 10S 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 BARRIER.
5. FROM PRESSURIZER RELIEF TANK, REACTOR MAKEUP WATERLINE
6. LOCATE CHECK NEAR CONTAINMENT PENETRATION.
7. ALL ITEM NUMBERS INCLUDE THE PREFIX WPSCS.
8. LOCATE ORIFICE NEAR REACTOR COOLANT PUMP.
9. = QUALITY ASSURANCE CODES BY P.S. & E.
10. LETDOWN ORIFICES ORLD 1, ORLD 2 UPSTREAM OF ISOLATION VALVES 8140A, 8140B, RESPECTIVELY ARE DESIGNED TO PASS 40 GPM AND THE THIRD ORIFICE ORLD 3 UPSTREAM OF ISOLATION VALVE 8141 IS DESIGNED TO PASS 60 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 RCDT (X-K100-431)
ALL PIPING ON THIS DRAWING OUTSIDE CONTAINMENT IS IN SV ZONE
13. SEE M750 SERIES FOR ADDITIONAL INSTRUMENTS ON MAJOR COMPONENTS.
14. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.E., SW-11007).
15. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
16. NCC 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 ISI INTERVAL.
G-1
KAP 01-001639
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
AUXILIARY COOLANT SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
06-26-43
HYBRID CADD
APPROVED
C.A. TOMES
DWG. NO.
ISDX-100-35
REV.
H



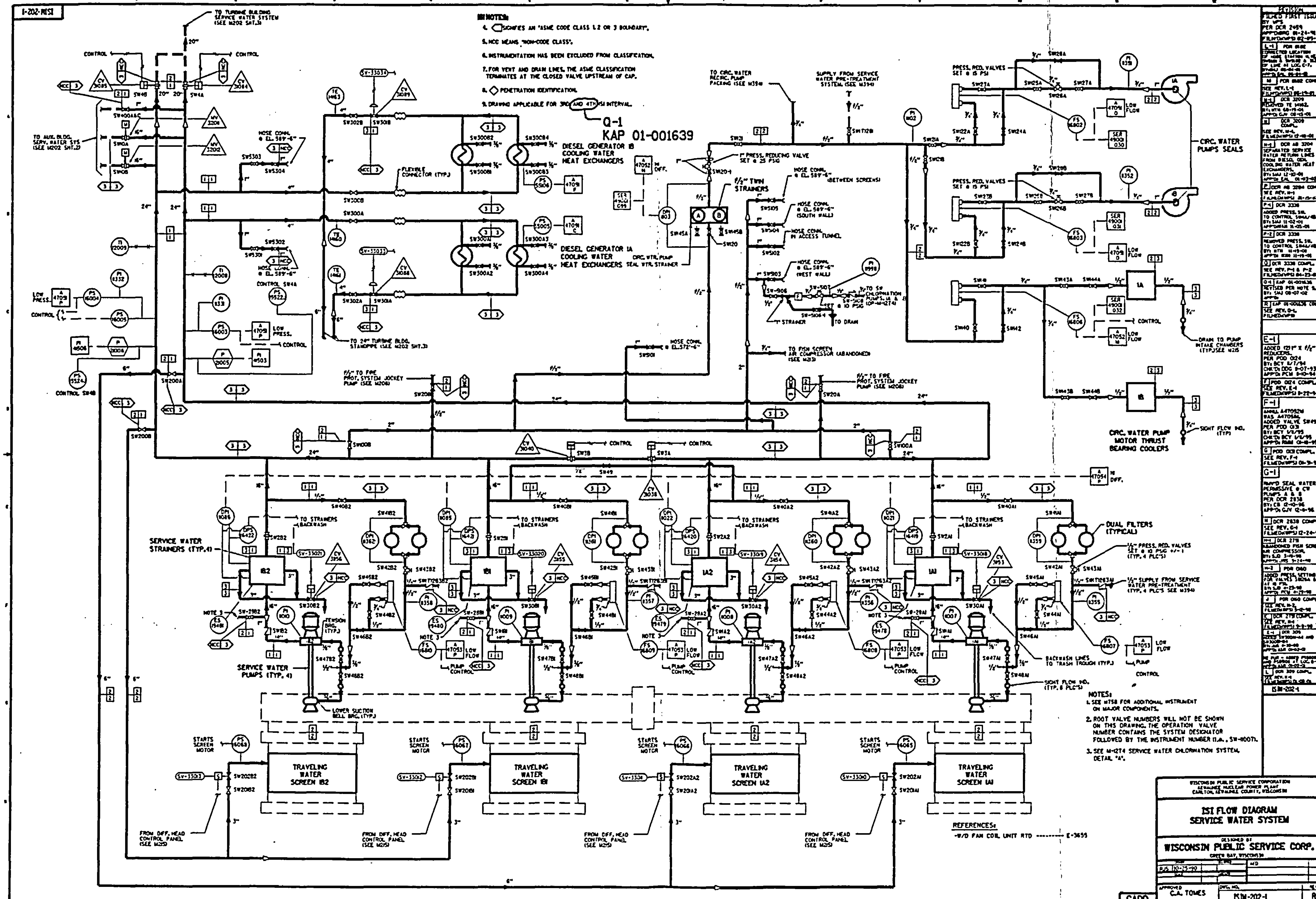
NOTES:
1. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK.
2. SPECIAL SPRING LOADED CHECK VALVE.
3. ELECTROMAGNETIC - LOCATE METER IN VERTICAL PIPE RUN.
4. DRAIN FROM STUFFING BOX LEAKOFF.
5. 3/4" NOMINAL PIPE O.D. 3/8" TUBING INSERT.
6. ALL ITEM NUMBERS INCLUDE THE PREFIX WPSCS
7. INSTALL SOLENOID VALVES IN DIRECTION OF ARROW.
8. CONTROL VALVE MODULATES OPEN/CLOSE TO MAINTAIN DOWNSTREAM PRESSURE OF 5 PSI.
9. QUALITY ASSURANCE CODES BY P S & E.
NOTES (CONTINUED):
11. FOR CONT. OF ALL REFERENCES TO DH (DRAIN HEADERS) SEE M-350.
13. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.E., SW-11007).
NOTES (CONTINUED):
14. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
15. NCC MEANS "NON-CODE CLASS".
16. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
17. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
18. PENETRATION IDENTIFICATION.
19. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
LEGEND
Q-1
KAP 01-001639
VOLUME CONTROL TANK
SEAL WATER HEAT EXCHANGER
LETDOWN HEAT EXCHANGER
REACTOR MAKEUP CONTROL
BORIC ACID BLENDER
CHEMICAL MIXING TANK
REFUELING WATER STORAGE TANK
MIXED BED DEMINERALIZERS
CATION BED DEMINERALIZER
DEBORATING DEMINERALIZERS
RESIN FILL TANK
REACTOR COOLANT FILTER
SEAL WATER INJECTION FILTER
SEAL WATER FILTER
ISDX-100-36
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
CHEMICAL & VOLUME CONTROL SYS.
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISDX-100-36
REV. R



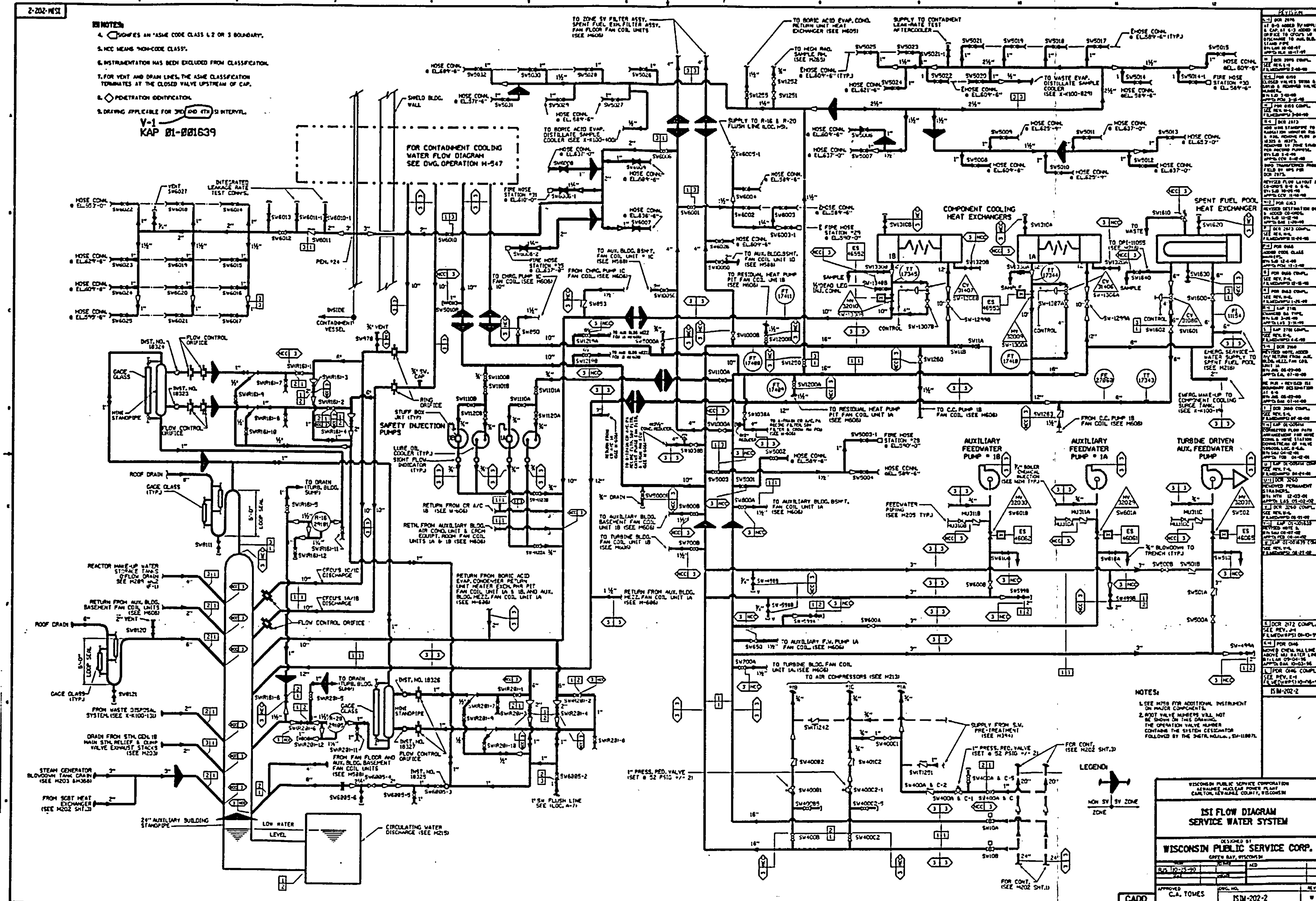
NOTES:
1. DIAPHRAGM SEAL
2. .06" DIA. HOLE IN CLAPPER OR CUP.
3. LOOP SEAL TO EXTEND 12" BELOW AND 12" ABOVE THE OVERFLOW NOZZLE
4 STEAM TRAP AND STRAINER SUPPLIED BY A.E.
5. QUALITY ASSURANCE CODES BY P.S. & E.
6. HYDRAULIC END OF PUMPS SHALL BE HEAT TRACED OR SURROUNDED BY A HEATED ENCLOSURE.
7. CANNED ROTOR PUMPS SHALL BE SURROUNDED BY A HEATED ENCLOSURE.
8 EXTENSION REQUIRED TO OPERATE VALVE OUTSIDE HEAT TRACING ENCLOSURE.
9 VALVE CVC-637 LOCKED CLOSED
11. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
12. NCC MEANS "NON-CODE CLASS".
13. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
14. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE VALVE UPSTREAM OF CAP.
15. PENETRATION IDENTIFICATION.
16. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
17. ALL PIPING THIS SHEET IS ASME SECTION XI NON-CODE CLASS UNLESS OTHERWISE NOTED.
J-1
KAP 01-001639
LEGEND
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
FLOW DIAGRAM
CHEMICAL & VOLUME
CONTROL SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID
CADD
APPROVED
C.A. TOMES
DWG. NO.
ISI XK100-38
REV.
K



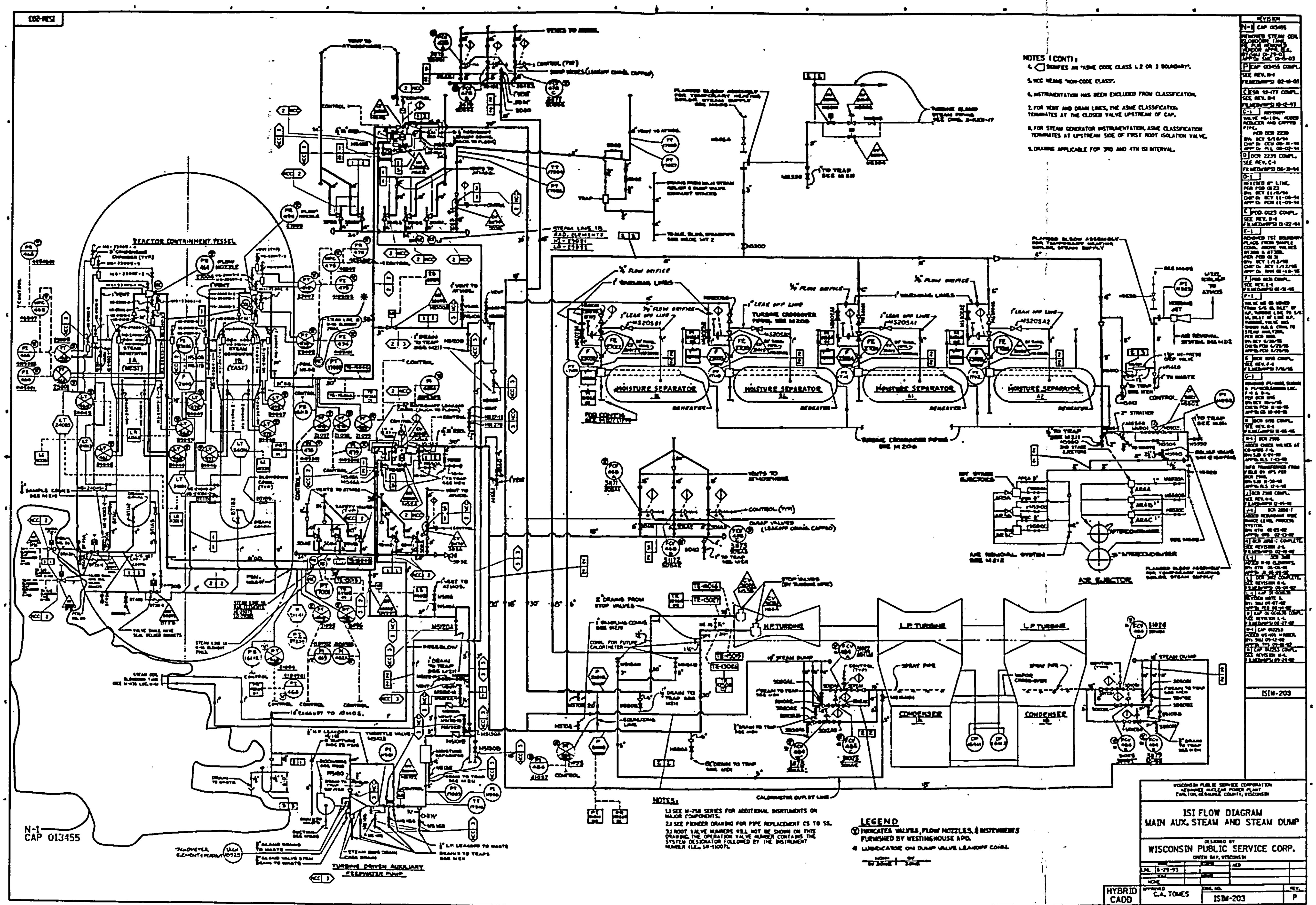
F-1
DCR AB 2912
AUXILARY BUILDING EXHAUST FAN
OUTSIDE CONTAINMENT
INSIDE CONTAINMENT
OUTSIDE SAMPLING ROOM
INSIDE SAMPLING ROOM
PRESSURIZER STEAM SPACE (RCS)
PRESSURIZER LIQUID SPACE (RCS)
HOT LEG (RCS)
EXPANSION TANK
INTEGRATED LEAKAGE RATE TEST CONNS.
DELAY COIL NOTE 2
PRESSURIZED STEAM SAMPLE
PRESSURIZED LIQUID SAMPLE
RC HOTLEG SAMPLE
SAMPLE PRESSURE VESSEL
RC 405
RC 406
RC 408
RC415
RC428
RC 434
RESIDUAL HEAT REMOVAL LOOP (ACS)
MIXED BED DEMINERALIZER OUTLET (CVCS)
MIXED BED DEMINERALIZER INLET (CVCS)
VOLUME CONTROL TANK GAS SPACE (CVCS)
LD 82
LD 72
REMOTE EXTENSION
H.P. MILLIPORE FILTER APPARATUS
SAMPLE SINK
TO SAMPLE SINK FAUCET ETC.
LOOP SEAL
INSIDE SAMPLING HOOD AND ASSOCIATED INSTRUMENT PANEL
DEMINERALIZED WATER M209
TO WASTE HOLD UP TANK SEE M 610
TO FUME HOOD SAMPLER (HI-RAD RC SAMPLE)
STM. GEN 1A BLOWDOWN SAMPLE
STM. GEN. 1B BLOWDOWN SAMPLE
SEE M219
DRAIN HEADER NO 4 TO DEAERATED DRAINS TANK (M390)
TO VOLUME CONTROL TANK
RELIEF VALVE SET AT 125 PSIG
VENT HEADER
REACTOR COOLANT HIGH RADIATION SAMPLE HEAT EXCHANGER
RESIDUAL HEAT REMOVAL HIGH RADIATION SAMPLE HEAT EXCHANGER
RESIDUAL HEAT EXCHANGER 1B
RESIDUAL HEAT EXCHANGER 1A
LIQUID SAMPLE PANEL
CHEMICAL ANALYZER PANEL
FUME HOOD
INSTR. AIR
PROPANE
NITROGEN
HYDROGEN
DEMIN. WATER
HOT COLD WATER
INSTRUMENT AIR
ARGON
DEMIN. WATER
HIGH RADIATION SAMPLE ROOM
TO SUMP TANK
TO RHR SUMP PIT
SEE M 672
FUNNEL
NOTES:
1. ALL TUBING IS 3/8 O.D. EXCEPT AS DETAILED.
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. X 3/8" TUBING INSERT.
4. ALL ITEM NUMBERS INCLUDE PREFIX WPSSS.
5. Ⓦ WILL SUPPLY 3 HEAT EXCHANGERS AND THE 4AIR 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. QUALITY ASSURANCE CODES BY P.E.&E.
8. 1/2" TUBING X 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 MANUFACTURER.
11. 3/4" TUBING X 3/8" TUBING INSERT
12. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.E., SV-11007).
LEGEND:
INSTALL SOLENOID VALVES IN DIRECTION SHOWN BY ARROW
13. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
14. NCC MEANS "NON-CODE CLASS".
15. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
16. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE VALVE UPSTREAM OF CAP.
17. PENETRATION IDENTIFICATION.
18. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
19. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
ISIXK-100-44
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
FLOW DIAGRAM
SAMPLING SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
6-22-93
NONE
HYBRID CADD
APPROVED
C.A. TOMES
DWG. NO.
ISIXK-100-44
REV.
G



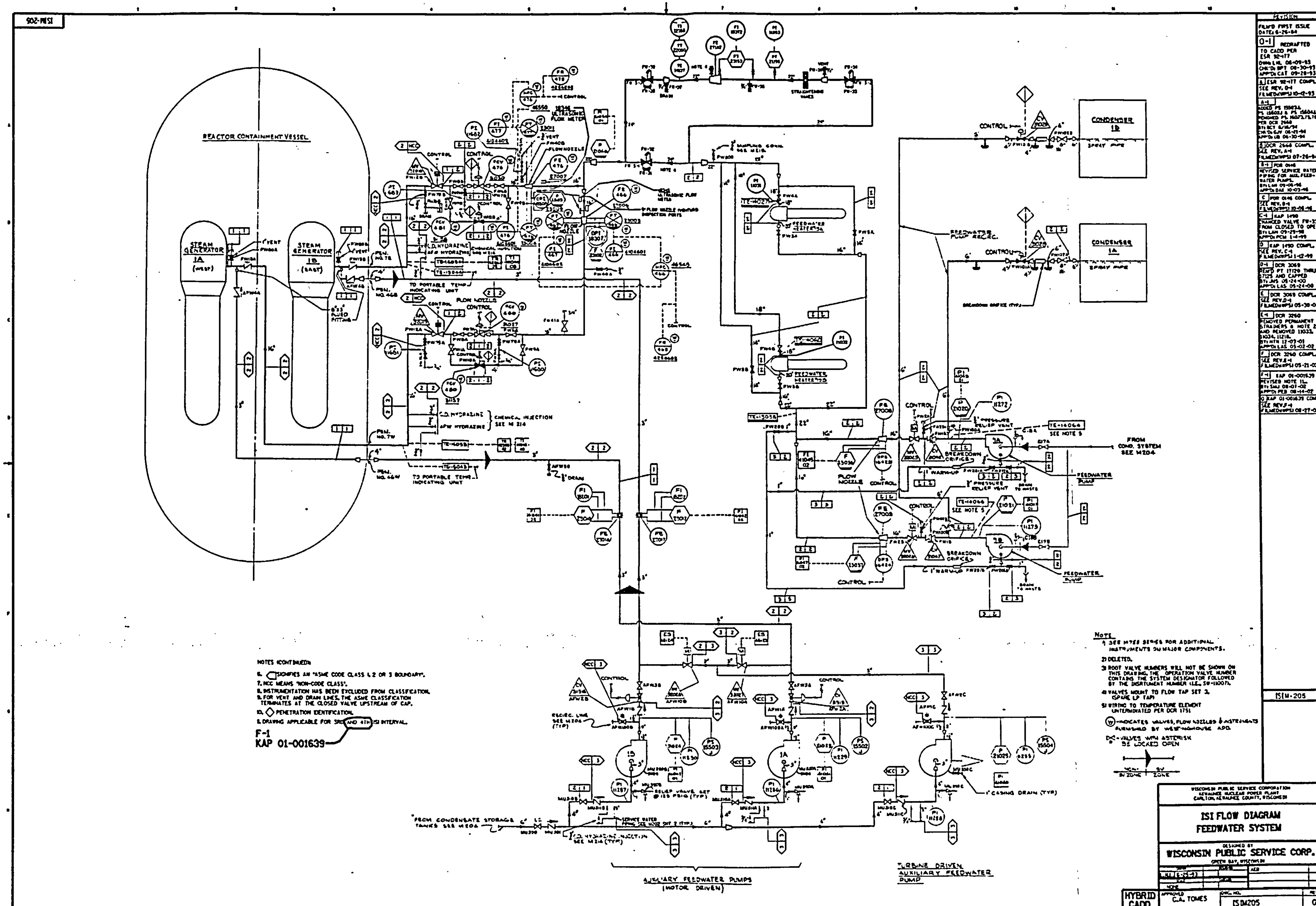
I-202-MISI
NOTES:
4. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
5. NCC MEANS "NON-CODE CLASS".
6. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
7. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
8. PENETRATION IDENTIFICATION.
9. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
Q-1
KAP 01-001639
TO TURBINE BUILDING SERVICE WATER SYSTEM (SEE M202 SHT.3)
TO AUX. BLDG. SERV. WATER SYS (SEE M202 SHT.2)
DIESEL GENERATOR 1B COOLING WATER HEAT EXCHANGERS
DIESEL GENERATOR 1A COOLING WATER HEAT EXCHANGERS
FLEXIBLE CONNECTOR (TYP.)
TO 24" TURBINE BLDG. STANDPIPE (SEE M202 SHT.3)
TO CIRC. WATER RECIRC. PUMP PACKING
SUPPLY FROM SERVICE WATER PRE-TREATMENT SYSTEM
1" PRESS. REDUCING VALVE SET @ 25 PSIG
1 1/2" TWIN STRAINERS
CIRC. WTR. PUMP SEAL WTR. STRAINER
TO FISH SCREEN AIR COMPRESSOR (ABANDONED)
PRESS. RED. VALVES SET @ 15 PSI
CIRC. WATER PUMPS SEALS
CIRC. WATER PUMP MOTOR THRUST BEARING COOLERS
DRAIN TO PUMP INTAKE CHAMBERS
SIGHT FLOW IND. (TYP.)
SERVICE WATER STRAINERS (TYP. 4)
SERVICE WATER PUMPS (TYP. 4)
DUAL FILTERS (TYPICAL)
BACKWASH LINES TO TRASH TROUGH (TYP.)
SIGHT FLOW IND. (TYP. 8 PLC'S)
LOWER SUCTION BELL BRG. (TYP.)
TRAVELING WATER SCREEN 1B2
TRAVELING WATER SCREEN 1B1
TRAVELING WATER SCREEN 1A2
TRAVELING WATER SCREEN 1A1
STARTS SCREEN MOTOR
FROM DIFF. HEAD CONTROL PANEL (SEE M25)
NOTES:
1. SEE M758 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.e., SW-8007).
3. SEE M-1274 SERVICE WATER CHLORINATION SYSTEM, DETAIL "A".
REFERENCES:
-W/D FAN COIL UNIT RTD ---- E-3655
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SERVICE WATER SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
APPROVED C.A. TOMES
DWG. NO. ISI M-202-1
REV. R
CADO



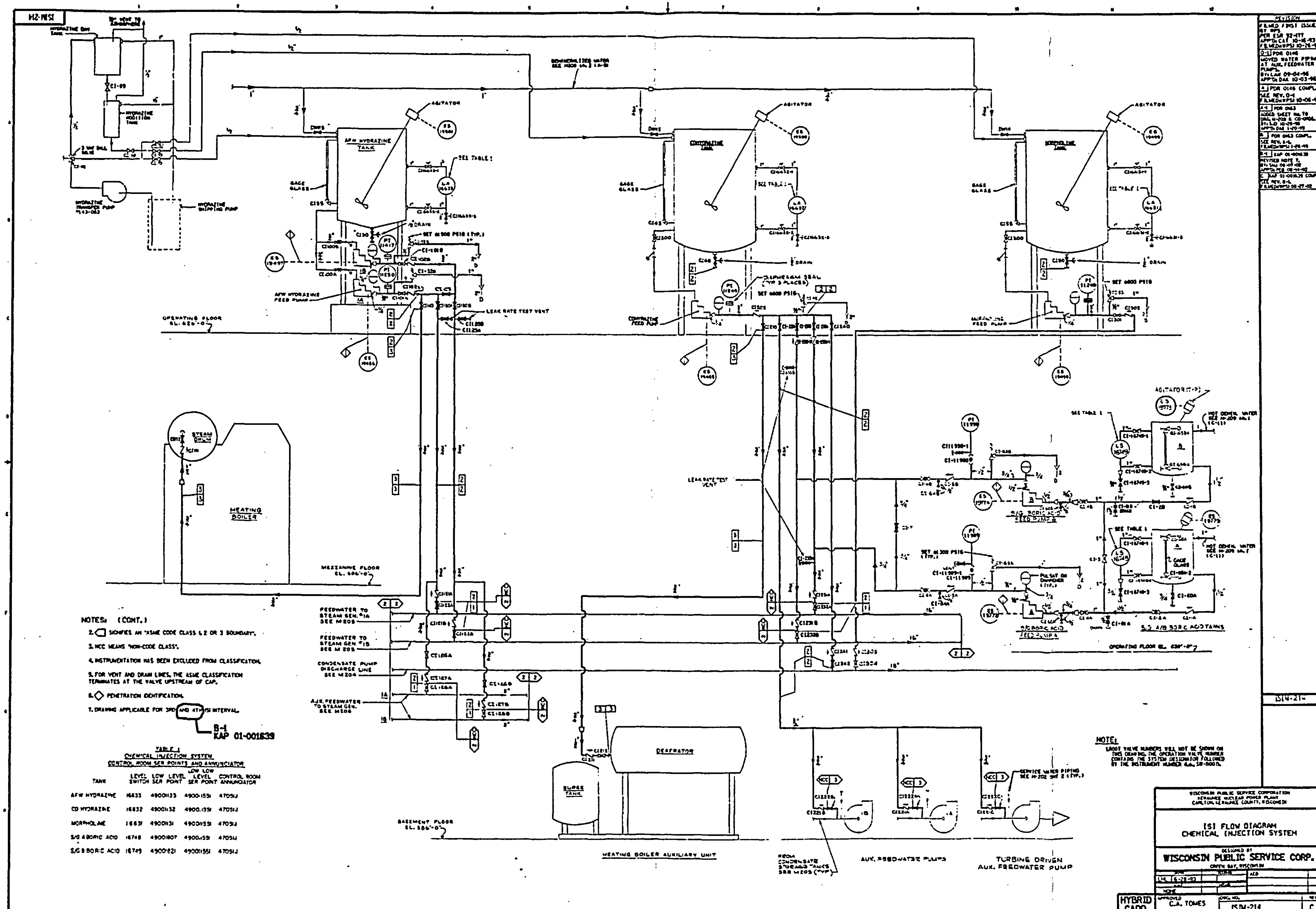
2-202-MISI
NOTES:
4. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
5. NCC MEANS "NON-CODE CLASS".
6. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
7. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
8. PENETRATION IDENTIFICATION.
9. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
V-1
KAP 01-001639
FOR CONTAINMENT COOLING WATER FLOW DIAGRAM SEE DWG. OPERATION M-547
SHIELD BLDG. WALL
INSIDE CONTAINMENT VESSEL
COMPONENT COOLING HEAT EXCHANGERS
SPENT FUEL POOL HEAT EXCHANGER
SAFETY INJECTION PUMPS
AUXILIARY FEEDWATER PUMP # 1B
AUXILIARY FEEDWATER PUMP # 1A
TURBINE DRIVEN AUX. FEEDWATER PUMP
TO AIR COMPRESSORS (SEE M213)
CIRCULATING WATER DISCHARGE (SEE M215)
24" AUXILIARY BUILDING STANDPIPE
LOW WATER LEVEL
NOTES:
1. SEE M758 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 DISTR. NO., i.e., SW-1100TL
LEGEND:
NON SV ZONE
SV ZONE
ISM-202-2
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SERVICE WATER SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
BJS 10-25-90
APPROVED
C.A. TOMES
DWG. NO.
ISM-202-2
REV.
CADD



REACTOR CONTAINMENT VESSEL
MOISTURE SEPARATOR
H.P. TURBINE
L.P. TURBINE
CONDENSER
AIR EJECTOR
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP
NOTES (CONT):
4. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
5. NCC 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 ISI INTERVAL.
NOTES:
1.) SEE M-758 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 OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (I.E., SP-11007).
LEGEND
Ⓦ INDICATES VALVES, FLOW NOZZLES, & INSTRUMENTS FURNISHED BY WESTINGHOUSE APD.
LUBRICATOR ON DUMP VALVE LEAKOFF CONN.
N-1 CAP 013455
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
MAIN AUX. STEAM AND STEAM DUMP
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
6-29-93
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISIM-203
REV. P



ISM-205
REACTOR CONTAINMENT VESSEL
STEAM GENERATOR 1A (WEST)
STEAM GENERATOR 1B (EAST)
CONDENSER 1B
CONDENSER 1A
FEEDWATER HEATER 15A
FEEDWATER HEATER 15B
FEEDWATER PUMP RECIRC.
FEEDWATER PUMP
FROM COND. SYSTEM SEE M204
TO PORTABLE TEMP. INDICATING UNIT
CHEMICAL INJECTION SEE M 214
AUXILIARY FEEDWATER PUMPS (MOTOR DRIVEN)
TURBINE DRIVEN AUXILIARY FEEDWATER PUMP
FROM CONDENSATE STORAGE TANKS SEE M206
NOTES (CONTINUED):
6. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
7. NCC 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 3RD AND 4TH 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 INSTRUMENT NUMBER (I.E., SW-11007).
4) VALVES MOUNT TO FLOW TAP SET 3. (SPARE LP TAP)
5) WIRING TO TEMPERATURE ELEMENT UNTERMINATED PER DCR 1751
Ⓦ - INDICATES VALVES, FLOW NOZZLES & INSTRUMENTS FURNISHED BY WESTINGHOUSE APD.
VALVES WITH ASTERISK BE LOCKED OPEN
NON-SV ZONE
SV ZONE
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
FEEDWATER SYSTEM
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISM205
REV. G



NOTES: (CONT.)

2. ⬠ SIGNIFIES 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.

B-1
KAP 01-001639

TABLE 1
CHEMICAL INJECTION SYSTEM
CONTROL ROOM SET POINTS AND ANNUNCIATOR

TANK	LEVEL SWITCH	LOW LEVEL SET POINT	LOW LOW LEVEL SET POINT	CONTROL ROOM ANNUNCIATOR
AFW HYDRAZINE	16633	49001133	4900-1551	47051J
CD HYDRAZINE	16632	49001132	4900.1551	47051J
MORPHOLINE	16631	49001131	49001551	47051J
S/G A BORIC ACID	16748	49001807	4900.1551	47051J
S/G B BORIC ACID	16749	49001821	49001551	47051J

NOTE:

LOOOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER e.g., SW-1100T.

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

ISI FLOW DIAGRAM
CHEMICAL INJECTION SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

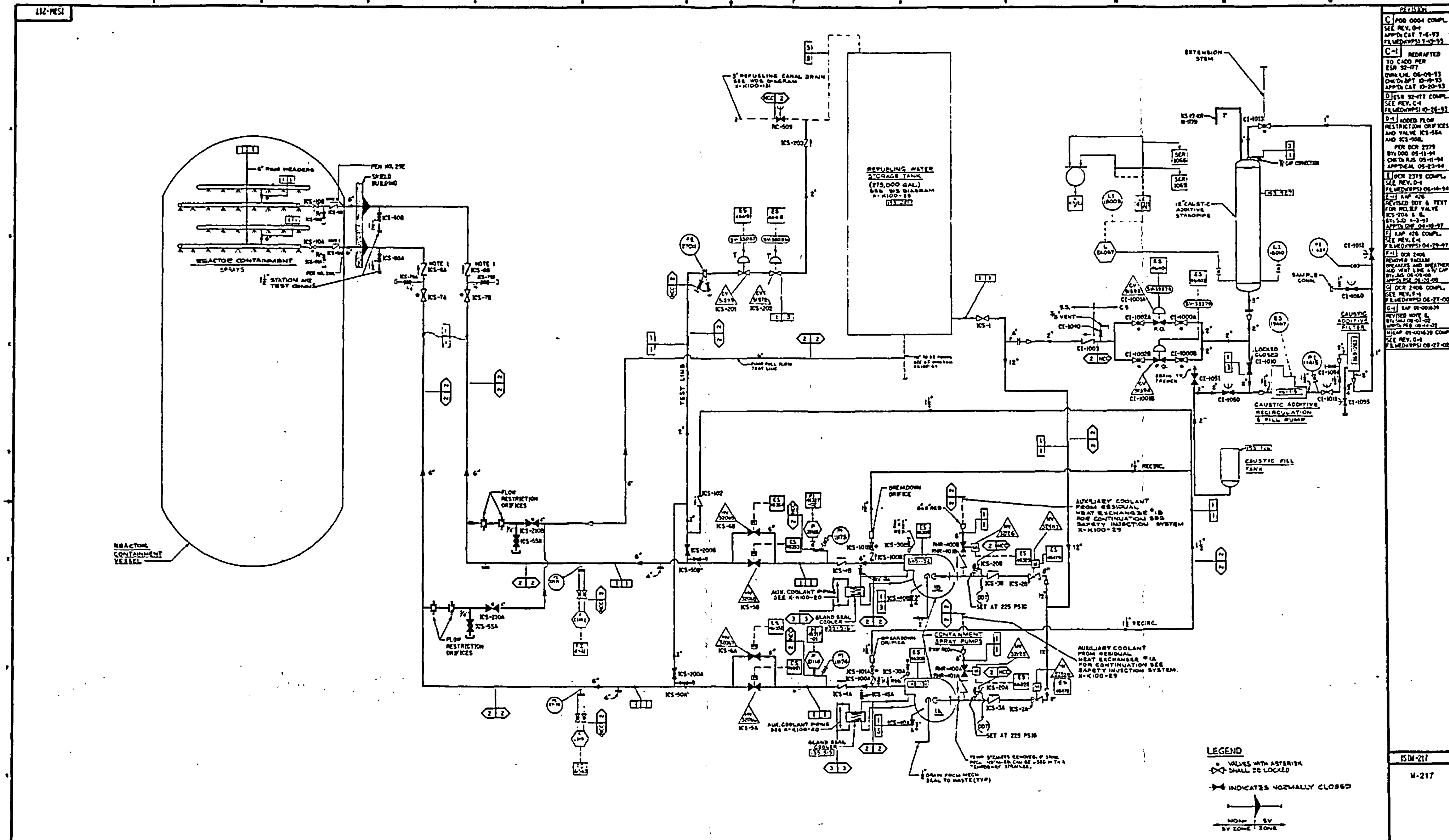
LNL 6-28-93
NONE

HYBRID CADD

APPROVED C.A. TOMES

DWG. NO. ISDM-214

REV. C



NOTES:
1. CHECK VALVES SUPPLIED WITH MANUAL OPERATOR.
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.E., SV-1100T).
3. ⬭ SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
4. NCC MEANS "NON-CODE CLASS".
5. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
6. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
7. ◇ PENETRATION IDENTIFICATION.
8. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.

G-1
KAP 01-001639

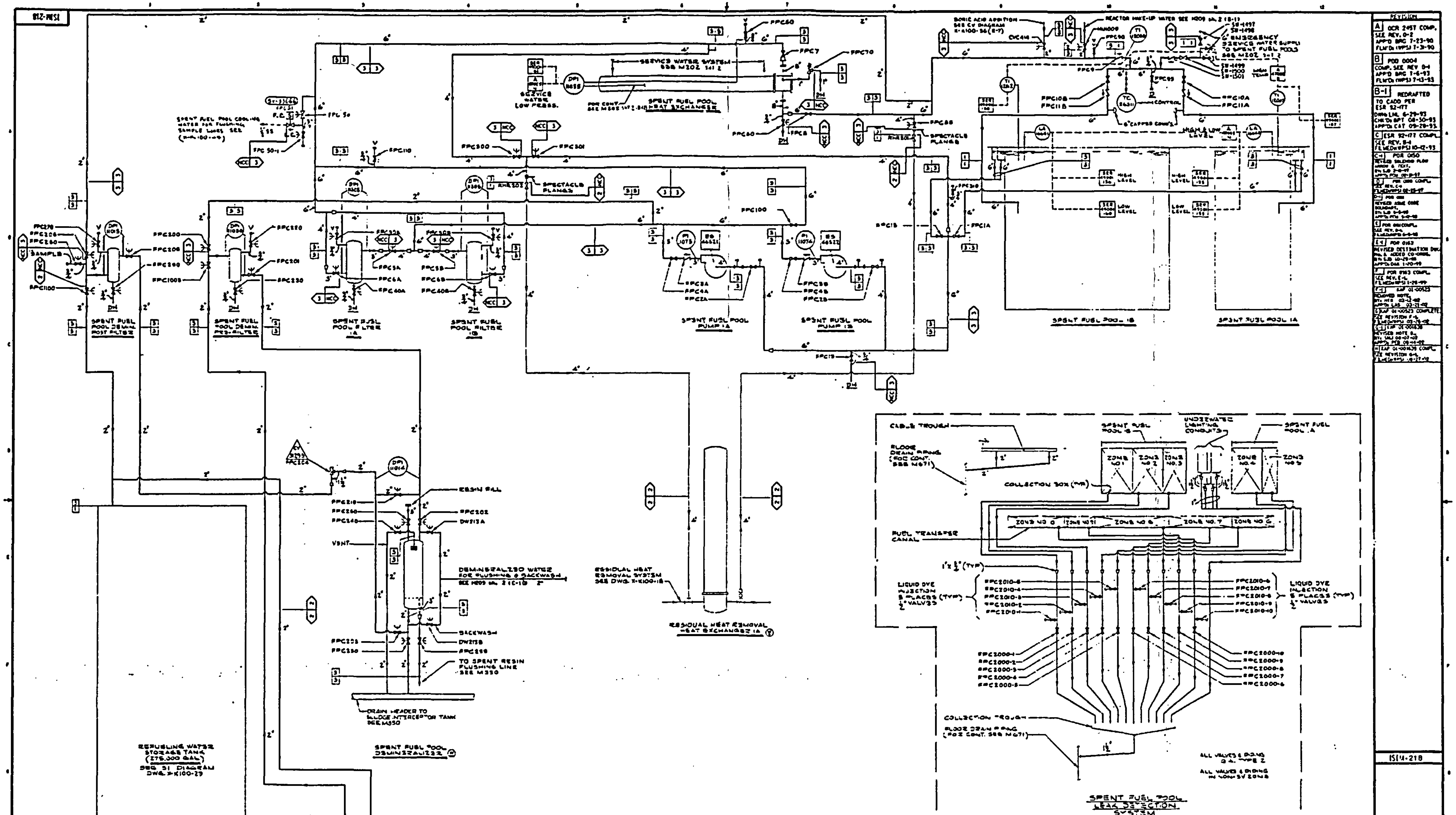
HYBRID CADD

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

FLOW DIAGRAM
INTERNAL CONTAINMENT
SPRAY SYSTEM

DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

APPROVED C.A. TOMES | DWG. NO. ISDM-217 | REV. H



NOTES (CONT):

3. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".

4. NCC MEANS "NON-CODE CLASS".

5. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.

6. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.

7. ◇ PENETRATION IDENTIFICATION.

8. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.

G-1
KAP 01-001639

NOTES:
1) ALL PIPING & EQUIPMENT IS IN SV ZONE.
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.E., SW-1100T).

LEGEND

D – INDICATES DRAIN TO FLOOR DRAIN SYSTEM

DH – INDICATES DRAIN TO DRAIN HEADER. SEE AUXILIARY BUILDING EQUIPMENT DRAIN DIAGRAM M350

INSTALL SOLENOID VALVE IN DIRECTION OF ARROW.

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

ISI FLOW DIAGRAM
SPENT FUEL POOL COOLING AND CLEAN-UP SYSTEM

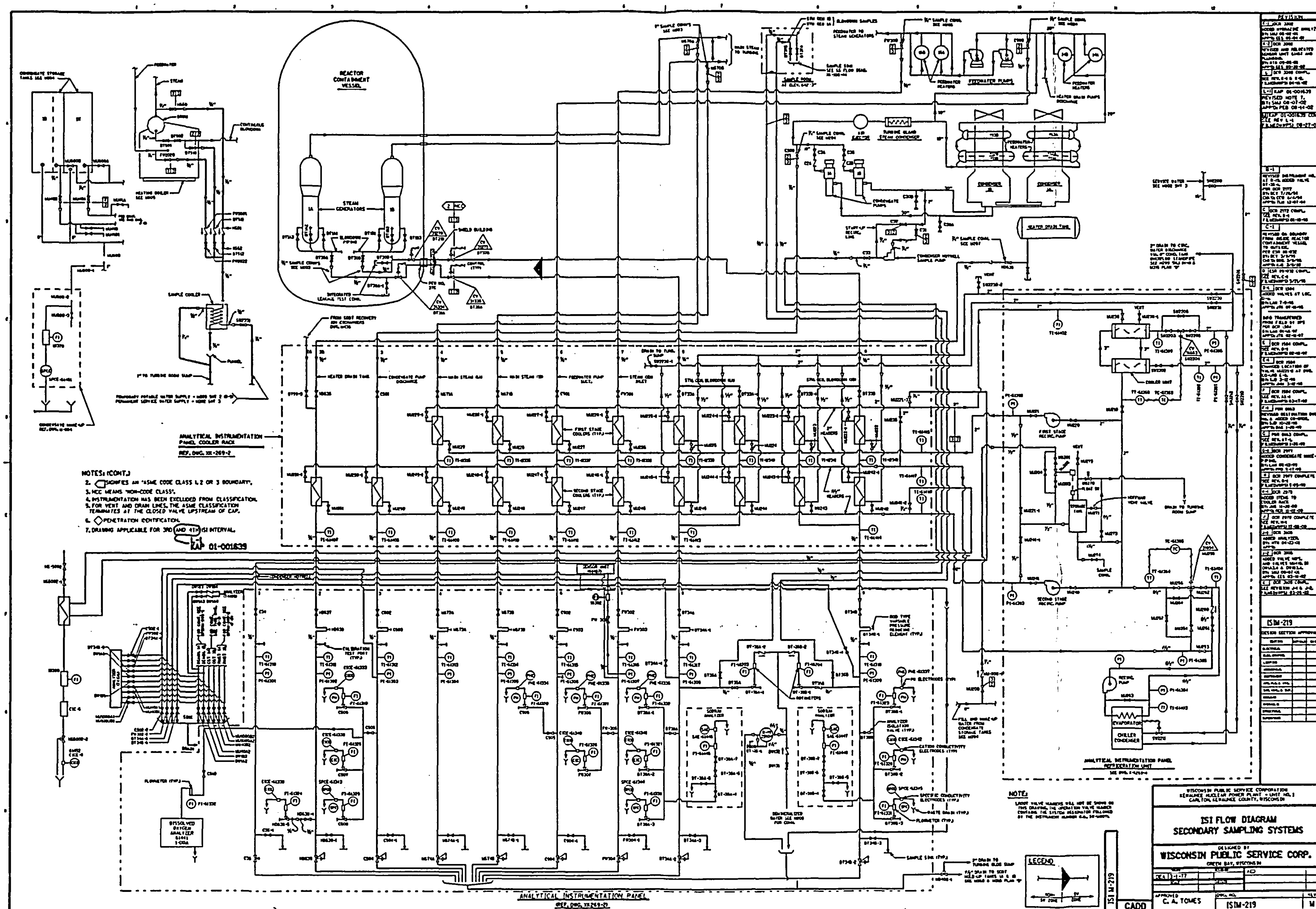
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN

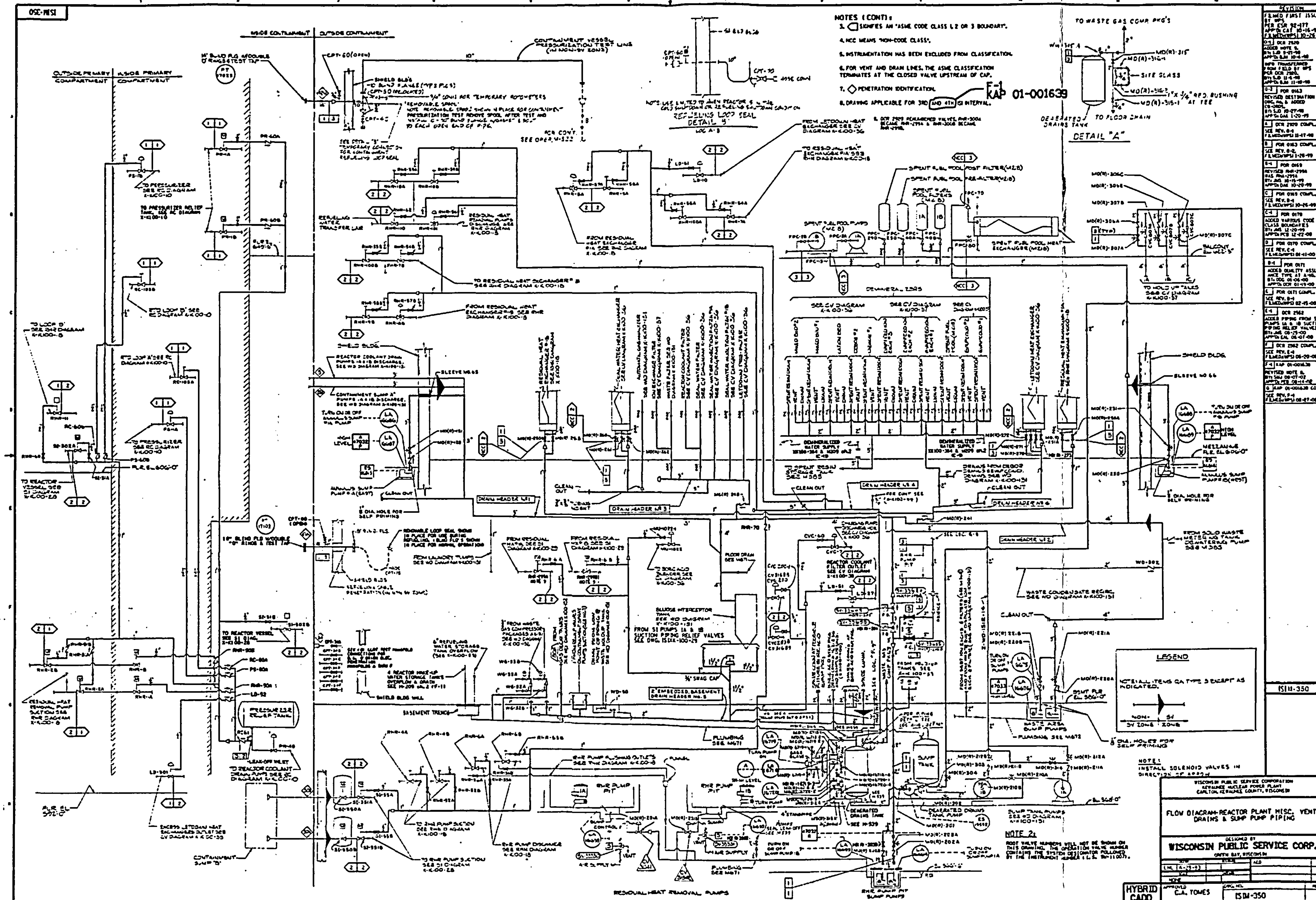
HYBRID CADD

APPROVED C.A. TOMES

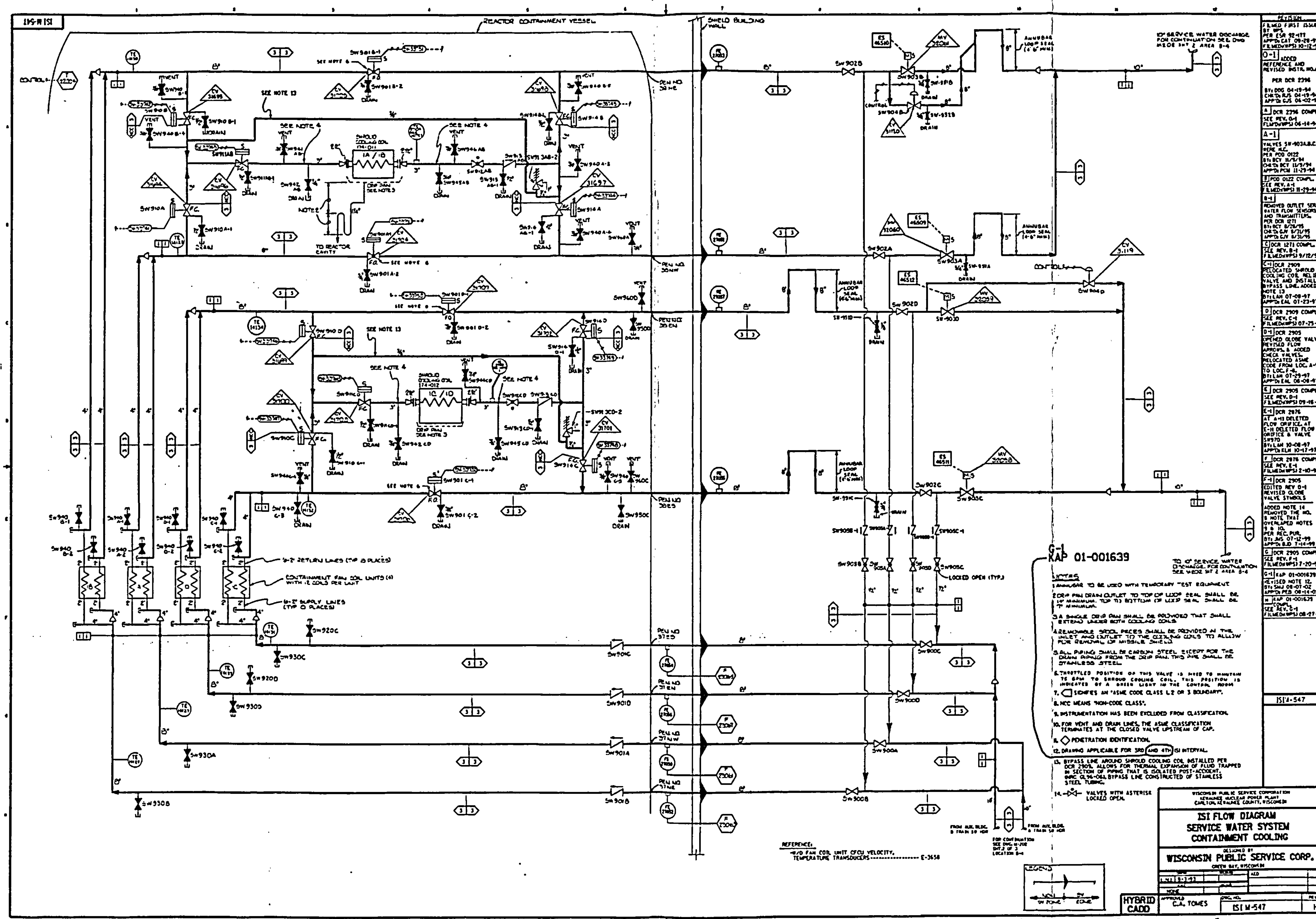
DWG. NO. ISIM-218

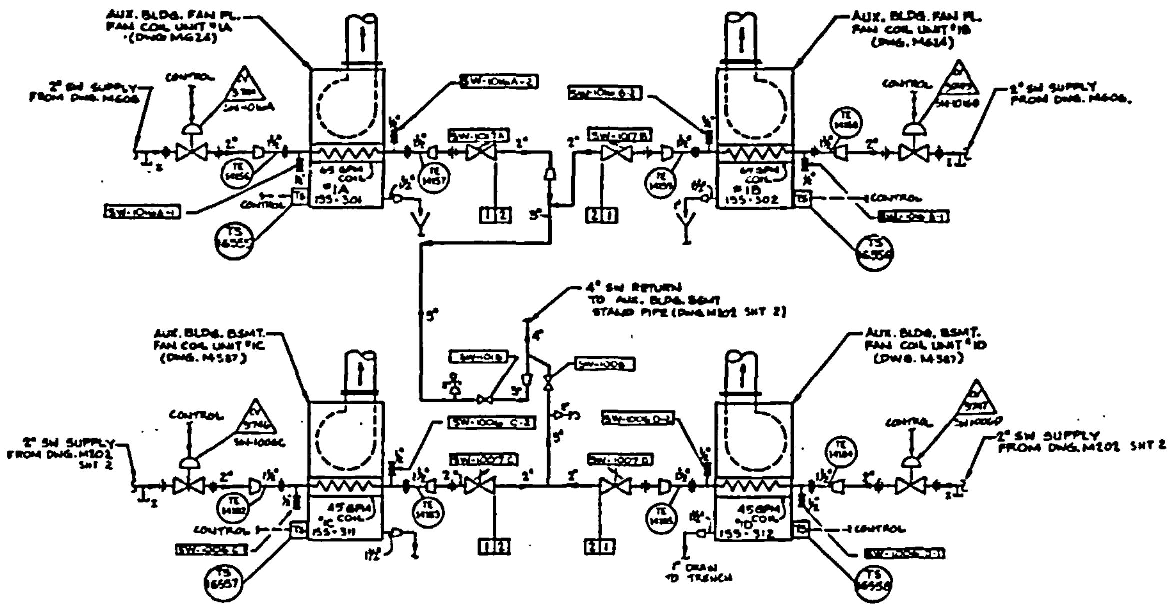
REV. H

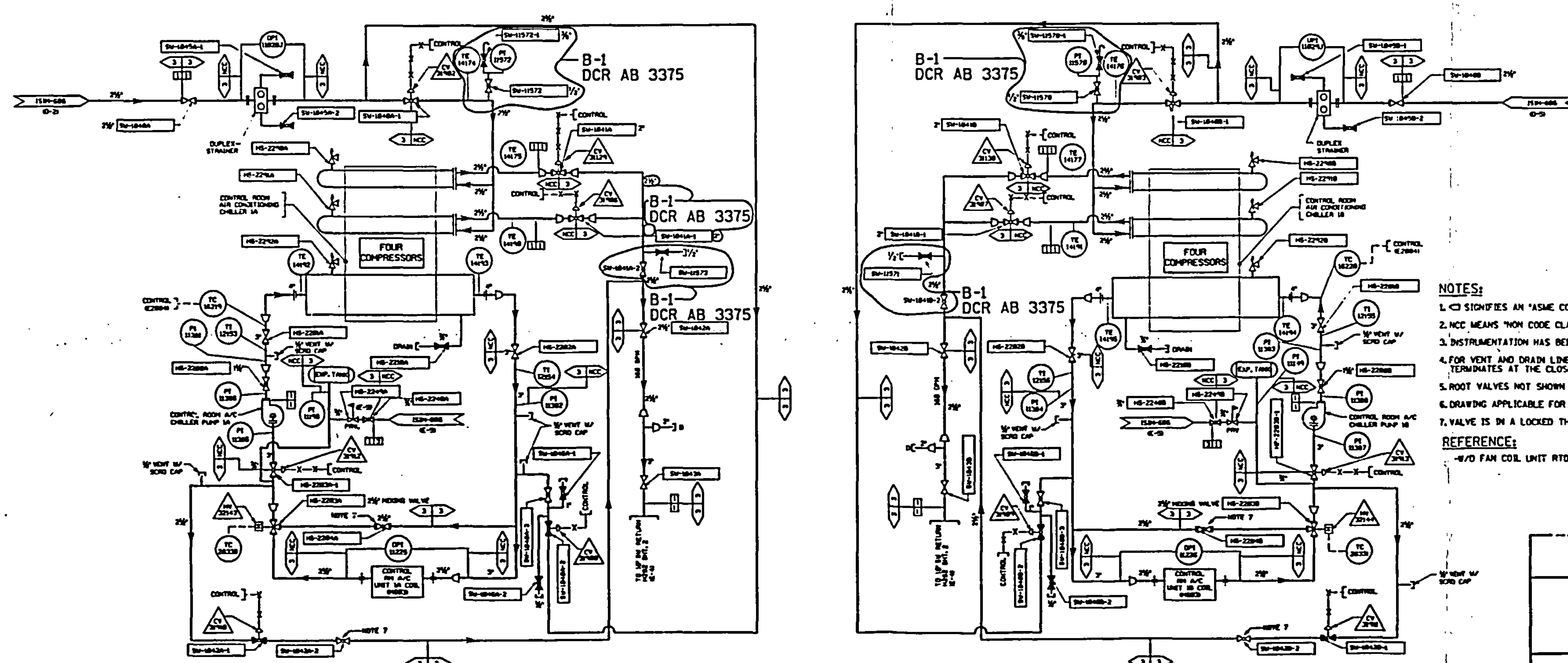

REACTOR CONTAINMENT VESSEL
STEAM GENERATORS
FEEDWATER PUMPS
CONDENSER
HEATER DRAIN TANK
ANALYTICAL INSTRUMENTATION PANEL COOLER RACK
REF. DWG. XK-269-2
NOTES: (CONT.)
2. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
3. NCC MEANS "NON-CODE CLASS".
4. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
5. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
6. PENETRATION IDENTIFICATION.
7. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
KAP 01-001639
DISSOLVED OXYGEN ANALYZER
EVAPORATOR
CHILLER CONDENSER
ANALYTICAL INSTRUMENTATION PANEL REFRIGERATION UNIT
ANALYTICAL INSTRUMENTATION PANEL
NOTE:
LEGEND
REVISION
ISIM-219
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT - UNIT NO. 1
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SECONDARY SAMPLING SYSTEMS
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
3-1-77
APPROVED
C. A. TOMES
CADD
DWG. NO.
ISIM-219
REV.
M



OSC-MISI
NOTES (CONT):
3. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
4. NCC MEANS "NON-CODE CLASS".
5. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
6. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
7. PENETRATION IDENTIFICATION.
8. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
F-1
KAP 01-001639
DETAIL "A"
DEAERATED DRAINS TANK
TO WASTE GAS COMP PKG'S
SITE GLASS
TO FLOOR DRAIN
REFUELING LOOP SEAL DETAIL "B"
DEMINERALIZERS
SHIELD BLDG.
SLEEVE NO 65
SLEEVE NO 66
DRAIN HEADER NO 3
DRAIN HEADER NO 4
DRAIN HEADER NO 6
CONTAINMENT SUMP "B"
RESIDUAL HEAT REMOVAL PUMPS
RHR PUMP PIT
SUMP TANK
LEGEND
NOTE: ALL ITEMS QA TYPE 3 EXCEPT AS INDICATED.
NON-SV ZONE
SV ZONE
NOTE:
INSTALL SOLENOID VALVES IN DIRECTION OF ARROW
NOTE 2:
ISIM-350
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
FLOW DIAGRAM-REACTOR PLANT MISC. VENTS, DRAINS & SUMP PUMP PIPING
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISIM-350
REV. G


ISI-M-547
REACTOR CONTAINMENT VESSEL
SHIELD BUILDING WALL
G-1
KAP 01-001639
TO 10" SERVICE WATER DISCHARGE. FOR CONTINUATION SEE M-202 SHT 2 AREA B-4
NOTES
1. ANNUBAR TO BE USED WITH TEMPORARY TEST EQUIPMENT
2. DRIP PAN DRAIN OUTLET TO TOP OF LOOP SEAL SHALL BE 14" 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 SPOOL PIECES 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 USED TO MAINTAIN 75 GPM TO SHROUD COOLING COIL. THIS POSITION IS INDICATED BY A GREEN LIGHT IN THE CONTROL ROOM
7. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
8. NCC 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. PENETRATION IDENTIFICATION.
12. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
13. BYPASS LINE AROUND SHROUD COOLING COIL INSTALLED PER DCR 2909. ALLOWS FOR THERMAL EXPANSION OF FLUID TRAPPED IN SECTION OF PIPING THAT IS ISOLATED POST-ACCIDENT. GNRC GL96-06. BYPASS LINE CONSTRUCTED OF STAINLESS STEEL TUBING.
14. VALVES WITH ASTERISK LOCKED OPEN.
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
CARLTON, KEWAUNEE COUNTY, WISCONSIN
ISI FLOW DIAGRAM
SERVICE WATER SYSTEM
CONTAINMENT COOLING
DESIGNED BY
WISCONSIN PUBLIC SERVICE CORP.
GREEN BAY, WISCONSIN
HYBRID CADD
APPROVED C.A. TOMES
DWG. NO. ISI M-547
REV. H
ISI M-547
G-1 KAP 01-001639 REVISED NOTE 12.
H KAP 01-001639 COMPL. SEE REV. G-1





REVISION

FILMED FIRST ISSUE
PER DCR 3048,
APP'D: LAS 05-15-02
FILMED: WPSI 06-18-02

0-1 KAP 01-001639
REVISED PER
KAP 01-001639,
BY: SMJ 08-06-02
APP'D: PEB 08-14-02

A KAP 01-001639 COMPL.
SEE REV. 0-1,
FILMED: WPSI 08-27-02

A-1 KAP 01-001639
REMOVE VALVE SHOWN FOR
FUTURE MODIFICATION.
BY: NTM 11-08-02
APP'D: PEB 11-15-02

B KAP 01-001639 COMPLETE,
SEE REVISION A-1,
FILMED: WPSI 11-19-02

B-1 DCR AB 3375
ADDED VALVES
SW-1041A-2,
SW-1041B-2, SW-11572,
SW-11572-1, SW-11570,
SW-11570-1, SW-11573
AND SW-11571.
REMOVED PI 11571 AND
PI 11573.
BY: NTM 04-10-03
APP'D: LAS 04/17/03

C DCR AB 3375 COMPL.
SEE REVISION B-1,
FILMED: WPSI 04/29/03

ISIM-588

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 THE 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

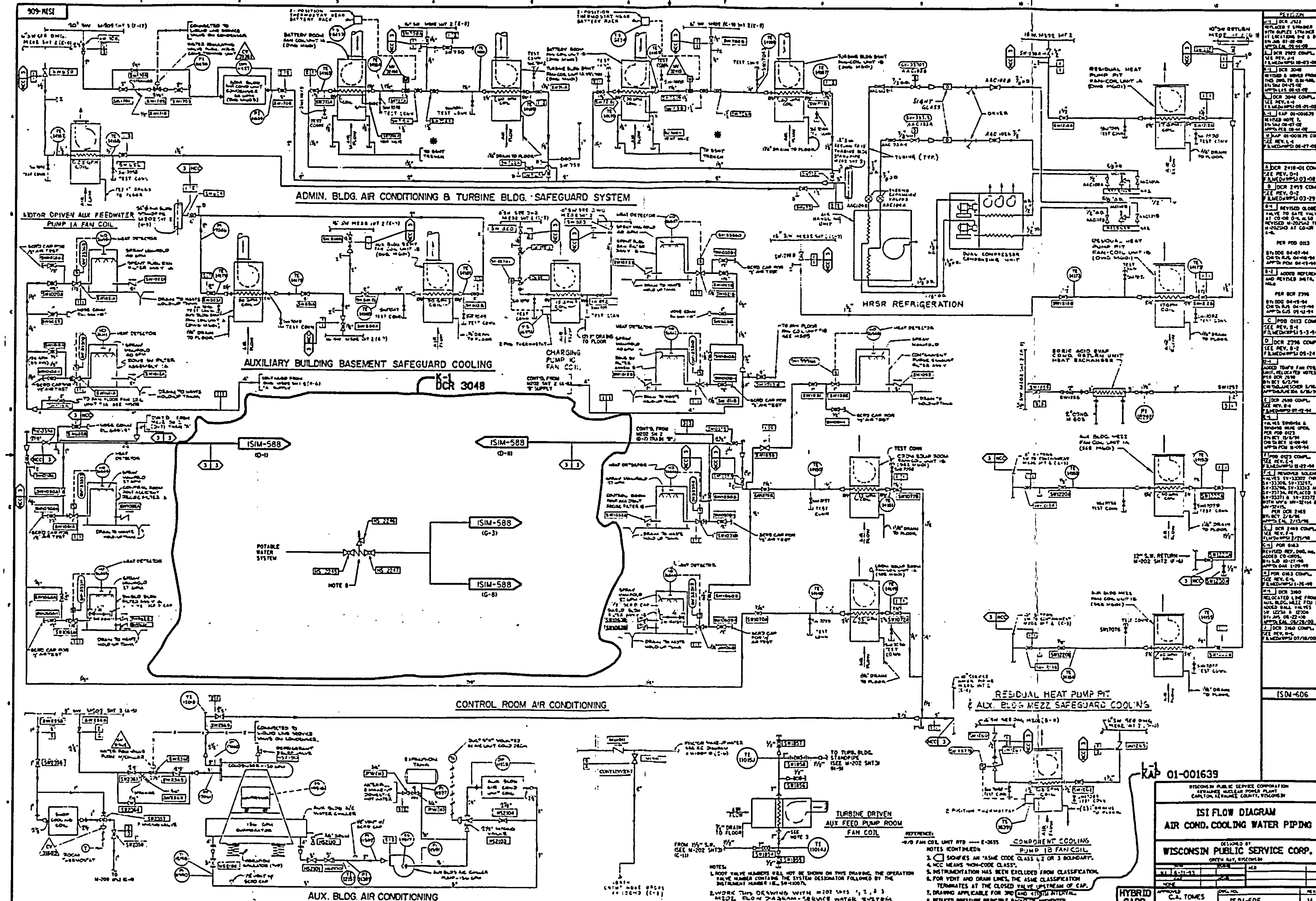
ACC-25
ACA-17

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	DRAWN: BPT	SCALE: NONE	DWG. NO. ISIM-588	REV. C


909-RISI
ADMIN. BLDG. AIR CONDITIONING & TURBINE BLDG. SAFEGUARD SYSTEM
MOTOR DRIVEN AUX FEEDWATER PUMP 1A FAN COIL
AUXILIARY BUILDING BASEMENT SAFEGUARD COOLING
CHARGING PUMP 1C FAN COIL
HRSR REFRIGERATION
K-1 DCR 3048
ISIM-588
POTABLE WATER SYSTEM
NOTE 8
CONTROL ROOM AIR CONDITIONING
RESIDUAL HEAT PUMP PIT & AUX. BLDG MEZZ SAFEGUARD COOLING
AUX. BLDG. AIR CONDITIONING
TURBINE DRIVEN AUX FEED PUMP ROOM FAN COIL
COMPONENT COOLING PUMP 1B FAN COIL
L-1 KAP 01-001639
NOTES:
1. ROOT VALVE NUMBERS WILL NOT BE SHOWN ON THIS DRAWING. THE OPERATION VALVE NUMBER CONTAINS THE SYSTEM DESIGNATOR FOLLOWED BY THE INSTRUMENT NUMBER (IE., SW-41007).
2. WORK THIS DRAWING WITH M202 SHTS 1, 2, & 3 M202 FLOW DIAGRAM-SERVICE WATER SYSTEM
REFERENCE:
-W/O FAN COIL UNIT RTD ---- E-3655
NOTES (CONTINUED):
3. SIGNIFIES AN "ASME CODE CLASS 1, 2 OR 3 BOUNDARY".
4. NCC MEANS "NON-CODE CLASS".
5. INSTRUMENTATION HAS BEEN EXCLUDED FROM CLASSIFICATION.
6. FOR VENT AND DRAIN LINES, THE ASME CLASSIFICATION TERMINATES AT THE CLOSED VALVE UPSTREAM OF CAP.
7. DRAWING APPLICABLE FOR 3RD AND 4TH ISI INTERVAL.
8. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER.
REVISION
ISDM-606
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
APPROVED
C.A. TOMES
DWG. NO.
ISDM-606
REV.
M

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

Appendix C

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	REAPIRED
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	EVALAUTED
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	AHCC1-1A-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. <u>Program Summary</u>

   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

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.).

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.

<u>Environment</u>

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.

<u>Susceptible Material</u>

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.

Appendix F

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.

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

Appendix F

Augmented Examination Programs

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.

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

<u>HIGH</u> EDY>12	<u>MODERATE</u> EDY ≥8 & ≤12	<u>LOW</u> EDY <8
Each Outage A and (B, C, or D).	Each Outage either A or (B, C, or D) But, over the course of 2 outages, A must be performed once as well as (B, C, or D) once.	Over the first 3 outages after the order was issued, KNPP must perform A once and either (B, C, or D) once. After the above requirements are met, A must be done once every 3 outages and either (B, C, or D) once every 4 outages.

Appendix F

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.

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:

IDENTITY	LOCATION	MATERIAL
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

Appendix F

Augmented Examination Programs

	IDENTITY	LOCATION	MATERIAL
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................Probablistic 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

W....................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

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.

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)	
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

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)	
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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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)

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)	
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 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

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)

(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.

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.

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-overtemperature 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.

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, though 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.

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, though 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.

(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.

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 rode 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

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.

(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.

(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 convention 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.

All these safety feature 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 involve 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.

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.

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.

(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 $^3/_8$ 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 harder.

(5) RHR piping from RWST and containment sump to reactor coolant loop.

(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.

Appendix I

Basis Document for ISI Code Class Boundaries

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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 ISIK-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.

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"

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.

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 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

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"

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 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.

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"

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.

Appendix I

Basis Document for ISI Code Class Boundaries

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"