



ENGINEERING
CONSULTANTS

CALCULATION COVER SHEET

Calculation No.: 52233-C-004

Project: Beaver Valley A-46 Review

Calculation Title: GE Switchgear Anchorage Evaluation

References: See Page 9

Attachments: A (3) Pages

Total Number of Pages (Including Cover Sheet) 40

Revision Number	Approval Date	Description of Revision	Originator	Checker	Approver
0	10/30	Original issue	RA	CRA	RC



CALCULATION SHEET

SHEET NO. 2JOB NO. 52233 JOB Beaver Valley A-46 Review BY EA DATE 8/22/95
CALC NO. C-004 SUBJECT GE Switchgear Anchorage Evaluation CHK CM DATE 9-29-95

PURPOSE

This calculation will evaluate the seismic adequacy of the anchorage for Low Voltage Switchgear, installed at the Beaver Valley Power Station.

SCOPE

The evaluation includes General Electric Battery Breaker Switchgear and Breakmaster Disconnect Switches. This equipment is installed in the SRVB structure as indicated below.

Equipment ID No.	Location	
	Building	Elevation
BAT-BKR-1	SRVB	713'-6"
BAT-BKR-2	SRVB	713'-6"
BAT-BKR-3	SRVB	713'-6"
BAT-BKR-4	SRVB	713'-6"
SW-1-8N1	SRVB	713'-6"
SW-1-9P1	SRVB	713'-6"

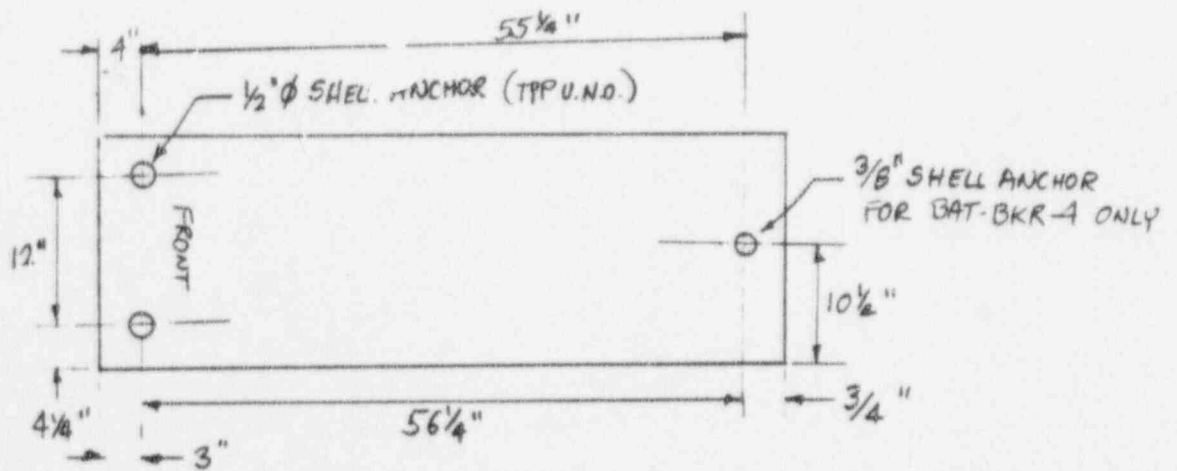
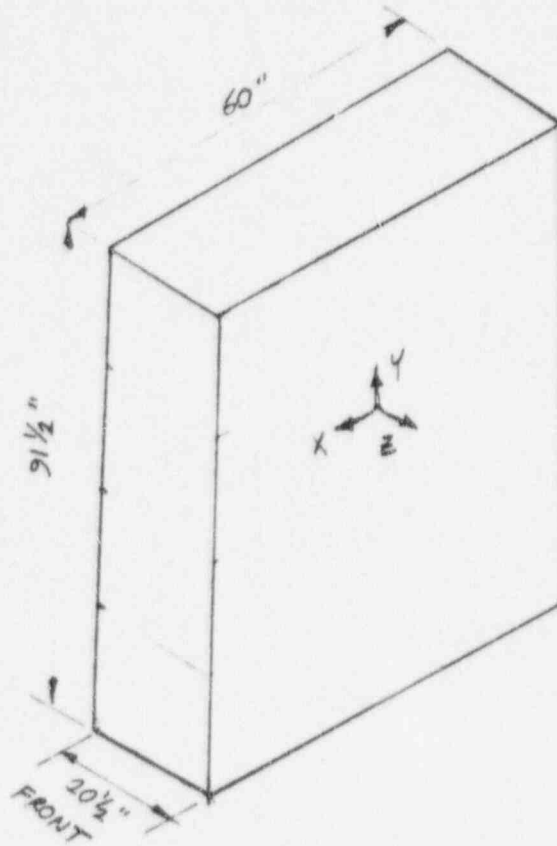
METHODOLOGY

The Low Voltage Switchgear is evaluated in accordance with the techniques provided in Section 4 and Appendix C of the Generic Implementation Procedure (GIP) (Reference 1). Existing analysis for the Disconnect Switches (Reference 2) will be reviewed for conformance to the GIP criteria.

Battery Breaker Switchgear

The General Electric 125 V Battery Breaker Switchgear have 20" wide X 60" deep X 91.5" tall sections with an approximate weight of 1000 lb. Most sections are anchored with three 1/2" ϕ shell anchors. BAT-BKR-4 has a 3/8" ϕ anchor bolt in the rear location. This limiting configuration of Battery Breaker Switchgear anchorage is shown in the following sketch.

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BAT-BKR-X CONFIGURATION



CALCULATION SHEET

SHEET NO. 4

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The Battery Breaker Switchgear will be evaluated as a single cabinet, as each of the General Electric units is anchored in a similar fashion. Per Reference 8, the assembly weight is 1000 lb. Each section (except BAT-BKR-4) is anchored by three 1/2" ϕ bolts. These anchor bolts will be evaluated in this calculation.

The peak horizontal spectral acceleration for the Service Building is 0.36g at 5% damping for frequencies between approximately 2 and 6 Hz (Reference 2). Assume that the CG is at 1/2 of the cabinet's height, or 45.75" and at the centroid of the 3-bolt pattern for the X-Z plane.

$$S_h = 0.36 \text{ g}$$

$$S_v = \frac{2}{3} S_h \qquad S_v = 0.24 \text{ g}$$

$$Wt = 1000 \text{ lb} \qquad h = 45.75 \text{ in}$$

Determine loads on the anchor bolts

Because of the anchor bolt arrangement of two bolts in front and one bolt in the rear, and the additional condition of a 3/8" bolt rather than 1/2" at the rear of BAT-BKR-4, the loading conditions will be determined separately for both the front and the back bolts

Bolt loads for seismic forces in the X direction (front to back):

$$P_{xf} = \frac{S_h \cdot Wt \cdot h}{2 \cdot (55.25)} \qquad P_{xf} = 149 \text{ lb}$$

$$V_{xf} = \frac{S_h \cdot Wt}{2} \qquad V_{xf} = 180 \text{ lb} \quad (1/2 \text{ of load taken by one front bolt})$$

$$P_{xr} = \frac{S_h \cdot Wt \cdot h}{55.25} \qquad P_{xr} = 298 \text{ lb}$$

$$V_{xr} = \frac{S_h \cdot Wt}{2} \qquad V_{xr} = 180 \text{ lb}$$



CALCULATION SHEET

SHEET NO. 5

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Bolt loads for seismic forces in the Y direction (vertical):

$$P_{yf} = \frac{S_v Wt}{2} \quad P_{yf} = 120 \text{ lb} \quad (1/2 \text{ of load taken by one front bolt})$$

$$P_{yr} = \frac{S_v Wt}{2} \quad P_{yr} = 120 \text{ lb}$$

$$V_{yf} = 0 \quad V_{yr} = 0$$

Bolt loads for seismic forces in the Z direction (side to side):

$$P_{zr} = \frac{S_h Wt h}{(10.25) \cdot 2} \quad P_{zr} = 803 \text{ lb} \quad (1/2 \text{ of load taken by single rear bolt})$$

$$V_{zr} = \frac{S_h Wt}{2} \quad V_{zr} = 180 \text{ lb}$$

$$P_{zf} = P_{zr} \quad P_{zf} = 803 \text{ lb} \quad (\text{Let load determined for rear bolt represent the load seen by one of two front bolts})$$

$$V_{zf} = \frac{S_h Wt}{2} \quad V_{zf} = 180 \text{ lb} \quad (1/2 \text{ of load taken by one front bolt})$$

Additional Loads due to dead weight:

$$P_{dlf} = \left(\frac{-Wt}{2 \cdot 2} \right) \quad P_{dlf} = -250 \text{ lb} \quad (1/2 \text{ of load taken by two front bolts})$$

$$P_{dlr} = \left(\frac{-Wt}{3} \right) \quad P_{dlr} = -333 \text{ lb} \quad (1/3 \text{ of load taken by single rear bolt})$$

$$V_{dlf} = 0 \quad V_{dlr} = 0$$



CALCULATION SHEET

SHEET NO. 6

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SRSS combination of loads:

$$P_f = \sqrt{P_{xf}^2 + P_{yf}^2 + P_{zf}^2} + P_{dlf}$$

$$V_f = \sqrt{V_{xf}^2 + V_{yf}^2 + V_{zf}^2} + V_{dlf}$$

$$P_f = 576 \text{ lb/bolt}$$

$$V_f = 255 \text{ lb/bolt}$$

$$P_r = \sqrt{P_{xr}^2 + P_{yr}^2 + P_{zr}^2} + P_{dlr}$$

$$V_r = \sqrt{V_{xr}^2 + V_{yr}^2 + V_{zr}^2} + V_{dlr}$$

$$P_r = 532 \text{ lb/bolt}$$

$$V_r = 255 \text{ lb/bolt}$$



CALCULATION SHEET

SHEET NO. 7

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Determine allowable loads for anchor bolts

The nominal allowable capacities for 1 / 2" ϕ expansion anchor (front) and a 3 / 8" ϕ expansion anchor (rear) are as follows (Reference 1):

$$P_{f \text{ nom}} = 2290 \text{ lb} \quad V_{f \text{ nom}} = 2380 \text{ lb}$$

$$P_{r \text{ nom}} = 1460 \text{ lb} \quad V_{r \text{ nom}} = 1420 \text{ lb}$$

A reduction factor for unknown anchorage will be used since the type of shell anchor is not specified. The anchor bolts were checked for tightness and none were indicated as having its shell protrude above the concrete.

With the front bolt spacing of 12" for the 20.5" wide sections, the closest bolts are 8.5" between center lines.

$$D_f = 0.50 \text{ in} \quad 10 \cdot D_f = 5 \text{ in.} < 8.5" \text{ O.K.}$$

The subject anchor bolts are not adjacent to any free edges.

Concrete strength, $f'_c = 4000 \text{ psi}$ (Reference 7)

The SEWS indicates that switchgear BAT-BKR-2 may contain essential relays (marked as unknown).

The resulting capacity reduction factors are as follows:

For expansion anchor type,	$RT_p = 0.6$	$RT_s = 0.6$
For short embedment lengths,	$RL_p = 1.0$	$RL_s = 1.0$
For closely spaced anchors,	$RS_p = 1.0$	$RS_s = 1.0$
For near edge anchors,	$RE_p = 1.0$	$RE_s = 1.0$
For low concrete strength,	$RF_p = 1.0$	$RF_s = 1.0$
For cracked concrete,	$RC_p = 1.0$	
For essential relay anchors,	$RR_p = 0.75$	$RR_s = 0.75$



CALCULATION SHEET

SHEET NO. 8

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$$P_{fall} = P_{fnom} \cdot RT_p \cdot RL_p \cdot RS_p \cdot RE_p \cdot RF_p \cdot RC_p \cdot RR_p$$

$$V_{fall} = V_{fnom} \cdot RT_s \cdot RL_s \cdot RS_s \cdot RE_s \cdot RF_s \cdot RR_s$$

$$P_{fall} = 1031 \text{ lb} \quad V_{fall} = 1071 \text{ lb}$$

Similarly for the rear anchor bolt,

$$P_{rall} = P_{rnom} \cdot RT_p \cdot RL_p \cdot RS_p \cdot RE_p \cdot RF_p \cdot RC_p \cdot RR_p$$

$$V_{rall} = V_{rnom} \cdot RT_s \cdot RL_s \cdot RS_s \cdot RE_s \cdot RF_s \cdot RR_s$$

$$P_{rall} = 657 \text{ lb} \quad V_{rall} = 639 \text{ lb}$$

Comparing capacity and demand.

For the front 1/2" bolts,

$$\frac{P_f}{P_{fall}} = 0.559 \quad \frac{V_f}{V_{fall}} = 0.24 < 0.3$$

For the rear 3/8" bolt

$$\frac{P_r}{P_{rall}} = 0.81 \quad \frac{V_r}{V_{rall}} = 0.4 > 0.3$$

$$0.7 \cdot \left(\frac{P_r}{P_{rall}} \right) + \frac{V_r}{V_{rall}} = 0.97$$

The single 3/8" bolt at the rear of BAT-BKR-4 would be adequate to anchor the Battery Breaker Switchgear along with the two 1/2" bolts in the front.



CALCULATION SHEET

SHEET NO. 9

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Disconnect Switches

The anchorage for the General Electric Breakmaster Disconnect Switches is evaluated for seismic loadings in DLC calculation 8700-DSC-6550 (Reference 2). Review of this calculation confirmed that GIP criteria were satisfied.

CONCLUSIONS

The anchorage for the subject Battery Breaker Switchgear has been shown to be adequate to withstand the seismic loadings from an SSE event. Review of existing analysis shows that GIP criteria and methods were utilized for the Disconnect Switches in reference 2.

REFERENCES

1. SQUG, Generic Implementation Procedure (GIP) For Seismic Verification of Nuclear Plant Equipment, Revision 2, Corrected, June 28, 1991.
2. Draft Calculation 8700-DSC-6550, Anchorage Evaluation of Disconnect Switch SW-1-8N1 and SW-1-9P1 for SQUG Project, 1/27/95
3. Telecopy from G. S. Ritz to R. W. Cushing dated July 13, 1995, EQE log 52233-I-003.
4. URS/John A. Blume & Associates, Seismic Verification of Nuclear Plant Equipment Anchorage (Revision 1), EPRI NP-5228-SL, June 1991.
5. AISC Manual of Steel Construction, 9th Edition
6. ACI 349-90, Code Requirements for Nuclear Safety Related Concrete Structures.
7. Letter from R.M. Stark to H.A. Van Wassen dated November 19, 1979, regarding Beaver Valley Power Station Unit 1 Concrete Strength Evaluation.
8. Beaver Valley Power Station Drawings
8700-RE-27B
8700-1.26-17A (GE/0673D0500)
8700-1.26-19C (GE/0152C9165)
8700-1.18-129A (GE/0183B9261)



CALCULATION SHEET

SHEET NO. A1

JOB NO. 52233 JOB Beaver Valley A-46 Review BY AS DATE 8/22/95
CALC NO. C-004 SUBJECT GE Switchgear Anchorage Evaluation CHK SM DATE 9-29-95

Attachment A

Screening Evaluation Work Sheet (SEWS)
Packages

(31 pages)

SSEL Line No. 8007
A

Status Y N U

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 1 of 3

Equip. ID No. BAT-BKR-1 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #1 BATTERY CIRCUIT BREAKER

Location: Bldg. SRVB Floor El. 713 Room, Row/Col EMERG SWGR #1

Manufacturer, Model, Etc. (optional but recommended) G080 GENERAL ELECTRIC AKD-5 VTI 1

SEISMIC CAPACITY VS DEMAND

- Elevation where equipment receives seismic input
- Elevation of seismic input below about 40' from grade
- Equipment has fundamental frequency above about 8 Hz
- Capacity based on: Existing Documentation
Bounding Spectrum
1.5 x Bounding Spectrum
GERS
- Demand based on: Ground Response Spectrum
1.5 x Ground Response Spectrum
Conserv. Des. In-Str. Resp. Spec.
Realistic M-Ctr. In-Str. Resp. Spec.

713
 Y N U
 Y N U N/A
 DOC
 BS
 ABS
 GERS
 GRS
 AGS
 CRS
 RRS

Does capacity exceed demand? (Indicate at right (*) and in COMMENTS if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.) Y N U

CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- Equipment is included in earthquake experience equipment class
- 600 V rating or less
- Side-to-side restraint of draw-out circuit breakers is provided
- Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays
- Attached weight (except conduit) less than about 100 lbs per cabinet assembly
- Externally attached items rigidly anchored
- General configuration similar to ANSI C37.20 Standards
- Cutouts in lower half of cabinet side sheathing less than 30% of width of side panel wide and less than 60% of width of side panel high excluding bus transfer compartment
- All doors secured by latch or fastener
- Anchorage adequate (See checklist below for details)
- Relays mounted on equipment evaluated *No relays*
- Have you looked for and found no other adverse concerns?

Y N U N/A * Note 1
 Y N U N/A
 Y N U N/A

 Y N U N/A
 Y N U N/A
 Y N U N/A
 Y N U N/A

Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

SSEL Line No. 8007

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 2 of 3

Equip. ID No. BAT-BKR-1 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #1 BATTERY CIRCUIT BREAKER

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- 1. Equipment is included in generic seismic testing equipment class Y N U N/A
- 2. Meets all Bounding Spectrum caveats Y N U N/A
- 3. Floor-mounted enclosure Y N U N/A
- 4. Manufactured by major vendor (ITE/Brown Boveri, Westinghouse, or GE) Y N U N/A
- 5. Maximum weight per section less than 1600 lbs Y N U N/A
- 6. Base anchorage adequate (See checklist below for details) Y N U N/A
- 7. Relays used for breaker function are not on "Low Ruggedness Relays" list Y N U N/A
- 8. Relay evaluation completed for all relays that are essential to other equipment or cause unacceptable lockout Y N U N/A
- 9. For 2.5 g level GERS, vertical restraint prevents breaker uplift Y N U N/A
- 10. For 2.5 g level GERS, outside corners of end units are reinforced, if needed Y N U N/A
- 11. All adjacent cabinets or sections of multi-bay assemblies bolted together Y N U N/A

Is the intent of all the caveats met for GERS? Y N U N/A

ANCHORAGE

- 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) Y N U N/A
- 2. Type of anchorage covered by GIP Y N U N/A
- 3. Sizes and locations of anchors determined Y N U N/A
- 4. Anchorage installation adequate, e.g., weld quality and length, nut and washers, expansion anchor tightness Y N U N/A
- 5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking Y N U N/A
- 6. For bolted anchorages, gap under base less than 1/4-inch Y N U N/A
- 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors Y N U N/A
- 8. Base has adequate stiffness and effect of prying action on anchors considered Y N U N/A
- 9. Strength of equipment base and load path to CG adequate Y N U N/A
- 10. Embedded steel, grout pad or large concrete pad adequacy evaluated Y N U N/A

Are anchorage requirements met? Y N U

SSEL Line No. 8007

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 3 of 3

Equip. ID No. BAT-BKR-1 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #1 BATTERY CIRCUIT BREAKER

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures (Y) N U N/A
 - 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures No relays
Y N U N/A
 - 3. Attached lines have adequate flexibility Y N U N/A
 - 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U N/A
 - 5. Have you looked for and found no other adverse concerns? (Y) N U N/A
- Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE? Y N U

COMMENTS

Note 1: Cabinet is 1/2" taller than height for equipment class. Additional height is not judged significant. Additional height is sheet metal not internal volume.

Cabinet near block wall. ~~2B-1-15~~ Wall has been evaluated in accordance with IEB 80-11. Refer to attached.

Evaluated by: *[Signature]*
[Signature]

Date: 1/30/95
1-30-95

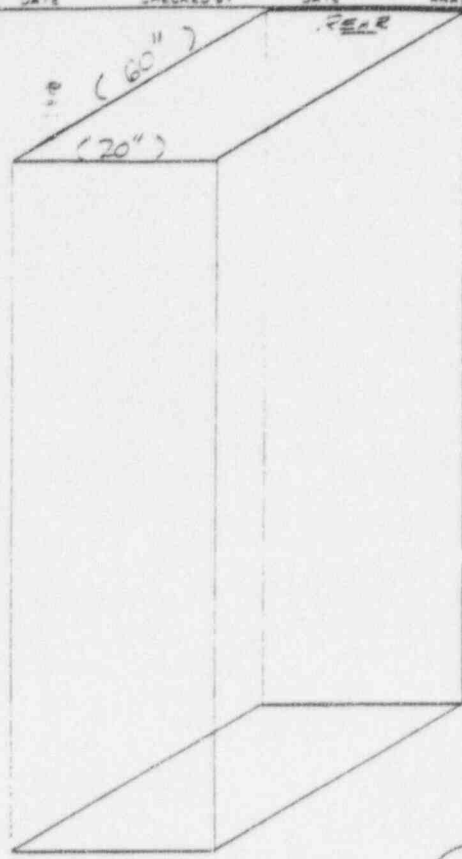
THE FOLLOWING ARE NEAR BLOCK WALLS:

EIN	DISTANCE FROM WALL
SSW-VITBUS-2	BEYOND PROJECTION OF THE WALL
INV-VITBUS-2	84"
DC-SWBD-2	BEYOND PROJECTION OF THE WALL
BAT-BKR-2	60"
BAT-CHG-2	BEYOND PROJECTION OF THE WALL

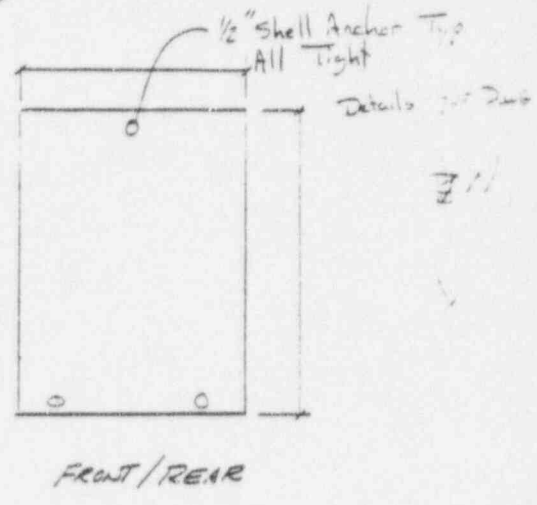
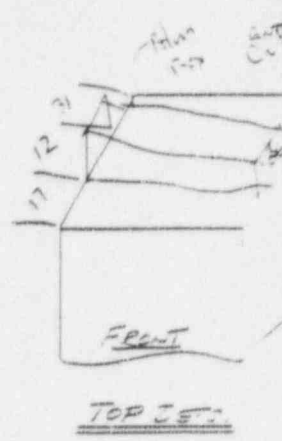
PROJECTION OF THE WALL IS EQUAL TO ITS HEIGHT. (90")

THE BLOCK WALLS ARE IDENTIFIED AS SB-1-11, SB-1-12, SB-1-13.
THE WALLS HAVE BEEN EVALUATED AND FOUND SATISFACTORY IN
ACCORDANCE WITH THE IEB 80-11 REVIEW.

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EN: GBT-BKS-1...
LINE No.: _____
MARE MODEL: _____
INTERNAL: _____



BASE SETS

SSEL Line No. 8008
A

Status Y N U

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 1 of 3

Equip. ID No. BAT-BKR-2 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #2 BATTERY CIRCUIT BREAKER

Location: Bldg. SRVB Floor E1. 713 Room, Row/Col EMERG SWGR #2

Manufacturer, Model, Etc. (optional but recommended) GOBO GENERAL ELECTRIC AKD-5, VTI 1

SEISMIC CAPACITY VS DEMAND

- 1. Elevation where equipment receives seismic input
- 2. Elevation of seismic input below about 40' from grade
- 3. Equipment has fundamental frequency above about 8 Hz
- 4. Capacity based on: Existing Documentation
Bounding Spectrum
1.5 x Bounding Spectrum
GERS
- 5. Demand based on: Ground Response Spectrum
1.5 x Ground Response Spectrum
Conserv. Des. In-Str. Resp. Spec.
Realistic M-Ctr. In-Str. Resp. Spec.

713

Y N U
Y N U N/A
DOC
BS
ABS
GERS
GRS
AGS
CBS
RRS

Does capacity exceed demand? (Indicate at right (*) and in COMMENTS if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.) Y N U

CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- 1. Equipment is included in earthquake experience equipment class
- 2. 600 V rating or less
- 3. Side-to-side restraint of draw-out circuit breakers is provided
- 4. Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays
- 5. Attached weight (except conduit) less than about 100 lbs per cabinet assembly
- 6. Externally attached items rigidly anchored
- 7. General configuration similar to ANSI C37.20 Standards
- 8. Cutouts in lower half of cabinet side sheathing less than 30% of width of side panel wide and less than 60% of width of side panel high excluding bus transfer compartment No cutouts
- 9. All doors secured by latch or fastener
- 10. Anchorage adequate (See checklist below for details)
- 11. Relays mounted on equipment evaluated
- 12. Have you looked for and found no other adverse concerns?

Y N U N/A * 3
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A
Y N U N/A

Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

SSEL Line No. 8008

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 2 of 3

Equip. ID No. BAT-BKR-2 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #2 BATTERY CIRCUIT BREAKER

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- 1. Equipment is included in generic seismic testing equipment class Y N U N/A
- 2. Meets all Bounding Spectrum caveats Y N U N/A
- 3. Floor-mounted enclosure Y N U N/A
- 4. Manufactured by major vendor (ITE/Brown Boveri, Westinghouse, or GE) Y N U N/A
- 5. Maximum weight per section less than 1600 lbs Y N U N/A
- 6. Base anchorage adequate (See checklist below for details) Y N U N/A
- 7. Relays used for breaker function are not on "Low Ruggedness Relays" list Y N U N/A
- 8. Relay evaluation completed for all relays that are essential to other equipment or cause unacceptable lockout Y N U N/A
- 9. For 2.5 g level GERS, vertical restraint prevents breaker uplift Y N U N/A
- 10. For 2.5 g level GERS, outside corners of end units are reinforced, if needed Y N U N/A
- 11. All adjacent cabinets or sections of multi-bay assemblies bolted together Y N U N/A

Is the intent of all the caveats met for GERS? Y N U N/A

ANCHORAGE

- 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) Y N U N/A
- 2. Type of anchorage covered by GIP Y N U N/A
- 3. Sizes and locations of anchors determined Y N U N/A
- 4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness Y N U N/A
- 5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking Y N U N/A
- 6. For bolted anchorages, gap under base less than 1/4-inch Y N U N/A
- 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors Y N U N/A
- 8. Base has adequate stiffness and effect of prying action on anchors considered Y N U N/A
- 9. Strength of equipment base and load path to CG adequate Y N U N/A
- 10. Embedded steel, grout pad or large concrete pad adequacy evaluated Y N U N/A

Are anchorage requirements met? Y N U

Equip. ID No. BAT-BKR-2 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #2 BATTERY CIRCUIT BREAKER

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures (Y) N U N/A
- 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures (Y) N U N/A
- 3. Attached lines have adequate flexibility (Y) N U N/A #1
- 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U N/A
- 5. Have you looked for and found no other adverse concerns? (Y) N U N/A

Is equipment free of interaction effects? (Y) N ~~(U)~~ *[Signature]*

IS EQUIPMENT SEISMICALLY ADEQUATE? Y N (U)

COMMENTS

- *₁ - RWID ATTACHED CONDUITS IN THE TOP (6) \approx 3' TO FIRST SUPPORT (3) 3 RELATIVELY LOW SPANS.
 2($1\frac{1}{2}$ " ϕ), 2($\frac{3}{4}$ " ϕ), 2(2" ϕ)
 (~1" ϕ) Sufficient slack in cables to permit movement.
- *₂ ACCESS CASE IN FRONT NOT EASILY ACCESSIBLE.
- *₃ Cabinet exceeds the height for the equipment class.
 (91 $\frac{1}{2}$ " vs 90") Additional height is sheet metal only and judged acceptable.

Evaluated by: GTW *[Signature]*
RP *[Signature]*

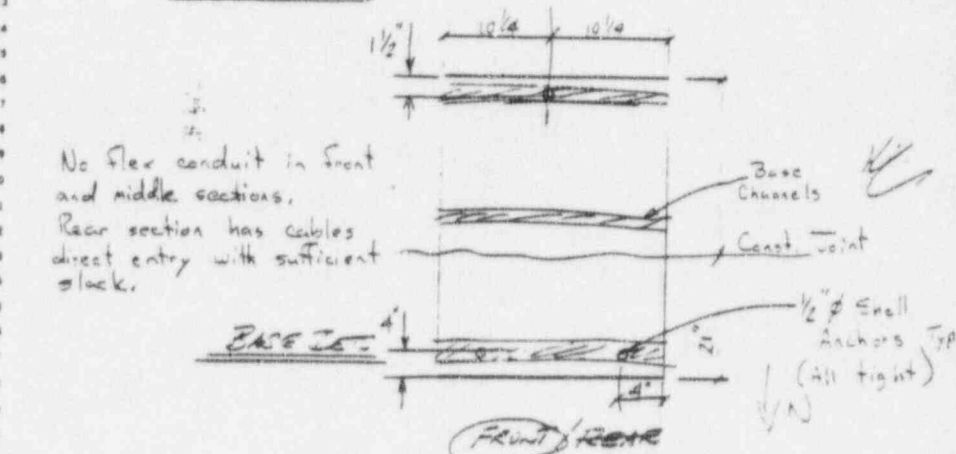
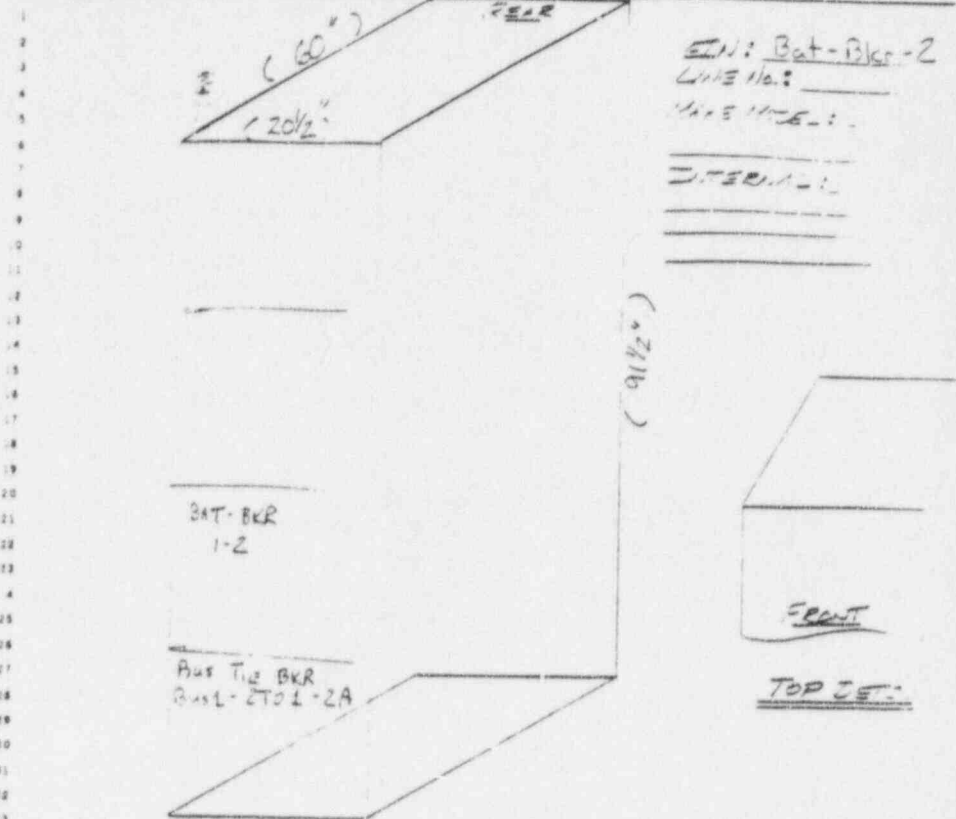
Date: 1/11/75
1/11/95

THE FOLLOWING ARE NEAR BLOCK WALLS:

FIN		DISTANCE FROM WALL
SC-1-1	MS-2	BEYOND PROJECTION OF THE WALL
1-1-1	MS-2	24"
DC-1-1	-3	BEYOND PROJECTION OF THE WALL
BAT-1-1	-3	60"
BAT-1-2	-2	BEYOND PROJECTION OF THE WALL

PROJECTION OF THE WALL IS EQUAL TO ITS HEIGHT. (90")

THE BLOCK WALLS ARE IDENTIFIED AS SB-1-6, SB-1-7, SB-1-8.
THE WALLS HAVE BEEN EVALUATED AND FOUND SATISFACTORY IN
ACCORDANCE WITH THE IEP 90-11 REVIEW.



No flex conduit in front and middle sections.
 Rear section has cables direct entry with sufficient slack.

Other anchor bolts are not visible with breaker racked in.
 Anchor bolts checked when breaker removed.

SSEL Line No. 8009
A

Status Y N U

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 1 of 3

Equip. ID No. BAT-BKR-3 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER

Location: Bldg. SRVB Floor E1. 713 Room, Row/Col EMERG SWGR #1

Manufacturer, Model, Etc. (optional but recommended) G080 GENERAL ELECTRIC AKD-5 VTI 1

SEISMIC CAPACITY VS DEMAND

1. Elevation where equipment receives seismic input
2. Elevation of seismic input below about 40' from grade
3. Equipment has fundamental frequency above about 8 Hz
4. Capacity based on: Existing Documentation
Bounding Spectrum
1.5 x Bounding Spectrum
GERS
5. Demand based on: Ground Response Spectrum
1.5 x Ground Response Spectrum
Conserv. Des. In-Str. Resp. Spec.
Realistic M-Ctr. In-Str. Resp. Spec.

713
Y N U
Y N U N/A
DOC
BS
ABS
GERS
GRS
AGS
CRS
RRS

Does capacity exceed demand? (Indicate at right (*) and in COMMENTS if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.) (Y) N U

CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

1. Equipment is included in earthquake experience equipment class
2. 600 V rating or less
3. Side-to-side restraint of draw-out circuit breakers is provided
4. Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays *No essential relays*
5. Attached weight (except conduit) less than about 100 lbs per cabinet assembly *None*
6. Externally attached items rigidly anchored
7. General configuration similar to ANSI C37.20 Standards
8. Cutouts in lower half of cabinet side sheathing less than 30% of width of side panel wide and less than 60% of width of side panel high excluding bus transfer compartment
9. All doors secured by latch or fastener
10. Anchorage adequate (See checklist below for details)
11. Relays mounted on equipment evaluated *No relays*
12. Have you looked for and found no other adverse concerns?

(Y) N U N/A *
(Y) N U N/A
(Y) N U N/A
Y N U N/A
(Y) N U N/A
(Y) N U N/A
(Y) N U N/A
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(Y) N U N/A
(Y) N U N/A
(Y) N U N/A
(Y) N U N/A

Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

SSEL Line No. 8009

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 2 of 3

Equip. ID No. BAT-BKR-3 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- | | | | | |
|--|---|---|---|-----------|
| 1. Equipment is included in generic seismic testing equipment class | Y | N | U | N/A |
| 2. Meets all Bounding Spectrum caveats | Y | N | U | N/A |
| 3. Floor-mounted enclosure | Y | N | U | N/A |
| 4. Manufactured by major vendor (ITE/Brown Boveri, Westinghouse, or GE) | Y | N | U | N/A |
| 5. Maximum weight per section less than 1600 lbs | Y | N | U | N/A |
| 6. Base anchorage adequate (See checklist below for details) | Y | N | U | N/A |
| 7. Relays used for breaker function are not on "Low Ruggedness Relays" list | Y | N | U | N/A |
| 8. Relay evaluation completed for all relays that are essential to other equipment or cause unacceptable lockout | Y | N | U | N/A |
| 9. For 2.5 g level GERS, vertical restraint prevents breaker uplift | Y | N | U | N/A |
| 10. For 2.5 g level GERS, outside corners of end units are reinforced, if needed | Y | N | U | N/A |
| 11. <u>All</u> adjacent cabinets or sections of multi-bay assemblies bolted together | Y | N | U | N/A |
| Is the intent of all the caveats met for GERS? | | | | Y N U N/A |

ANCHORAGE

- | | | | | |
|--|---|---|---|-------|
| 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) | Y | N | U | N/A |
| 2. Type of anchorage covered by GIP | Y | N | U | N/A |
| 3. Sizes and locations of anchors determined | Y | N | U | N/A |
| 4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness | Y | N | U | N/A |
| 5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking | Y | N | U | N/A |
| 6. For bolted anchorages, gap under base less than 1/4-inch | Y | N | U | N/A |
| 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors | Y | N | U | N/A |
| 8. Base has adequate stiffness and effect of prying action on anchors considered | Y | N | U | N/A |
| 9. Strength of equipment base and load path to CG adequate | Y | N | U | N/A |
| 10. Embedded steel, grout pad or large concrete pad adequacy evaluated | Y | N | U | N/A |
| Are anchorage requirements met? | | | | Y N U |

SSEL Line No. 8009

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 3 of 3

Equip. ID No. BAT-BKR-3 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures (Y) N U N/A
 - 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Y N U N/A ^{No relays}
 - 3. Attached lines have adequate flexibility (Y) N U N/A
 - 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U N/A
 - 5. Have you looked for and found no other adverse concerns? (Y) N U N/A
- Is equipment free of interaction effects? (Y) N U

IS EQUIPMENT SEISMICALLY ADEQUATE?

Y N U

COMMENTS

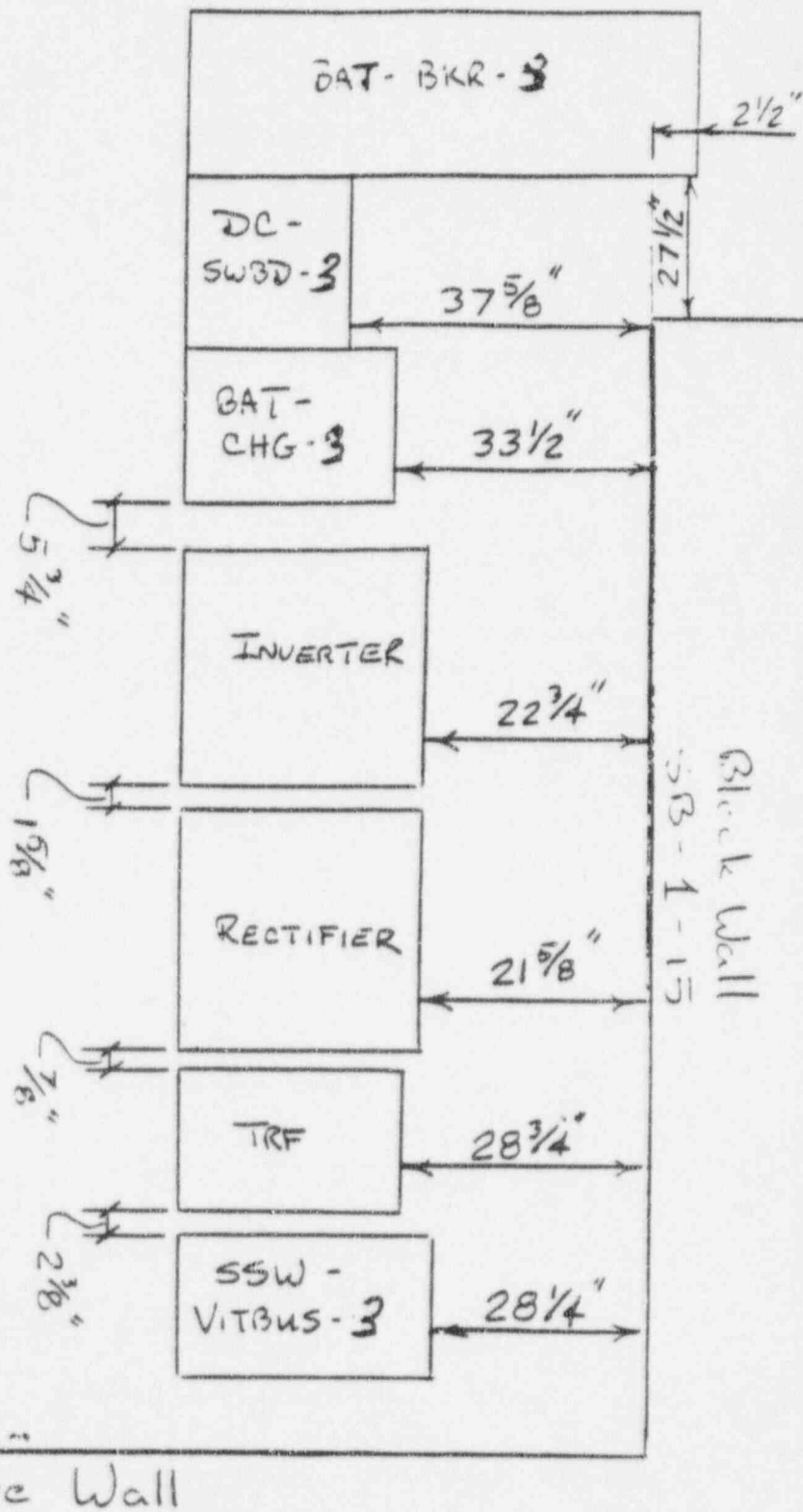
* Cabinet height exceeds the height for the equipment class. (By 1/2") The difference in height is minor. The difference is sheet metal.

Cabinet is near block wall SB-1-15. Wall has been evaluated for the requirements of IEB 80-11.

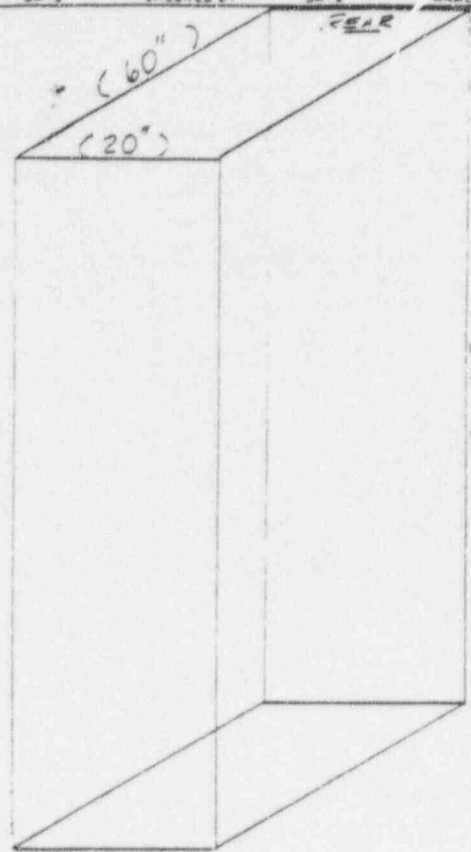
Evaluated by: *[Signature]*
[Signature]

Date: 1/30/95
1-30-95

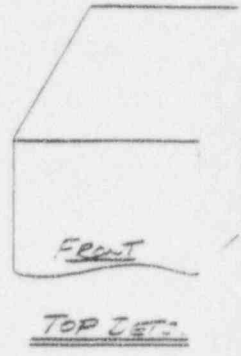
JOB TITLE	FILE NO	
LOCATION	OFF NO	
SUBJECT	CO/JO	
DEPARTMENT	COMPILED BY	DATE 2/13/95
DIVISION	CHECKED BY	DATE
	REVISED BY	DATE



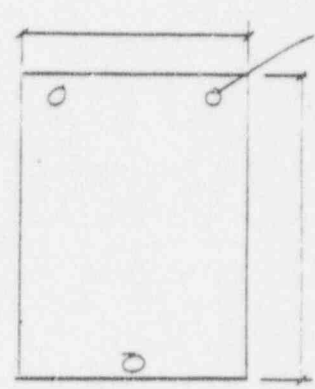
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EIN: BAT-3ER-3
LINE No.:
MAKE MODEL:
SERIAL:



Details per
Dwg



BASE DET.

~~FRONT~~ (REAR)

SSEL Line No. 8010

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 2 of 3

Equip. ID No. BAT-BKR-4 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #4 BATTERY CIRCUIT BREAKER

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- | | | | | |
|--|-----|---|---|-----|
| 1. Equipment is included in generic seismic testing equipment class | (Y) | N | U | N/A |
| 2. Meets all Bounding Spectrum caveats | (Y) | N | U | N/A |
| 3. Floor-mounted enclosure | (Y) | N | U | N/A |
| 4. Manufactured by major vendor (ITE/Brown Boveri, Westinghouse, or GE) | (Y) | N | U | N/A |
| 5. Maximum weight per section less than 1600 lbs | (Y) | N | U | N/A |
| 6. Base anchorage adequate (See checklist below for details) | (Y) | N | U | N/A |
| 7. Relays used for breaker function are not on "Low Ruggedness Relays" list | (Y) | N | U | N/A |
| 8. Relay evaluation completed for all relays that are essential to other equipment or cause unacceptable lockout | (Y) | N | U | N/A |
| 9. For 2.5 g level GERS, vertical restraint prevents breaker uplift | (Y) | N | U | N/A |
| 10. For 2.5 g level GERS, outside corners of end units are reinforced, if needed | (Y) | N | U | N/A |
| 11. All adjacent cabinets or sections of multi-bay assemblies bolted together <i>Bolted Together Only in front</i> | (Y) | N | U | N/A |

Is the intent of all the caveats met for GERS? Y N U N/A

ANCHORAGE

- | | | | | |
|---|-----|---|---|-----|
| 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) | (Y) | N | U | N/A |
| 2. Type of anchorage covered by GIP | (Y) | N | U | N/A |
| 3. Sizes and locations of anchors determined | (Y) | N | U | N/A |
| 4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness | (Y) | N | U | N/A |
| 5. Factors affecting anchorage capacity, or margin of safety considered: <u>embedment length</u> ; anchor spacing, free-edge distance, <u>concrete strength/condition</u> , and concrete cracking | (Y) | N | U | N/A |
| 6. For bolted anchorages, gap under base less than 1/4-inch <i>at bolt location</i> | (Y) | N | U | N/A |
| 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors | (Y) | N | U | N/A |
| 8. Base has adequate stiffness and effect of prying action on anchors considered | (Y) | N | U | N/A |
| 9. Strength of equipment base and load path to CG adequate | (Y) | N | U | N/A |
| 10. Embedded steel, grout pad or large concrete pad adequacy evaluated | (Y) | N | U | N/A |

Are anchorage requirements met? Y N U

SSEL Line No. 8010

SCREENING EVALUATION WORK SHEET (SEWS)

Sheet 3 of 3

Equip. ID No. BAT-BKR-4 Equip. Class 02 - Low Voltage Switchgear

Equipment Description 39/MAIN DC BUS #4 BATTERY CIRCUIT BREAKER

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures NO SOFT TARGETS Y N U (N/A)
 - 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Y N U (N/A)
 - 3. Attached lines have adequate flexibility (Y) N U (N/A)
 - 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U (N/A)
 - 5. Have you looked for and found no other adverse concerns? (Y) N U (N/A) Z
- Is equipment free of interaction effects? Y N U

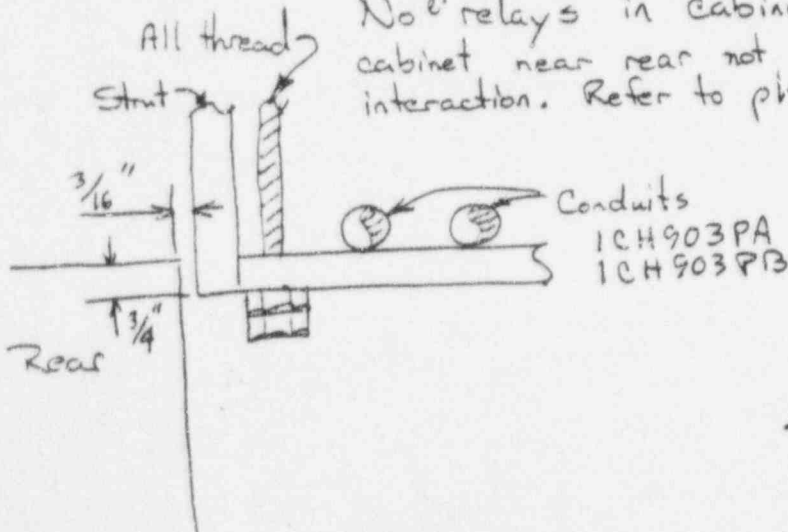
IS EQUIPMENT SEISMICALLY ADEQUATE? Y N U

COMMENTS

1) TOP mounted conduit support is rigidly connected

2) ADJACENT OVERHEAD CONDUIT SUPPORT may interact with cabinet. SEE SKETCH

No ⁵⁰⁰ relays in cabinet. Impact at top of cabinet near rear not considered a significant interaction. Refer to photo.



* Cabinet height exceeds that for the equipment class by 1/2".

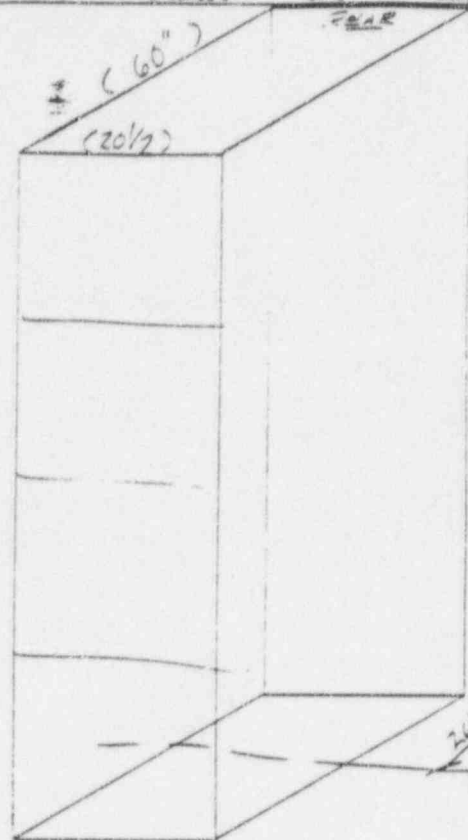
Rear of panel 4'-2" from black wall SB-1-9. Black wall reviewed and analyzed by IB 80-11. CK

Evaluated by: GUM J.T. Westbrook
GUM Cam Marin

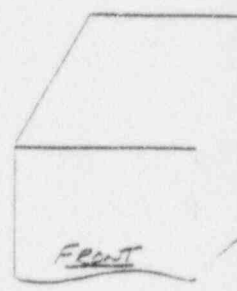
Date: 1/13/95
1/13/95

COMPILED BY _____ DATE _____ CHECKED BY _____ DATE _____ ANALYSIS NO _____

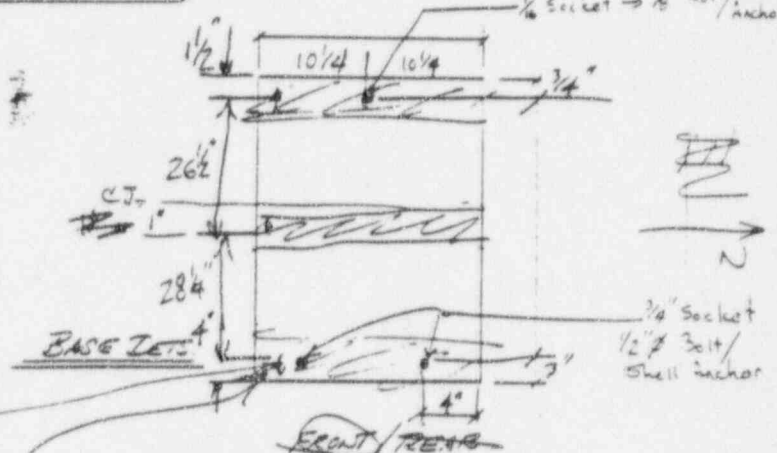
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ETW: BAT-BKR-4
 LINE No.: _____
 MAKE MODEL: _____
 SERIAL: _____

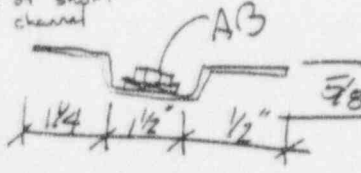


TOP SET:



FRONT/REAR
 Supported on base channels
 Refer to DWG

Arrow indicates
 direction of short
 side of channel



Base Channel Typ.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. SW-1-8N1 Equip. Class 03 - Medium Voltage Switchgear
 Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH
 Location: Bldg. SRVB Floor El. 713 Room, Row/Col AE SWGR
 Manufacturer, Model, Etc. (optional) G080 GENERAL ELECTRIC SE-100S, VTI 1.18-129

SEISMIC CAPACITY VS DEMAND

- Elevation where equipment receives seismic input
- Elevation of seismic input below about 40' from grade
- Equipment has fundamental frequency above about 8 Hz
- Capacity based on: Existing Documentation
Bounding Spectrum
GERS
- Demand based on: Ground Response Spectrum
1.5 x Bounding Spectrum
Conserv. Des. In-Str. Resp. Spec.
Realistic M-Ctr. In-Str. Resp. Spec.

713
 (Y) N U
 Y N U (N/A)
 DOC
 BS
 GERS
 GRS
 (ARS)
 (CRS)
 RRS

Does capacity exceed demand

(Y) N U

CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- Equipment is included in earthquake experience equipment class
- 2.4 KV to 4.16 KV rating
- Internally mounted potential and/or control power transformers are restrained to prevent damage to or disconnection of contacts
- Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays
- Attached weight (excluding conduit) less than about 100 lbs per cabinet bay
- Externally attached items rigidly anchored
- General configuration similar to ANSI C37.20 Standards
- Cutouts in lower half of cabinet sheathing less than 30% of width of side panel wide and less than 60% of width of side panel high excluding bus transfer compartment
- All doors secured by latch or fastener
- Anchorage adequate (See checklist below for details)
- Relays mounted on equipment evaluated
- Have you looked for and found no other adverse concerns?

(Y) N U N/A
 (Y) N U N/A
 Y N U (N/A)
 No cabinets close enough to impact
 Y N U (N/A)
 (Y) N U N/A
 (Y) N U N/A
 (Y) N U N/A
 Y N U (N/A)
 (Y) N U N/A

Is the intent of all the caveats met for Bounding Spectrum?

Y N U N/A

Equip. ID No. SW-1-8N1 Equip. Class 03 - Medium Voltage Switchgear

Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- | | | | | |
|---|---|---|---|-----|
| 1. Equipment is included in generic seismic testing equipment class | Y | N | U | N/A |
| 2. Meets all Bounding Spectrum caveats | Y | N | U | N/A |
| 3. Floor-mounted enclosure | Y | N | U | N/A |
| 4. The switchgear is not a specially-designed type | Y | N | U | N/A |
| 5. Circuit breakers are truck-mounted type, not jack-up or vertical-lift | Y | N | U | N/A |
| 6. Average weight per vertical section less than 5000 lbs | Y | N | U | N/A |
| 7. Base anchorage adequate (See checklist below for details) | Y | N | U | N/A |
| 8. Relays used for breaker function are not on "Low Ruggedness Relays" list | Y | N | U | N/A |
| 9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout | Y | N | U | N/A |
| 10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift | Y | N | U | N/A |
| 11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally | Y | N | U | N/A |
| 12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay | Y | N | U | N/A |
| 13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used | Y | N | U | N/A |

Is the intent of all the caveats met for GERS?

Y N U N/A

ANCHORAGE

- | | | | | |
|--|---|---|---|-----------|
| 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) | ⓪ | N | U | N/A |
| 2. Type of anchorage covered by GIP | ⓪ | N | U | N/A * |
| 3. Sizes and locations of anchors determined | ⓪ | N | U | N/A |
| 4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.) | | | | ⓪ N U N/A |
| 5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking | ⓪ | N | U | N/A |
| 6. For bolted anchorages, gap under base less than 1/4-inch | ⓪ | N | U | N/A |

Equip. ID No. SW-1-8N1 Equip. Class 03 - Medium Voltage Switchgear

Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH

ANCHORAGE (Cont'd)

- 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors (Y) N U N/A
- 8. Base has adequate stiffness and effect of prying action on anchors considered (Y) N U N/A
- 9. Strength of equipment base and load path to CG adequate (Y) N U N/A
- 10. Embedded steel, grout pad or large concrete pad adequacy evaluated Y N U N/A

Are anchorage requirements met? (Y) N U

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures (Y) N U N/A
- 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures No relays
- 3. Attached lines have adequate flexibility (Y) N U N/A
- 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U N/A
- 5. Have you looked for and found no other adverse concerns? (Y) N U N/A

Is equipment free of interaction effects? (Y) N U

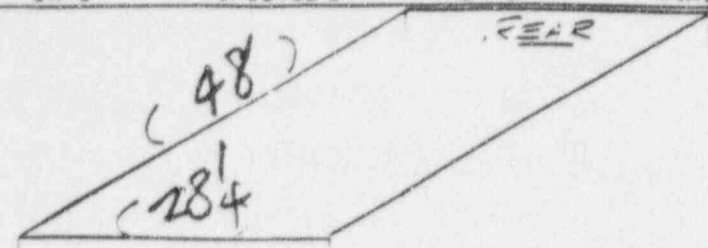
IS EQUIPMENT SEISMICALLY ADEQUATE? (Y) N U

COMMENTS

Evaluated by: GTW [Signature]
W/H W. Hwang

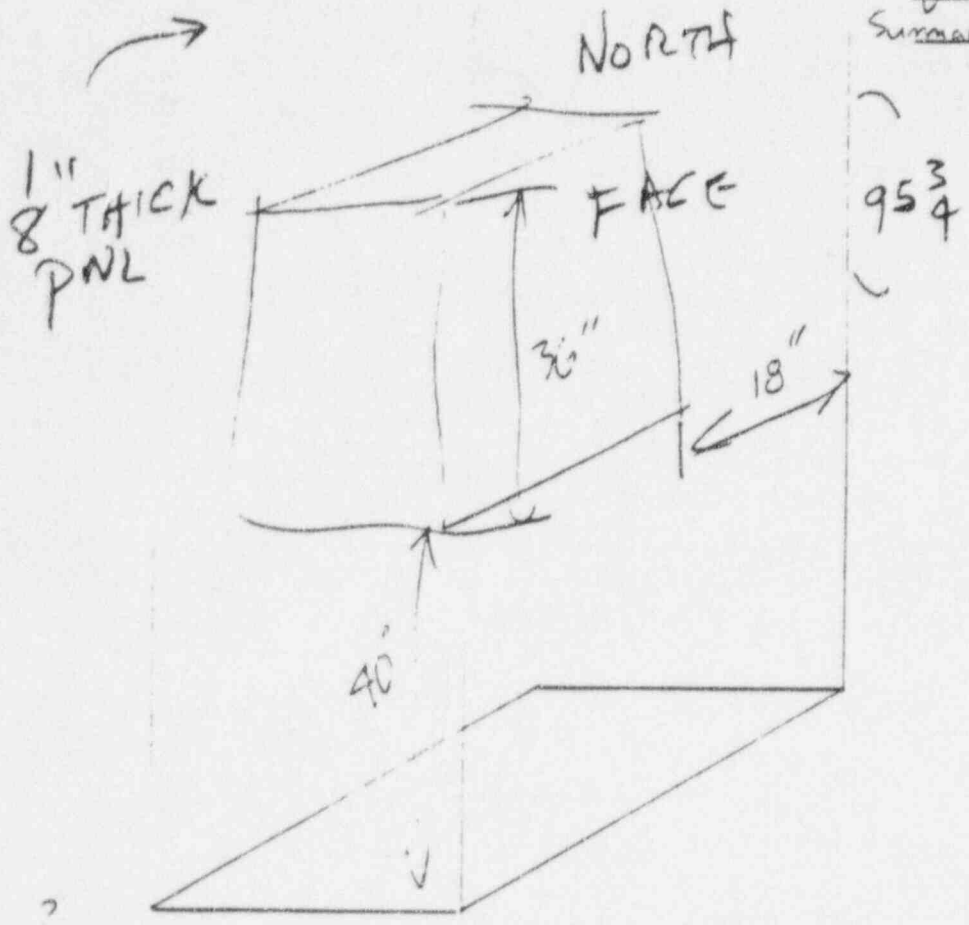
Date: 4/26/93
4/28/93

COMPILED BY _____ DATE _____ CHECKED BY _____ DATE _____ ANALYSIS NO _____



EIN: _____
 LINE No.: _____
 MAKE/TYPE: _____
GE

INTERNAL: _____
 Breakmaster SWGR
 Reg 297-86423
 Summary 0258A1958

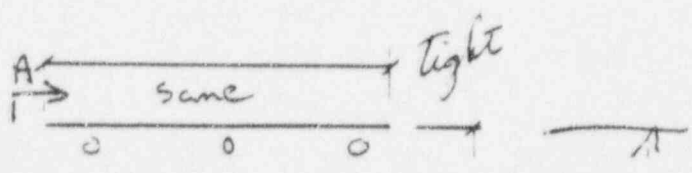


1" THICK
8" PNL



TOP DET.

1199?

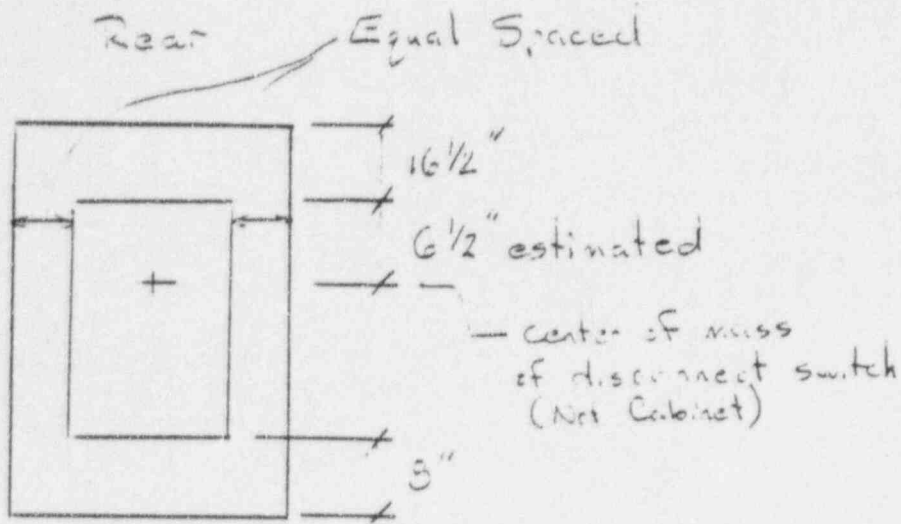




A25

Disconnect Switch

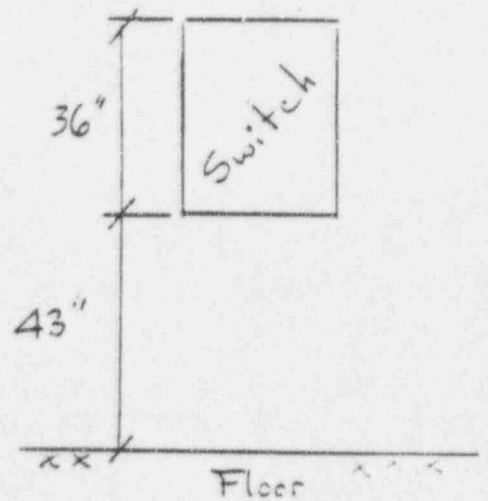
SW-1-8N1
SW-1-9P1



Front

Plan View

Except for cables (top entry)
the rest of the cabinet is empty.



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SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. SW-1-9P1 Equip. Class 03 - Medium Voltage Switchgear

Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH

Location: Bldg. SRVB Floor El. 713 Room, Row/Col EMERG SWGR #2

Manufacturer, Model, Etc. (optional) GENERAL ELECTRIC

SEISMIC CAPACITY VS DEMAND

- 1. Elevation where equipment receives seismic input 713
- 2. Elevation of seismic input below about 40' from grade (Y) N U
- 3. Equipment has fundamental frequency above about 8 Hz Y N U (N/A)
- 4. Capacity based on: Existing Documentation DOC
- Bounding Spectrum ~~BS~~ *GRS*
- GERS GERS
- 5. Demand based on: Ground Response Spectrum GRS
- 1.5 x Bounding Spectrum (ABS)
- Conserv. Des. In-Str. Resp. Spec. (CRS)
- Realistic M-Ctr. In-Str. Resp. Spec. RRS

Does capacity exceed demand (Y) N U

CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- 1. Equipment is included in earthquake experience equipment class (Y) N U N/A
- 2. 2.4 KV to 4.16 KV rating (Y) N U N/A
- 3. Internally mounted potential and/or control power transformers are restrained to prevent damage to or disconnection of contacts Y N U (N/A)
- 4. Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays (Y) N U N/A
- No Relays*
- 5. Attached weight (excluding conduit) less than about 100 lbs per cabinet bay (Y) N U N/A
- 6. Externally attached items rigidly anchored (Y) N U N/A
- 7. General configuration similar to ANSI C37.20 Standards (Y) N U N/A
- 8. Cutouts in lower half of cabinet sheathing less than 30% of width of side panel wide and less than 60% of width of side panel high excluding bus transfer compartment (Y) N U N/A
- 9. All doors secured by latch or fastener (Y) N U N/A
- 10. Anchorage adequate (See checklist below for details) Y N (U) N/A
- 11. Relays mounted on equipment evaluated Y N (U) N/A
- 12. Have you looked for and found no other adverse concerns? (Y) N U N/A

Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

Equip. ID No. SW-1-9P1 Equip. Class 03 - Medium Voltage Switchgear

Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH

CAVEATS - GERS (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the COMMENTS section below)

- | | | | | |
|---|---|---|---|-----|
| 1. Equipment is included in generic seismic testing equipment class | Y | N | U | N/A |
| 2. Meets all Bounding Spectrum caveats | Y | N | U | N/A |
| 3. Floor-mounted enclosure | Y | N | U | N/A |
| 4. The switchgear is not a specially-designed type | Y | N | U | N/A |
| 5. Circuit breakers are truck-mounted type, not jack-up or vertical-lift | Y | N | U | N/A |
| 6. Average weight per vertical section less than 5000 lbs | Y | N | U | N/A |
| 7. Base anchorage adequate (See checklist below for details) | Y | N | U | N/A |
| 8. Relays used for breaker function are not on "Low Ruggedness Relays" list | Y | N | U | N/A |
| 9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout | Y | N | U | N/A |
| 10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift | Y | N | U | N/A |
| 11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally | Y | N | U | N/A |
| 12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay | Y | N | U | N/A |
| 13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used | Y | N | U | N/A |

Is the intent of all the caveats met for GERS? Y N U N/A

ANCHORAGE

- | | | | | | |
|--|-------------------------------------|-------------------------------------|---|-----|-----|
| 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) | <input checked="" type="checkbox"/> | N | U | N/A | |
| 2. Type of anchorage covered by GIP | <input checked="" type="checkbox"/> | N | U | N/A | |
| 3. Sizes and locations of anchors determined | <input checked="" type="checkbox"/> | N | U | N/A | |
| 4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.) | | <input checked="" type="checkbox"/> | N | U | N/A |
| 5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking | <input checked="" type="checkbox"/> | N | U | N/A | |
| 6. For bolted anchorages, gap under base less than 1/4-inch | <input checked="" type="checkbox"/> | N | U | N/A | |

Equip. ID No. SW-1-9P1 Equip. Class 03 - Medium Voltage Switchgear

Equipment Description 36/480 VOLT AC TRFM DISCONNECT SWITCH

ANCHORAGE (Cont'd)

- 7. Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors (Y) N U N/A
 - 8. Base has adequate stiffness and effect of prying action on anchors considered (Y) N U N/A
 - 9. Strength of equipment base and load path to CG adequate (Y) N U N/A
 - 10. Embedded steel, grout pad or large concrete pad adequacy evaluated (Y) N U N/A¹
- Are anchorage requirements met? (Y) N U

INTERACTION EFFECTS

- 1. Soft targets free from impact by nearby equipment or structures (Y) N U N/A
 - 2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures (Y) N U N/A --
 - 3. Attached lines have adequate flexibility (Y) N U N/A
 - 4. Overhead equipment or distribution systems are not likely to collapse (Y) N U N/A
 - 5. Have you looked for and found no other adverse concerns? (Y) N U N/A
- Is equipment free of interaction effects? (Y) N U

IS EQUIPMENT SEISMICALLY ADEQUATE?

Y N U

COMMENTS

Work Completed *[initials]*

* Rear of Cabinet ~~to be attached~~ to adjacent panel 4KVS-IDF
Front is attached four places.

1 Refer to calc for SW-1-EN1.

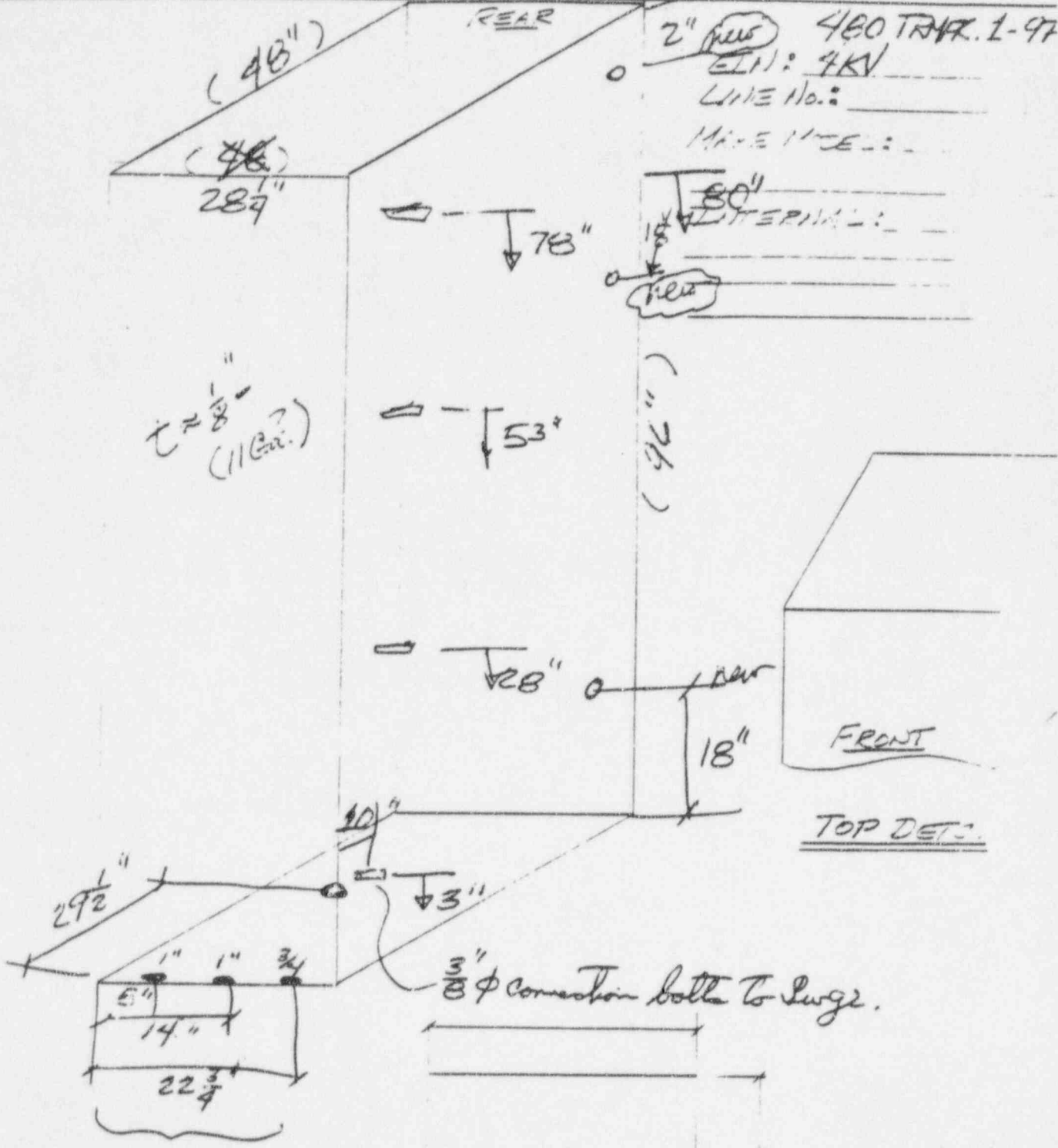
Evaluated by: *[Signature: J. Westbrooke]*
[Signature: W. Huang]
[Signature: Glenn S. ...]

Date: 5/3/93
5/3/93
5-3-93



COMPILED BY _____ DATE _____ CHECKED BY _____ DATE _____ ANALYSIS NO. _____

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01 36
BLDG SERVICE

SW-1-9P1

CKTBRK
ELEV 713 BLDG AREA N/A

N/A

A30

EQUIPMENT FUNCTIONAL DESCRIPTION: TRANS 1-9P1 LOAD BREAK
DISCONNECT

MANUFACTURER G080 GENERAL ELECTRIC COMPANY

MODEL NO SE-1005

REQUEST *****TECH SPEC*****

DATE DATE TIME NUMBER
930503 N/A N/A N/A

SERIAL NO N/A

NO. Y/N: Y

CTS - 870613

OPEN ITEM ***** ORIGINATING SUPERVISOR ***

EMP.# NAME
5754 G S RITZ

INITIAL PROBLEM/FAILURE DESCRIPTION: HOT - WORK IMMEDIATELY. CENTER CONCRETE ANCHOR IN REAR OF CABINET IS LOOSE IN HOLE; REMOVE ANCHOR AND REPLACE WITH 1/2" HILTI, MIN. 2.5" EMBEDMENT, ENGR TO INSPECT FOR REPLACEMENT OF OTHER 3 ANCHORS. INSTALL 3/8" BOLTS THRU REAR, SIDE CHANNEL ALSO.

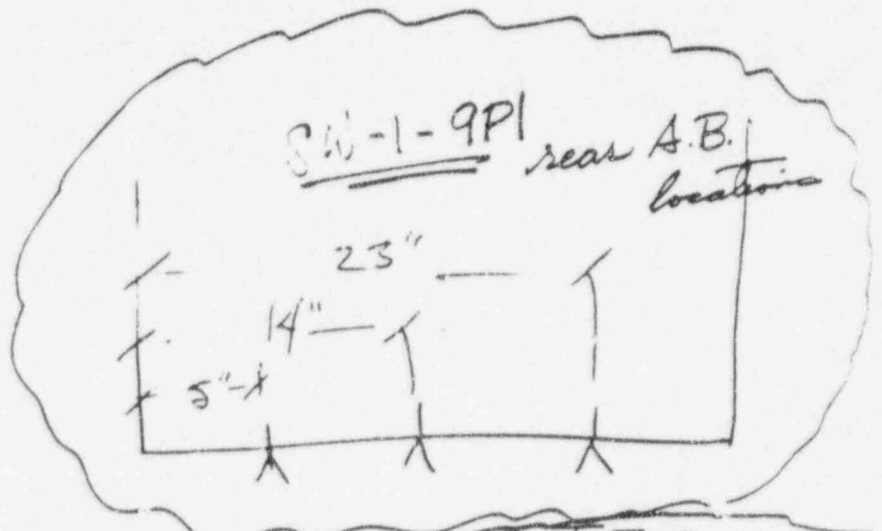
3

RECORD WAS WRITTEN
"PF1" - HELP

SysAv1

"PF5" - CONTINUE PROCESSING
Appl

YOU ARE IN CHANGE MODE
"PF3" - RETURN



L-TE

Gould Type 2032-T4

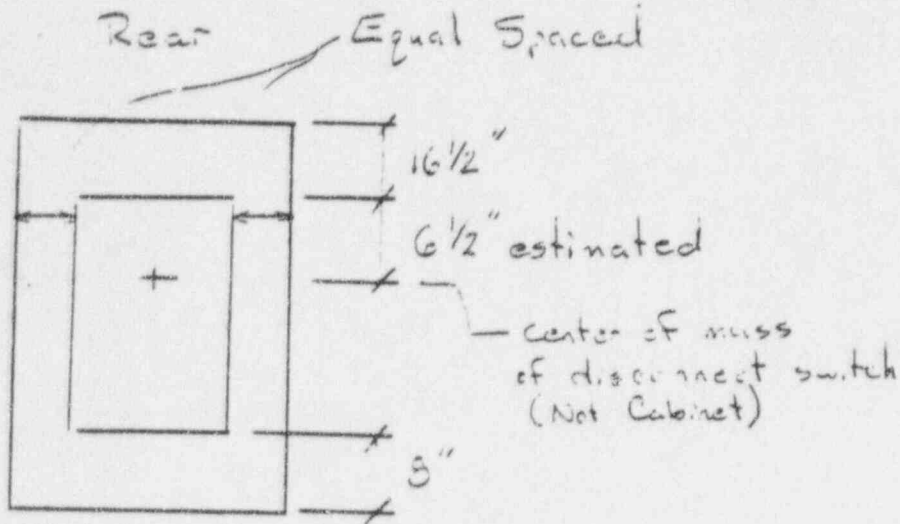
MCC-1-E4 Cubicle "K" Transformer
has 2 bolts top only



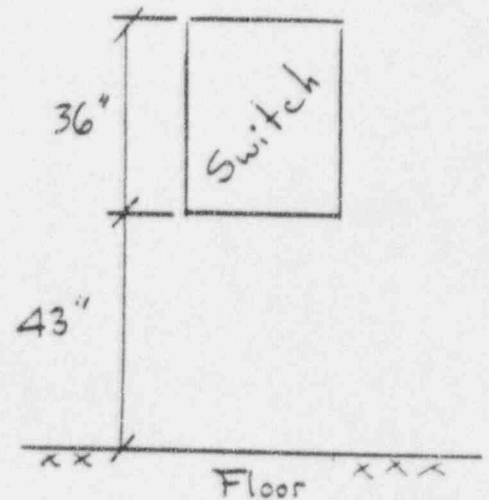
1
2 Disconnect Switch

SW-1-8N1
SW-1-9P1

A31



22
23 Front
24
25
26 Plan View
27



ENCLOSURE 4