| Calcula            | tion No.:        | 52233-C-004                     |                                       |         |         |  |  |  |
|--------------------|------------------|---------------------------------|---------------------------------------|---------|---------|--|--|--|
| Project            |                  | Beaver Valley A-46 Review       | analasia analasian Sanatarini di Para |         |         |  |  |  |
| Calcula            | tion Title:      | GE Switchgear Anchorage Evaluat | tion                                  |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
| Referen            | ces:             | See Page 9                      |                                       |         |         |  |  |  |
| Attachm            | nents:           | A (31 Pages)                    |                                       |         |         |  |  |  |
| Revision<br>Number | Approval<br>Date | Description of Revision         | Originator                            | Checker | Approve |  |  |  |
| 0                  | 10/30            | Original issue                  | A4                                    | CRA     | RC      |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
|                    |                  |                                 |                                       |         |         |  |  |  |
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SHEET NO

| JOB NO. | 52233 | JOB     | Beaver Valley A-46 Review          | BY_ | RF- | DATE | 8/22/95 |
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| CALC NO | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | СНК | m   | 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.

|                  | Loc      | ation     |
|------------------|----------|-----------|
| Equipment ID No. | 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  $\times$  60" deep X 91.5" tall sections with an approximate weight of 1000 lb. Most sections are anchored with three 1/2"  $\phi$  shell anchors. BAT-BKR-4 has a 3/8"  $\phi$  anchor bolt in the rear location. This limiting configuration of Battery Breaker Switchgear anchorage is shown in the following sketch.

| EQE                        |         | CALCULATION SHEET                  |                      |
|----------------------------|---------|------------------------------------|----------------------|
| ENGDIEERING<br>CONSULTANTS |         |                                    | SHEET NO 3           |
| JOB NO. 52233              | JOB     | Beaver Valley A-46 Review          | BY DATE 8/22/95      |
| CALC NO                    | SUBJECT | GE Switchgear Anchorage Evaluation | CHK CAM DATE 9-29-95 |



4%" - 3" 56%" - 3/4 " BAT-BKR - X CONFIGURATION

| CALCI | JLATION | SHEET                                                                                                           |
|-------|---------|-----------------------------------------------------------------------------------------------------------------|
|       |         | the second se |

| ENGINEERIN<br>COPOSULTAN | 0     |         |                                    |       | SHE | ET NO.  | 4       |  |
|--------------------------|-------|---------|------------------------------------|-------|-----|---------|---------|--|
| JOB NO                   | 52233 | JO8     | Beaver Valley A-46 Review          | BY E  | X   | DATE 8  | 1/22/95 |  |
| CALC NO                  | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | снк Д | pr- | DATE 1- | 29-95   |  |

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"  $\phi$  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.

 $S_{h} = 0.36 \text{ g}$   $S_{v} = \frac{2}{3} \cdot S_{h}$   $S_{v} = 0.24 \text{ g}$ Wt = 1000 lb h = 45.75 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):

| $P_{xf} = \frac{S_{h} vvi}{2(55.25)}$ | P <sub>xf</sub> = 149 lb                                |
|---------------------------------------|---------------------------------------------------------|
| $V_{xf} = \frac{S_h W_t}{2}$          | $V_{xf}$ = 180 lb (1/2 of load taken by one front bolt) |
| $P_{xr} = \frac{S_h Wt h}{55.25}$     | P xr = 298 lb                                           |
| $V_{xr} = \frac{S_h Wt}{2}$           | V xr = 180 lb                                           |

SHEET NO. 5



| JOB NO. | 52233 | JOB     | Beaver Valley A-46 Review          | BY_ | RA  | DATE | 8/22/95 |
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| CALC NO | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | СНК | Com | DATE | 9-29-95 |

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

| $P_{yf} = \frac{S_{y} W_{t}}{2}$ | $P_{yf} = 120$ lb (1/2 of load taken by one front b | oit) |
|----------------------------------|-----------------------------------------------------|------|
| $P_{yr} = \frac{S_{y}Wt}{2}$     | P yr = 120 lb                                       |      |
| V yf = 0                         | V yr = 0                                            |      |

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

| $P_{zr} = \frac{S_{h} Wt_{h}}{(10.25) \cdot 2}$ | P <sub>zr</sub> = 803 lb | (1/2 of load taken by single rear bolt)                                                  |
|-------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------|
| $V_{zr} = \frac{S_h Wt}{2}$                     | V <sub>zr</sub> = 180 lb |                                                                                          |
| P zf = P zr                                     | P zf = 803 lb            | (Let load determined for rear bolt represent<br>the load seen by one of two front bolts) |
| $V_{zf} = \frac{S_h Wt}{2}$                     | V <sub>zf</sub> = 180 lb | (1/2 of load taken by one front bolt)                                                    |

Additional Loads due to dead weight:

| P dtf = | 2.2         | P <sub>dlf</sub> = 250 lb | (1/2 of load taken by two front bolts)  |
|---------|-------------|---------------------------|-----------------------------------------|
| P dir = | (- Wt)<br>3 | P dir = -333 lb           | (1/3 of load taken by single rear bolt) |

V dif = 0 V dir = 0

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|------|------|--------|-----|------|
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|      | -    |        |     |      |
| 1    | NO   | おけ     | YR. | NO   |
| 1.25 | 1201 | 941.72 | TA  | N'75 |

| CONSULTAN | 40<br>175 |         |                                    |     | SH | EET NO. | _ 6     |
|-----------|-----------|---------|------------------------------------|-----|----|---------|---------|
| JOB NO.   | 52233     | JOB     | Beaver Valley A-46 Review          | BY_ | BA | DATE    | 8/22/95 |
| CALC NO   | C-004     | SUBJECT | GE Switchgear Anchorage Evaluation | СНК | cm | _ DATE  | 9-29-25 |

SRSS combination of loads:

$$P f = \sqrt{P x f^2 + P y f^2 + P z f^2 + P dlf}$$

$$V_f = \sqrt{V_x f^2 + V_y f^2 + V_z f^2 + V_d}$$

V f = 255 lb/bolt

$$P_{r} = \sqrt{P_{xr}^{2} + P_{yr}^{2} + P_{zr}^{2} + P_{dr}^{2}}$$

$$V_{r} = \sqrt{V_{xr}^{2} + V_{yr}^{2} + V_{zr}^{2} + V_{dir}}$$

V r = 255 lb/bolt

| CORENULTANT | ř.    |         |                                    | SHE    | ET NO        |
|-------------|-------|---------|------------------------------------|--------|--------------|
| JOB NO.     | 52233 | JO8     | Beaver Valley A-46 Review          | BY BA  | DATE 8/22/95 |
| CALC NO.    | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | CHK On | DATE 9-29-15 |

Determine allowable loads for anchor bolts

The nominal allowable capacities for  $1 / 2^{\circ}\phi$  expansion anchor (front) and a  $3 / 8^{\circ}\phi$  expansion anchor (rear) are as follows (Reference 1):

| P fnom | = 2290 lb , | V fnom = 2380 lb |
|--------|-------------|------------------|
| Pmom   | = 1460 lb   | V mom = 1420 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 cente lines.

$$D_f = 0.50$$
 in  $10 D_f = 5$  in. < 8.5" O.K.

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

Concrete strength, f 'c = 4000 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 |

| -   |          | -  | 1          | -        |   |
|-----|----------|----|------------|----------|---|
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| JOB NO. | 52233 | JOB     | Beaver Valley A-46 Review          | BY 194 | DATE | 8/22/95 |
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| CALC NO | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | снк    | DATE | 9-29-95 |

Similarly for the rear anchor bolt,

V rall = V mom RT s RL s RS s RE s RF s RR s

Comparing capacity and demand.

For the front 1/2" bolts,

$$\frac{P f}{P fall} = 0.559 \qquad \qquad \frac{V f}{V fall} = 0.24 < 0.3$$

For the rear 3/8" bolt

$$\frac{P_r}{P_{rail}} = 0.81 \qquad \frac{V_r}{V_{rail}} = 0.4 > 0.3$$

 $0.7 \cdot \left(\frac{P}{P} \frac{r}{rall}\right) + \frac{V}{V} \frac{r}{rall} = 0.97$ 

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.



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SHEET NO.

| JOB NO.  | 52233 | JOB     | Beaver Valley A-46 Review          | BY BA   | DATE 8/22/95 |
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| CALC NO. | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | CHK CTU | DATE 9-19-95 |

### **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

- SQUG, Generic Implamentation Procedure (GIP) For Seismic Verification of Nuclear Plant Equipment, Revision 2, Corrected, June 28, 1991.
- 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 52233-1-003.
- 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.
- Letter from R.M. Stark to H.A. Van Wassen dated November 19, 1979, regarding Beaver Valley Power Station Unit 1 Concrete Strength Evaluation.
- 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)



| SHEET | NO. | AI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| CALC NO | C-004 | SUBJECT | GE Switchgear Anchorage Evaluation | CHK JAM | DATE | 9-29-45 |

Attachment A Screening Evaluation Work Sheet (SEWS) Packages

(31 pages)

SSEL Line No. 8007 Status Y N U A 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: B)dg. SRVB Floor E1. 713 Room, Row/Col EMERG SWGR #1 Manufacturer, Model, Etc. (optional but recommended) GO80 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 N Equipment has fundamental frequency above about 8 Hz 3. YNDE (N/A)Capacity based on: Existing Documentation 4. DOC Bounding Spectrum BS 1.5 x Bounding Spectrum ABS GERS GERS GRS 5. Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum AGS CRS Conserv. Des. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec. RRS Does capacity exceed demand? (Indicate at right (\*) and in (Y)N U COMMENTS if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.) 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 N/A \* Note 1 equipment class N U 2. 600 V rating or less U N N/A Side-to-side restraint of draw-out circuit 3. N U N/A 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 N/A N U 5. Attached weight (except conduit) less than about 100 lbs per cabinet assembly U N/A N NN 6. Externally attached items rigidly anchored U N/A 7. General configuration similar to ANSI C37.20 Standards U N/A 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 N/A N U All doors secured by latch or fastener 9. N U N/A 10. Anchorage adequate (See checklist below for details) N 0 N/A 11. Relays mounted on equipment evaluated No relays N U N/A 12. Have you looked for and found no other adverse concerns? N U N/A Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

### 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

| CAVEA  | TS - GERS (Identify with an asterisk (*) those caveats which   | are  |    |    |     |      |
|--------|----------------------------------------------------------------|------|----|----|-----|------|
| met b. | y intent without meeting the specific wording of the caveat    | rule | a  | nd |     |      |
| expla  | in the reason for this conclusion in the COMMENTS section be   | low) |    |    |     |      |
| 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                                                        | ¥    | 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 | e intent of all the caveats met for GERS?                      |      |    |    | Y   | NUN/ |
| ANCHOR | DAGE                                                           |      |    |    |     |      |
| 1      | Appropriate equipment characteristics determined               |      |    |    |     |      |
| * *    | (mass i' natural from damping conter of rotation)              | V    | A. | AN | N/A |      |
| 2      | Type of apphorage covered by GIP                               | in   | N  | -  | N/A |      |
| 2      | Sizes and locations of anchors determined                      | A    | N  | 11 | N/A |      |
| 4      | Anchorage installation adequate e d                            | 4    | 14 | 0  | N/A |      |
| 4.     | wold quality and length putr and washers evennsion             |      |    |    |     |      |
|        | anchor tightness                                               | 5    | N  |    | N/A |      |
| 5      | Eactors affecting anchorage capacity or margin of              | U    | 14 | 0  | M/M |      |
| 2.     | cafety considered; exhedment length anchor coacies             |      |    |    |     |      |
|        | free adde distance concrete strength (condition and            |      |    |    |     |      |
|        | concrete eracking                                              | 0    | ы  | 11 | N/A |      |
| 6      | For balted anchorages, and under base less than                | W    | N  | U  | N/A |      |
| 0.     | 1/4 inch                                                       | (3)  |    |    |     |      |
| 7      | 1/4-inch<br>Eastans affecting accenticl values considered, and | G    | N  | 0  | N/A |      |
| 1.     | ractors affecting essential relays considered: gap             | 0    |    |    |     |      |
| 0      | under base, capacity reduction for expansion anchors           | E    | N  | 0  | N/A |      |
| 0.     | base has adequate stiffness and effect of prying               |      |    | 0  |     |      |
| 0      | action on anchors considered                                   | Y    | N  | C  | N/A |      |
| 9.     | to CC adapted                                                  | 24   |    | a  |     |      |
| 10     | Triboddod stool and an long store                              | Y    | N  | 0  | N/A |      |
| 10.    | cmbedded steel, grout pad or large concrete                    | v    |    |    | NI  |      |
|        | peo adequacy evaluated                                         | 1    | N  | 0  | ava |      |
| ane an | chorage requirements met?                                      |      |    |    | Ŷ   | NU   |

4

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 YN U N/A equipment or structures 2. If equipment contains sensitive relays, equipment No relays free from all impact by nearby equipment or structures N UCN/A U 3. Attached lines have adequate flexibility N/A Overhead equipment or distribution systems are 4. N U N/A N U N/A not likely to collapse Have you looked for and found no other adverse concerns? 5. Is equipment free of interaction effects? IS EQUIPMENT SEISMICALLY ADEQUATE? YNU COMMENTS Note 1 : Cabinet is 11/2" taller than height for equipment class. Additional height is not judged significant. Additional height is sheet metal not internal volume. Cabinet near block wall. 55-1-5. Wall has been evaluated in accordance with IEB 80-11. Refer to attached.

| Evaluated by: | 4- Mastland  | Date: 1/30/95 |
|---------------|--------------|---------------|
|               | -Selen S. 25 | 1-30-45       |

BAT. De. 1 A5

THE FOLLOWING ARE NEAR BLOCK WALLS:

| EIN                    | DISTANCE FROM WALL                   |  |
|------------------------|--------------------------------------|--|
| SSW-VITBUS-2           | BEYOND PROJECTION OF THE WALL        |  |
| DC-SWBD-2              | BEYOND PROJECTION OF THE WALL        |  |
| BAT-BKR-2<br>BAT-CHG-2 | 60"<br>BEYOND PROJECTION OF THE WALL |  |
|                        |                                      |  |

La to the

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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FRONT / REAR

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| SSEL Line No. 8008 St                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | atus                                                   | Y                                                                            | N U                |           |
| SCREENING EVALUATION WORK SHEET (SEWS) Sh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | eet 1 d                                                | of 3                                                                         |                    |           |
| Equip. ID No. BAT-BKR-2 Equip. Class 02 - Low Volta                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ge Swit                                                | chgea                                                                        | r                  |           |
| quipment Description _ 39/MAIN DC BUS #2 BATTERY CIRCUIT BREAK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ER                                                     |                                                                              |                    |           |
| ccation: Brog. SRVB Floor El. 713 Room, Ro                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | w/Col                                                  | EMERG                                                                        | SWGR               | #2        |
| anufacturer, Model, Etc. (optional but recommended) <u>GOBO GE</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NERAL E                                                | LECTR                                                                        | IC AK              | (D-5, VT  |
| EISMIC CAPACITY VS DEMAND<br>1. Elevation where equipment receives seismic input<br>2. Elevation of seismic input below about 40' from grade<br>3. Equipment has fundamental frequency above about 8 Hz<br>4. Capacity based on: Existing Documentation<br>Bounding Spectrum<br>1.5 x Bounding Spectrum<br>GERS<br>5. Demand based on: Ground Response Spectrum<br>1.5 x Ground Response Spectrum<br>1.5 x Ground Response Spectrum<br>Conserv. Des. In-Str. Resp. Spec.<br>Realistic M-Ctr. In-Str. Resp. Spec.<br>Realistic M-Ctr. In-Str. Resp. Spec.<br>0es capacity exceed demand? (Indicate at right (*) and in<br><u>COMMENIS</u> if a special exception to enveloping of seismic<br>demand spectrum is invoked per Section 4.2 of the GIP.)<br>AVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) thos<br>re met by intent without meeting the specific wording of the G | O Y DO<br>BS<br>GR<br>GR<br>GR<br>GR<br>RR<br>RR<br>RR | 713<br>N U<br>C<br>RS<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S<br>S | N/A<br>hich<br>and | ><br>DN U |
| <ol> <li>Equipment is included in earthquake experience<br/>equipment class</li> <li>600 V rating or less</li> <li>Side-to-side restraint of draw-out circuit</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | below)                                                 | N U<br>N U                                                                   | N/A<br>N/A<br>N/A  | ₩3        |
| <ul> <li>breakers is provided</li> <li>Adjacent cabinets which are close enough to impact,<br/>or sections of multi-bay cabinets, are bolted together<br/>if they contain essential relays</li> <li>Attached weight (except conduit) less</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0                                                      | N U                                                                          | N/A                |           |
| than about 100 lbs per cabinet assembly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ø                                                      | NU                                                                           | N/A                |           |
| <ol> <li>General configuration similar to ANSI C37.20 Standards</li> <li>Cutouts in lower half of cabinet side sheathing<br/>less than 30% of width of side panel wide and No cutou</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ats                                                    | N U                                                                          | N/A<br>N/A         |           |
| bus transfer compartment<br>9. All doors secured by latch or fastener                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A                                                      | NU                                                                           | N/A                |           |
| 10. Anchorage adequate (See checklist below for details)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Y                                                      | NU                                                                           | N/A                |           |
| <ol> <li>Relays mounted on equipment evaluated</li> <li>Have you looked for and found no other adverse concerns?</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Y<br>Y                                                 | NNU                                                                          | ) N/A<br>N/A       |           |
| the intent of all the caveats met for Bounding Spectrum?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                        |                                                                              | Y                  | NUN/      |

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) Equipment is included in generic seismic testing equipment 1. N U N/A class Y N U N/A Meets all Bounding Spectrum caveats 2. Y N U N/A Floor-mounted enclosure 3. Manufactured by major vendor (ITE/Brown Boveri, 4. Y N/A N U Westinghouse, or GE) N U N/A Maximum weight per section less than 1600 lbs Y 5. YNU N/A Base anchorage adequate (See checklist below for details) 6. Relays used for breaker function are not on 7. Y N U N/A "Low Ruggedness Relays" list Relay evaluation completed for all relays that are 8. essential to other equipment or cause unacceptable U N/A lockout For 2.5 g level GERS, vertical restraint prevents 9. U N/A N breaker uplift For 2.5 g level GERS, outside corners of end units 10. U N N/A are reinforced, if needed All adjacent cabinets or sections of multi-bay 11. U N/A assemblies bolted together N YNUNA Is the intent of all the caveats met for GERS? ANCHORAGE Appropriate equipment characteristics determined 1. N W N/A (mass, CG, natural freq., damping, center of rotation) U N/A N 2. Type of anchorage covered by GIP N U N/A Sizes and locations of anchors determined 3. Anchorage installation adequate, e.g., 4. weld quality and length, nuts and washers, expansion (Y) N U N/A anchor tightness Factors affecting anchorage capacity or margin of 5. safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and (Y) N U N/A concrete cracking For bolted anchorages, gap under base less than 6. ( N U N/A 1/4-inch Factors affecting essential relays considered: gap 7. Y N N/A U under base, capacity reduction for expansion anchors Base has adequate stiffness and effect of prying 8. Y U N/A action on anchors considered N Strength of equipment base and load path 9. ( N U N/A to CG adequate YNU NA NO Embedded steel, grout pad or large concrete 10. pad adequacy evaluated Are anchorage requirements met?

SCREENING EVALUATION WORK SHEET (SEWS) Sheet 3 of 3

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
- If equipment contains sensitive relays, equipment 2. free from all impact by nearby equipment or structures
- 3. Attached lines have adequate flexibility
- Overhead equipment or distribution systems are 4.
- not likely to collapse 5.

Have you looked for and found no other adverse concerns? Is equipment free of interaction effects?

### IS EQUIPMENT SEISMICALLY ADEQUATE?

COMMENTS

# - EKID ATTACHED CONOUITS IN THE TOP . (6) 2 3'TO FIRST SAPPORT (3) 2/14), 2 (3,4), 2 (2"\$), 2(2"\$), slack in cables to permit novement.

# \* ADCHORDE IN FRONT NOT EASILY ACCESSIBLE,

\*3 Cabinet exceeds the height for the equipment class. (911/2" us 90") Additional height is sheet metal only and judged acceptable.

Evaluated by: GTW Date:

YN U N/A

N U N/A N U N/A

N/A N/A 🕊

N/A

BN U

R

CAT. BER. 2 AIC

THE FOL! UNG ARE MENT BLOCK FALLS:

| ETH       |                                         | DISTATCE FROM TALL                                                                               |  |  |  |  |  |  |
|-----------|-----------------------------------------|--------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| S ~ '-'-' | 115-2<br>115-2                          | BEYOND PROJECTION OF THE WALL                                                                    |  |  |  |  |  |  |
| DC-C'     |                                         | BEYOND PROJECTION OF THE MALL                                                                    |  |  |  |  |  |  |
| BAT+C     | -2                                      | REVOID PROJECTION OF THE WALL                                                                    |  |  |  |  |  |  |
| PROJECTI. | OF THE 'M                               | L IS EQUAL TO ITS HEIGHT. (90")                                                                  |  |  |  |  |  |  |
| THE LICE  | MALLS APE I<br>MAVE PERMI<br>WITH INC I | CENTIFIED AS SP-1-6, SB-1-7, SB-1-8.<br>Evaluated and found satisfactory in<br>ted 20-11 petiev. |  |  |  |  |  |  |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| SSEL Line No. 8009 Stat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | tus YNU                                                                         |
| A SCREENING EVALUATION WORK SHEET (SEWS) Shee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | et 1 of 3                                                                       |
| $\cap$ 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                 |
| Equip IR No. BAT-BKR-3 Equip. Class 02 - Low Voltage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Switchgear                                                                      |
| Equipment Description 39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1                                                                               |
| Location: Bldg. SRVB Floor El. 713 Room, Row/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Col EMERG SWGR #1                                                               |
| Manufacturer, Model, Etc. (optional but recommended) G080 GENE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | RAL ELECTRIC AKD-5 VTI                                                          |
| SEISMIC CAPACITY VS DEMAND <ol> <li>Elevation where equipment receives seismic input</li> <li>Elevation of seismic input below about 40' from grade</li> <li>Equipment has fundamental frequency above about 8 Hz</li> <li>Capacity based on: Existing Documentation<br/>Bounding Spectrum         <ol> <li>S Bounding Spectrum</li> <li>S Bound based on: Ground Response Spectrum</li> <li>S x Ground</li></ol></li></ol> | 713<br>Y N W N/A<br>DOC<br>BS<br>GERS<br>GRS<br>GRS<br>AGS<br>CRS<br>RRS<br>RRS |
| <u>CAVEATS - BOUNDING SPECTRUM</u> (Identify with an asterisk (*) those<br>are met by intent without meeting the specific wording of the ca<br>explain the reason for this conclusion in the COMMENTS section b<br>1. Equipment is included in earthquake experience                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | caveats which<br>veat rule and<br>elow)                                         |
| 2. 600 V rating or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | M N U N/A                                                                       |
| 3. Side-to-side restraint of draw-out circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | M U N/A                                                                         |
| <ol> <li>Adjacent cabinets which are close enough to impact,<br/>or sections of multi-bay cabinets, are bolted together<br/>if they contain essential relays No essential relays</li> <li>Attached weight (except conduit) less<br/>than about 100 lbs per cabinet assembly None</li> <li>Externally attached items rigidly anchored</li> <li>General configuration similar to ANSI C37.20 Standards</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Y N U NA $Y N U NA Y N U NA Y N U NA Y N U NA$                                  |
| <ul> <li>less than 30% of width of side panel wide and<br/>less than 60% of width of side panel high excluding<br/>bus transfer compartment</li> <li>9. All doors secured by latch or fastener</li> <li>10. Anchorage adequate (See checklist below for details)</li> <li>11. Relays mounted on equipment evaluated No relays</li> <li>12. Have you looked for and found no other adverse concerns?</li> <li>Is the intent of all the caveats met for Bounding Spectrum?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Y N U N/A<br>Y N U N/A<br>Y N U N/A<br>Y N U N/A<br>Y N U N/A                   |

AIZ

# SCREENING EVALUATION WORK SHEET (SEWS) Sheet 2 of 3

| Equip                   | . ID No. BAT-BKR-3 Equip. Class 02 - Low Voltage                                                                                                                                                   | Swit                | ch  | gear |        |        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|------|--------|--------|
| Equip                   | ment Description 39/MAIN DC BUS #3 BATTERY CIRCUIT BREAKER                                                                                                                                         |                     |     |      |        |        |
| CAVEA<br>met b<br>expla | <u>TS - GERS</u> (Identify with an asterisk (*) those caveats which<br>y intent without meeting the specific wording of the caveat<br>in the reason for this conclusion in the COMMENTS section be | are<br>rule<br>low) | ar  | nd   |        |        |
| 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                                                                                                                                                  | 6.6                 | 1   | 1    |        |        |
|                         | breaker uplift                                                                                                                                                                                     | V                   | 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                                                                                                                                                     | - ° -               |     |      | 11/11  |        |
|                         | assemblies bolted together                                                                                                                                                                         | Y                   | N   | 11   | N/A    |        |
| is the                  | intent of all the caveats met for GERS?                                                                                                                                                            |                     |     | ~    | Y      | NUN    |
| 1.5 6116                |                                                                                                                                                                                                    |                     |     |      |        | a v ay |
| ANCHOR                  | RAGE                                                                                                                                                                                               |                     |     |      |        |        |
| 1                       | Appropriate equipment characteristics determined                                                                                                                                                   |                     |     |      |        |        |
| * '                     | (mass, (G, natura) freq, damning, center of rotation)                                                                                                                                              | 5                   | N   | 11   | N/A    |        |
| 2                       | Type of anchorage covered by GIP                                                                                                                                                                   | X                   | N   | i    | N/A    |        |
| 2.                      | Sizes and locations of anchors determined                                                                                                                                                          | X                   | N   | 11   | N/A    |        |
| A .                     | Anchorage installation adequate o a                                                                                                                                                                | U                   | 16  | 0    | IN/M   |        |
| 4.                      | wold guality and length puts and washene puppeden                                                                                                                                                  |                     |     |      |        |        |
|                         | werd quality and rength, nuts and washers, expansion                                                                                                                                               | 0                   | A.I |      | 61 / A |        |
| E                       | Eactory affecting anchorses especify an especial of                                                                                                                                                | C                   | N   | 0    | N/A    |        |
| 5.                      | ractors affecting anchorage capacity or margin or                                                                                                                                                  |                     |     |      |        |        |
|                         | Sarety considered: embedment length, anchor spacing,                                                                                                                                               |                     |     |      |        |        |
|                         | tree-edge distance, concrete strength/condition, and                                                                                                                                               | 5                   |     | 1.1  |        |        |
| ~                       | concrete cracking                                                                                                                                                                                  | U                   | N   | U    | N/A    |        |
| ь.                      | for bolted anchorages, gap under base less than                                                                                                                                                    | 0                   |     | ÷.,  |        |        |
|                         | 1/4-inch                                                                                                                                                                                           | Q                   | N   | U    | N/A    |        |
| 7.                      | Factors affecting essential relays considered: gap                                                                                                                                                 | 2                   |     |      |        |        |
|                         | under base, capacity reduction for expansion anchors                                                                                                                                               | C                   | N   | U    | N/A    |        |
| 8.                      | Base has adequate stiffness and effect of prying                                                                                                                                                   | 2                   |     |      |        |        |
|                         | action on anchors considered                                                                                                                                                                       | Q                   | N   | U    | N/A    |        |
| 9.                      | Strength of equipment base and load path                                                                                                                                                           |                     |     | -    |        |        |
|                         | to CG adequate                                                                                                                                                                                     | Y                   | N   | CU   | N/A    |        |
| 10.                     | Embedded steel, grout pad or large concrete                                                                                                                                                        |                     |     |      | in     |        |
| 1.5.5                   | pad adequacy evaluated                                                                                                                                                                             | Y                   | N   | U    | NA     |        |
| Are an                  | chorage requirements met?                                                                                                                                                                          |                     |     |      | Y      | NU     |

### 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

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

### IS EQUIPMENT SEISMICALLY ADEQUATE?

COMMENTS

Cabinet height exceeds the height for the equipment class. (By 11/2") The difference in height is minor. The difference is sheet metal. ×

Cabinet is near block wall 50-1-15. Wall has been evaluated for the requirements of IEB 80.11.

Date: 1/30 Evaluated by:

Jo relays

NU

YNU

N U N/A

U N/A

U N/A

NN

| Form 018-32112 | Duquesne Light Company | BAT. BRR-3 A15 |
|----------------|------------------------|----------------|
| JOB TITLE      | FILE NO<br>O FE. NO    | SHEET OF       |
| LOCATION       | 01/00                  |                |
| SUBJECT        | COMPILED<br>BY         | DATE 2/13/95   |
| DEPARTMENT     | CHECKED<br>BY          | DATE           |
| DIVISION       | REVISED<br>BY          | DATE           |





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|                                                                                                                                                                                                                                                                                                                                                                                   | AI7                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| SSEL Line No. 8010 Stat                                                                                                                                                                                                                                                                                                                                                           | tus YNU                                                                      |
| A SCREENING EVALUATION WORK SHEET (SEWS) Shee                                                                                                                                                                                                                                                                                                                                     | et 1 of 3                                                                    |
| NL                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |
| Equip. 10 No. BAY-BKR-4 Equip. Class 02 - Low Voltage                                                                                                                                                                                                                                                                                                                             | e Switchgear                                                                 |
| quipment Description 39/MAIN DC BUS #4 BATTERY CIRCUIT BREAKER                                                                                                                                                                                                                                                                                                                    | {                                                                            |
| ocation: Bldg. SRVB Floor El. 713 Room, Row/                                                                                                                                                                                                                                                                                                                                      | COI EMERG SWGR #2                                                            |
| fanufacturer, Model, Etc. (optional but recommended) <u>GOBO GENE</u>                                                                                                                                                                                                                                                                                                             | RAL ELECTRIC AKD-5, VTI                                                      |
| <ul> <li>EISMIC CAPACITY VS DEMAND         <ol> <li>Elevation where equipment receives seismic input</li> <li>Elevation of seismic input below about 40' from grade</li> <li>Equipment has fundamental frequency above about 8 Hz</li> <li>Capacity based on: Existing Documentation</li></ol></li></ul>                                                                          | 713-6<br>Y NU N/A<br>DOC<br>BS<br>ABD<br>GERS<br>GRS<br>AGS<br>CBB<br>RRS    |
| AVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those<br>re met by intent without meeting the specific wording of the ca<br>xplain the reason for this conclusion in the COMMENTS section b<br>1. Equipment is included in earthquake experience<br>equipment class<br>2. 600 V rating or less<br>3. Side-to-side restraint of draw-out circuit<br>breakers is provided | e caveats which<br>iveat rule and<br>below)<br>N U N/A<br>N U N/A<br>N U N/A |
| <ol> <li>Adjacent cabinets which are close enough to impact,<br/>or sections of multi-bay cabinets, are bolted together<br/>if they contain essential relays No essential Placety</li> <li>Attached weight (except conduit) less<br/>than about 100 lbs per cabinet assembly</li> </ol>                                                                                           | YNU MA                                                                       |
| <ol> <li>Externally attached items rigidly anchored</li> <li>General configuration similar to ANSI C37.20 Standards</li> <li>Cutouts in lower half of cabinet side sheathing<br/>less than 30% of width of side panel wide and</li> </ol>                                                                                                                                         | PNUNA 1                                                                      |
| less than 60% of width of side panel high excluding                                                                                                                                                                                                                                                                                                                               | ON U N/A                                                                     |

SCREENING EVALUATION WORK SHEET (SEWS) Sheet 2 of 3

Equip. Class 02 - Low Voltage Switchgear Equip. ID No. BAT-BKR-4 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) Equipment is included in generic seismic testing equipment 1. X U N/A N class N) N/A Meets all Bounding Spectrum caveats N 2. Y U N/A N 3. Floor-mounted enclosure Manufactured by major vendor (ITE/Brown Boveri, 4. X N U. N/A Westinghouse, or GE) N CR N/A Maximum weight per section less than 1600 lbs Y 5. Y N W N/A Base anchorage adequate (See checklist below for details) 6. Relays used for breaker function are not on 7. N UN/A "Low Ruggedness Relays" list Relay evaluation completed for all relays that are 8. essential to other equipment or cause unacceptable U lockout For 2.5 g level GERS, vertical restraint prevents 9. N N/A N breaker uplift For 2.5 g level GERS, outside corners of end units 10. NU N/A are reinforced, if needed All adjacent cabinets or sections of multi-bay assemblies bolted together Bales Together Only in front 11. (N) 0( N/A YNUN/A Is the intent of all the caveats met for GERS? ANCHORAGE Appropriate equipment characteristics determined 1. (mass, CG, natural freq., damping, center of rotation) N(U) N/A N/A U Type of anchorage covered by GIP 2. U N/A Sizes and locations of anchors determined 3. Anchorage installation adequate, e.g., 4. weld quality and length, nuts and washers, expansion )N U N/A anchor tighticss Factors affecting anchorage capacity, or margin of 5. safety considered: embedment length; anchor spacing, free-edge distance, concrete strength/condition, and (U) N/A concrete cracking For bolted anchorages, gap under base less than 1/4-inch 2/ bolt location 6. U N/A 1/4-inch Factors affecting essential relays considered: gap 7. U N/A under base, capacity reduction for expansion anchors Base has adequate stiffness and effect of prying 8. U N/A action on anchors considered Strength of equipment base and load path 9. (Y) NU N/A to CG adequate Embedded steel, grout pad or large concrete 10. YNURLA pad adequacy evaluated NU Are anchorage requirements met?

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 Soft targets free from impact by nearby 1. equipment or structures 110 SOFT TARET Y N U (N/A) If equipment contains sen; itive relays, equipment 2. free from all impact by nearby equipment or structures Attached lines have adequate flexibility 3. Overhead equipment or distribution systems are 4. Sh & not likely to collapse Have you looked for and found no other adverse concerns? 5. Is equipment free of interaction effects? YNO IS EQUIPMENT SEISMICALLY ADEQUATE? COMMENTS TOP mounted conduit Support is Risidly connected 2) ADDATT OVERHEAD CONDUIT SUPPORT May interest with cabinet. SEE DRETCH No errelays in cabinet. Impact at top of cabinet near rear not considered a significant interaction. Refer to photo.

> Conduits ICH903PA ICH903PB

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

Rear of panel 4-2" from black wall 58-1-9. Block will reviewed and analyzed by IB 80-11. CK

Date: 1/13/95 1/11/95

Evaluated by: GT.



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Status YNU SCREENING EVALUATION WORK SHEET (SEWS) Sheet 1 of 3 Equip. ID No. SW-1-8N1 Equip. Class 03 - Medium Voltage Switchgear Equipment Description /36/480 VOLT AC TRFM DISCONECT 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 1. Elevation where equipment receives seismic input 2. Elevation of seismic input below about 40' from grade Equipment has fundamental frequency above about 8 Hz 3. Y N U CA/A 4. Capacity based on: Existing Documentation DOC Bounding Spectrum BS GERS GERS 5. Demand based on: Ground Response Spectrum GRS CARSO 1.5 x Bounding Spectrum Conserv. Des. In-Str. Resp. Spec. CRS Realistic M-Ctr. In-Str. Resp. Spec. RRS Does capacity exceed demand TNU 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 1. equipment class U N/A 2. 2.4 KV to 4.16 KV rating 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, No cobinets c or sections of multi-bay cabinets, are bolted together enough to impact if they contain essential relays Y N U (N/A 5. Attached weight (excluding conduit) less than about 100 lbs per cabinet bay Ø N U N/A Externally attached items rigidly anchored 6. Y N 1 N/A 7. General configuration similar to ANSI C37.20 Standards N 6 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 N ü N/A 9. All doors secured by latch or fastener N U N/A 10. Anchorage adequate (See checklist below for details) U N N/A 11. Relays mounted on equipment evaluated Y N U SN/A 12. Have you looked for and found no other adverse concerns? N N/A U Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A

SCREENING EVALUATION WORK SHEET (SEWS) Sheet 2 of 3

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| Equipment Description <u>36/480 VOLT AC TRFM DISCONECT SWITCH</u> <u>CAVEATS - GERS</u> (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 Average weight per vertical section less than 5000 lbs Y N U N/A 8. Relays used for breaker function are not on "Low Ruggedness Relays" list P. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout 1. For 2.5g level GERS, vertical restraint prevents cricuit breaker uplift Y N U N/A 1. For 2.5g level GERS, circuit break arc chutes are restrained horizontally Y N U N/A 1. 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 1. Sporporiate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) 2. Type of anchorage covered by GIP 3. Sizes and locations of anchors determined (weld quality and length, nuts and washers, expansion anchor tightness, etc.; 5. Factors affecting anchorage capacity or margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Equip.                     | ID No. <u>SW-1-8N1</u> Equip. Class <u>O3 - Medium Volta</u>                                                                                                                                    | age S                  | wit | cho | ear        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----|-----|------------|
| CAVEATS - GERS (Identify with an asterisk (*) those caveats which are<br>met by intent without meeting the specific wording of the caveat rule<br>and explain the reason for this conclusion in the COMMENTS section below)<br>1. Equipment is included in generic seismic testing<br>equipment class<br>2. Meets all Bounding Spectrum caveats<br>3. Floor-mounted enclosure<br>4. The switchgear is not a specially-designed type<br>5. Circuit breakers are truck-mounted type,<br>not jack-up or vertical-lift<br>6. Average weight per vertical section less than<br>5000 lbs<br>7. Base anchorage adequate (See checklist below for details)<br>8. Relays used for breaker function are not on<br>10. Kour Ruggedness Relays' list<br>9. Relay evaluations completed for all relays that are<br>essential to other equipment or cause unacceptable<br>lockout<br>1. For 2.5g level GERS, ertical restraint prevents<br>circuit breaker uplift<br>1. For 2.5g level GERS, a Beaver Type Z relay is not<br>used in Westinghouse MV switchgear for the "Y"<br>anti-pump relay<br>13. Separate evaluation of breaker racking mechanism<br>completed; seismic positioner or sufficient side-to-side<br>restraints used<br>1. Appropriate equipment characteristics determined<br>(mass, CG, natural freq., damping, center of rotation)<br>2. Type of anchorage covered by GIP<br>3. Sizes and locations of anchors determined<br>(weld quality and length, nuts and washers, expansion<br>anchor tightness, etc.;<br>5. Factors affecting anchorage capacity or margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Equipm                     | ent Description 36/480 VOLT AC TRFM DISCONECT SWITCH                                                                                                                                            |                        |     |     |            |
| <ol> <li>Equipment is included in generic seismic testing<br/>equipment class</li> <li>Heets all Bounding Spectrum caveats</li> <li>Floor-mounted enclosure</li> <li>Floor-mounted for breaker for GERS?</li> <li>Floor-mounted enclosure</li> <li>Floor-m</li></ol>                                                                                                                                                                                                                             | CAVEAT<br>met by<br>and ex | <u>S - GERS</u> (Identify with an asterisk (*) those caveats which<br>intent without meeting the specific wording of the caveat<br>plain the reason for this conclusion in the COMMENTS section | n are<br>rule<br>on be | 104 | ()  |            |
| <ul> <li>equipment class</li> <li>equipment class</li> <li>floor-mounted enclosure</li> <li>Floor-mounted enclosure</li> <li>Floor-mounted enclosure</li> <li>The switchgear is not a specially-designed type</li> <li>Circuit breakers are truck-mounted type,<br/>not jack-up or vertical-lift</li> <li>Average weight per vertical section less than<br/>5000 lbs</li> <li>Base anchorage adequate (See checklist below for details)</li> <li>Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>Sizes and locations of anchors determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Kel used in type capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.                         | Equipment is included in generic seismic testing                                                                                                                                                | V                      | N   |     | N/A        |
| <ul> <li>Meets all bounding spectrum caveats</li> <li>Floor-mounted enclosure</li> <li>Y N U N/A</li> <li>The switchgear is not a specially-designed type</li> <li>The switchgear is not a specially-designed type</li> <li>Circuit breakers are truck-mounted type,<br/>not jack-up or vertical-lift</li> <li>Average weight per vertical section less than<br/>5000 lbs</li> <li>Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>Is the intent of all the caveats met for GERS?</li> <li>ANCHORAGE</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            | equipment class                                                                                                                                                                                 | V                      | N   |     | N/A        |
| <ul> <li>3. Floor-mounted enclosure</li> <li>4. The switchgear is not a specially-designed type</li> <li>Y N U N/A</li> <li>5. Circuit breakers are truck-mounted type,<br/>not jack-up or vertical-lift</li> <li>6. Average weight per vertical section less than<br/>5000 lbs</li> <li>7. Base anchorage adequate (See checklist below for details)</li> <li>8. Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>10. For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>11. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2.                         | Meets all Bounding Spectrum caveats                                                                                                                                                             | V                      | N   |     | N/A        |
| <ul> <li>a. The switchgear is not a specially-designed type</li> <li>b. Circuit breakers are truck-mounted type,<br/>not jack-up or vertical-lift</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Average weight per vertical section less than<br/>5000 lbs</li> <li>c. Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>c. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>for 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>v. N. U. N/A</li> <li>for 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>v. N. U. N/A</li> <li>for 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>for 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>for the intent of all the caveats met for GERS?</li> <li>ANCHORAGE</li> <li>Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined</li> <li>(Y' N U N/A</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                           | 3.                         | Floor-mounted enclosure                                                                                                                                                                         | v                      | N   | ü   | N/A        |
| <ul> <li>5. Circuit Dreakers are truck-mounted type, not jack-up or vertical-lift</li> <li>6. Average weight per vertical section less than 5000 lbs</li> <li>7. Base anchorage adequate (See checklist below for details)</li> <li>8. Relays used for breaker function are not on "Low Ruggedness Relays" list</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined</li> <li>4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4.                         | The switchgear is not a specially-designed type                                                                                                                                                 |                        | 14  | 0   | M/M        |
| <ul> <li>not jack-up or vertical-inft</li> <li>Average weight per vertical section less than<br/>5000 lbs</li> <li>Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>Kpropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.                         | Circuit breakers are truck-mounted type,                                                                                                                                                        | v                      | N   | 11  | N/A        |
| <ul> <li>Average weight per vertical section less than<br/>5000 lbs</li> <li>Base anchorage adequate (See checklist below for details)</li> <li>Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>ANCHORAGE</li> <li>Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> <li>Y N U N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | not jack-up or vertical-lift                                                                                                                                                                    | 1                      | a   | 0   | M/M        |
| <ul> <li>5000 lbs</li> <li>7. Base anchorage adequate (See checklist below for details)</li> <li>8. Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>10. For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> <li>7. N U N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 6.                         | Average weight per vertical section less than                                                                                                                                                   | V                      | M   | 11  | N/A        |
| <ul> <li>7. Base anchorage adequate (see checklist below not details)</li> <li>8. Relays used for breaker function are not on<br/>"Low Ruggedness Relays" list</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>9. Relay evaluations completed for all relays that are<br/>essential to other equipment or cause unacceptable<br/>lockout</li> <li>9. N U N/A</li> <li>10. For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>11. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>12. For 2.5g level GERS, a Beaver racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                       |                            | 5000 IDS                                                                                                                                                                                        | V                      | N   | U.  | N/A        |
| <ul> <li>8. Kelays used for breaker function are not on "Low Ruggedness Relays" list</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined</li> <li>4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.                         | Base anchorage adequate (see checklist below for details)                                                                                                                                       |                        | 14  | 0   | n/ A       |
| <ul> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Factors affecting anchorage capacity or margin of</li> <li>9. Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>9. Relay evaluations completed for all restraint prevents circuit breaker arc chutes are restrained horizontally</li> <li>9. Factors affecting anchorage capacity or margin of</li> <li>9. Relay evaluations of anchorage capacity or margin of</li> <li>9. Relay evaluation of breaker cause unacceptable lockout</li> <li>9. N U N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8.                         | Kelays used for breaker function are not on                                                                                                                                                     | V                      | N   | 11  | N/A        |
| <ul> <li>9. Ketay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout</li> <li>10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                            | Low kuggedness kerays list                                                                                                                                                                      | 1                      |     | 0   | 11/ 12     |
| <ul> <li>Anchorage</li> <li>Anchorage</li> <li>Anchorage</li> <li>Anchorage</li> <li>Sizes and locations of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Separate to be an of the second of the s</li></ul> | 9.                         | keray evaluations completed for all relays that are                                                                                                                                             |                        |     |     |            |
| <ul> <li>10. For 2.5g level GERS, vertical restraint prevents<br/>circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are<br/>restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. U N/A</li> <li>15. the intent of all the caveats met for GERS?</li> <li>ANCHORAGE</li> <li>1. Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | lookeut                                                                                                                                                                                         | V                      | N   | 11  | N/A        |
| <ul> <li>10. For 2.5g level GERS, vertical restraint prevents circuit breaker uplift</li> <li>11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 10                         | For 2 Eq lovel CEDS vertical restraint prevents                                                                                                                                                 |                        | -14 | v   | 11/10      |
| <ul> <li>11. For 2.5g level GERS, circuit break arc chutes are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. V V N/A</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. V V N/A</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" Y N U N/A</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>15. Type of anchorage covered by GIP</li> <li>2. Type of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 10.                        | For 2.5g level GERS, vertical restraint prevents                                                                                                                                                | V                      | N   | 11  | N/A        |
| <ul> <li>11. For 2.5g level GERS, the function of the are choices are restrained horizontally</li> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11                         | Circuit breaker upint                                                                                                                                                                           |                        | 14  | v   | 11/ 6      |
| <ul> <li>12. For 2.5g level GERS, a Beaver Type Z relay is not<br/>used in Westinghouse MV switchgear for the "Y"<br/>anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. U N/A</li> <li>13. Separate evaluation of breaker racking mechanism<br/>completed; seismic positioner or sufficient side-to-side<br/>restraints used</li> <li>14. U N/A</li> <li>15. the intent of all the caveats met for GERS?</li> <li>16. Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>17. Type of anchorage covered by GIP</li> <li>18. Sizes and locations of anchors determined<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>19. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 11.                        | FOR 2.59 level GERS, CITCUIL Dreak are chutes are                                                                                                                                               | ¥                      | N   | 11  | N/A        |
| <ul> <li>12. For 2.5g level GERS, a Deaver Type 2 relay is not used in Westinghouse MV switchgear for the "Y" anti-pump relay</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>14. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined</li> <li>4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10                         | Festrained norizontally                                                                                                                                                                         | 1                      | 14  | 0   | 11/ 2      |
| ANCHORAGE<br>1. Appropriate equipment characteristics determined<br>(mass, CG, natural freq., damping, center of rotation)<br>2. Type of anchorage covered by GIP<br>3. Sizes and locations of anchors determined<br>(weld quality and length, nuts and washers, expansion<br>anchor tightness, etc.)<br>5. Factors affecting anchorage capacity or margin of<br>Y N U N/A<br>Y N U N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 16.                        | For 2.5g level GERS, a beaver type 2 relay is not                                                                                                                                               |                        |     |     |            |
| <ul> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>13. Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side Y N U N/A</li> <li>Is the intent of all the caveats met for GERS?</li> <li>ANCHORAGE         <ul> <li>Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> <li>Appropriate equipment characteristics determined</li>             &lt;</ul></li></ul>                                                                                                                                                                                                                                                                                                     |                            | used in westinghouse hy switchgear for the f                                                                                                                                                    | V                      | N   | 11  | N/A        |
| <ul> <li>13. Separate evaluation of breaker facking mechanism completed; seismic positioner or sufficient side-to-side restraints used</li> <li>13. Sizes and locations of anchors determined (mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined</li> <li>4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 12                         | Consultantion of breaker maching mechanism                                                                                                                                                      |                        | 14  | 0   | N/ A       |
| Completed, setsmit positioner of sufficient side-to-side restraints used Is the intent of all the caveats met for GERS? ANCHORAGE 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation) 2. Type of anchorage covered by GIP 3. Sizes and locations of anchors determined 4. Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.) 5. Factors affecting anchorage capacity or margin of Y N U N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 13.                        | separate evaluation of preaker racking mechanism                                                                                                                                                |                        |     |     |            |
| Is the intent of all the caveats met for GERS?<br>ANCHORAGE<br>1. Appropriate equipment characteristics determined<br>(mass, CG, natural freq., damping, center of rotation)<br>2. Type of anchorage covered by GIP<br>3. Sizes and locations of anchors determined<br>4. Adequacy of anchorage installation evaluated<br>(weld quality and length, nuts and washers, expansion<br>anchor tightness, etc.)<br>5. Factors affecting anchorage capacity or margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            | completed, seismic positioner or sufficient side-to-side                                                                                                                                        | V                      | N   | 11  | N/A        |
| <ul> <li>ANCHORAGE         <ol> <li>Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> </ol> </li> <li>Is the intent of all the caveats met for details in the caveats in the caveats met for details in the caveats met for details in the caveats in the caveats in the caveats in the caveats met for details in the caveats in t</li></ul>                                                                 | In the                     | intent of all the caugate met for CEDS2                                                                                                                                                         | 1                      | 14  | 0   | VNUMTA     |
| <ul> <li>ANCHORAGE         <ol> <li>Appropriate equipment characteristics determined             (mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated             (weld quality and length, nuts and washers, expansion             anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ol> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | is the                     | intent of all the caveats met for GERS?                                                                                                                                                         |                        |     |     | I II U ULA |
| <ol> <li>Appropriate equipment characteristics determined<br/>(mass, CG, natural freq., damping, center of rotation)</li> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ANCHOR                     | ACE                                                                                                                                                                                             |                        |     |     |            |
| <ul> <li>(mass, CG, natural freq., damping, center of rotation)</li> <li>2. Type of anchorage covered by GIP</li> <li>3. Sizes and locations of anchors determined</li> <li>4. Adequacy of anchorage installation evaluated</li> <li>(weld quality and length, nuts and washers, expansion anchor tightness, etc.)</li> <li>5. Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1                          | Appropriate equipment characteristics determined                                                                                                                                                |                        |     |     |            |
| <ol> <li>Type of anchorage covered by GIP</li> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | (mass, CG, natural freq., damping, center of rotation)                                                                                                                                          | Q                      | N   | U   | N/A        |
| <ol> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2                          | Type of anchorage covered by GIP                                                                                                                                                                | Q                      | N   | Ŭ   | N/A **-    |
| <ul> <li>Adequacy of anchorage installation evaluated<br/>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)</li> <li>Factors affecting anchorage capacity or margin of</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3                          | Sizes and locations of anchors determined                                                                                                                                                       | D                      | N   | ũ   | N/A        |
| <pre>(weld quality and length, nuts and washers, expansion<br/>anchor tightness, etc.)<br/>5. Factors affecting anchorage capacity or margin of</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4                          | Adequacy of anchorage installation evaluated                                                                                                                                                    | 0                      |     |     |            |
| anchor tightness, etc.) (Y N U N/<br>5. Factors affecting anchorage capacity or margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            | (weld quality and length, nuts and washers, expansion                                                                                                                                           |                        |     |     |            |
| 5. Factors affecting anchorage capacity or margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | anchor tightness, etc.)                                                                                                                                                                         |                        |     |     | YN UN/A    |
| of the core attendening enclosing our age capacity of margin of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5                          | Factors affecting anchorage capacity or margin of                                                                                                                                               |                        |     |     | (          |
| safety considered: embedment length, anchor spacing,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | safety considered: embedment length, anchor spacing.                                                                                                                                            |                        |     |     |            |
| free-edge distance, concrete strength/condition, and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | free-edge distance, concrete strength/condition, and                                                                                                                                            |                        |     |     |            |
| concrete cracking                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            | concrete cracking                                                                                                                                                                               | 0                      | N   | U   | N/A        |
| 6. For bolted anchorages, gap under base less than                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6.                         | For bolted anchorages, gap under base less than                                                                                                                                                 | 9                      |     |     |            |
| 1/4-inch (Y) N U N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            | 1/4-inch                                                                                                                                                                                        | N                      | N   | U   | N/A        |

SCREENING EVALUATION WORK SHEET (SEWS) Sheet 3 of 3

Equip. ID No. SW-1-8N1 Equip. Class 03 - Medium Voltage Switchgear Equipment Description 36/480 VOLT AC TRFM DISCONECT SWITCH ANCHORAGE (Cont'd) Factors affecting essential relays considered: gap 7. under base, capacity reduction for expansion anchors QN U N/A 8. Base has adequate stiffness and effect of prying action on anchors considered NU N/A 9. Strength of equipment base and load path to CG adequate (DN U N/A 10. Embedded steel, grout pad or large concrete pad adequacy evaluated N U CN/A Are anchorage requirements met? U N INTERACTION EFFECTS Soft targets free from impact by nearby 1. equipment or structures (Y) N U N/A 2. If equipment contains sensitive relays, equipment No religs free from all impact by nearby equipment or structures N/A U 3. Attached lines have adequate flexibility U N/A Overhead equipment or distribution systems are 4. not likely to collapse N/A U N Have you looked for and found no other adverse concerns? 5. N U N/A Is equipment free of interaction effects? VN U IS EQUIPMENT SEISMICALLY ADEQUATE? NU

COMMENTS

Evaluated by: GTW

Date: 4/26



N ANALYSIS NO 183-8 AM PAGE\_ OF PAGE\_ **Duquesne Light Company** COMPILED BY DATE Analysis Sheet CHECKED BY DATE A 25 Disconnect Switch 5W-1-8N1 5W-1-9P1 Equal Siaced 8 Reat 9 10 1612 11 12 G 1/2" 13 estimated 14 15 of Maiss center. 16 ef disconnect switch (Not Cabinet) 17 1.0 3" 19 20 21 22 Frent 23 24 25 Flan View 26 27 28 29 Except for cubles (top entry) 30 31 the rest of the cubinet is empty. 3.2 36 33 34 35 36 0.0 37 43" 38 39 40 (ON 41 XX 42 2. 4 х, Floor 43 44 15 4.6 4.7 山西 49 50

Status Y N U

Sheet 1 of 3

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. SW-1-9P1 Equip. Class 03 - Medium Voltage Switchgear Equipment Description 36/480 VOLT AC TRFM DISCONECT SWITCH Location: BAdg. 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 2. Elevation of seismic input below about 40' from grade 3. Equipment has fundamental frequency above about 8 Hz NU (N/A DOC SIG Capacity based on: Existing Documentation 4. Bounding Spectrum BS GERS GERS Ground Response Spectrum GRS 5. Demand based on: ABS (1.5 x Bounding Spectrum Conserv. Des. In-Str. Resp. Spec. CRS Realistic M-Ctr. In-Str. Resp. Spec. RRS YNU Does capacity exceed demand 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 U N/A U N/A 2. 2.4 KV to 4.16 KV rating Internally mounted potential and/or control power 3. transformers are restrained to prevent damage to or disconnection of contacts N U N/A Ad icent cabinets which are close enough to impact, 4. or sections of multi-bay cabinets, are bolted together if they contain essential relays ? No Relays N U N/A Attached weight (excluding conduit) less than 5. about 100 lbs per cabinet bay U N/A N Externally attached items rigidly anchored N U N/A 6. N General configuration similar to ANSI C37.20 Standards U N/A 7. Cutouts in lower half of cabinet sheathing 8. less than 30% of width of side panel wide and less than 60% of width of side panel high excluding N N bus transfer compartment U N/A 9. All doors secured by latch or fastener U N/A Y N 10. Anchorage adequate (See checklist below for details) Y N 11. Relays mounted on equipment evaluated 10 N 12. Have you looked for and found no other adverse concerns? YNUN/A Is the intent of all the caveats met for Bounding Spectrum?

SCREENING EVALUATION WORK SHEET (SEWS) Sheet 2 of 3

72337 0-40-

| Equip.                     | ID No. <u>SW-1-9P1</u> Equip. Class <u>O3 - Medium Volta</u>                                                                                                                                                                                       | ge S                | wit | chg | ear     |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----|-----|---------|
| Equipm                     | ent Description 36/480 VOLT AC TRFM DISCONECT SWITCH                                                                                                                                                                                               |                     |     |     |         |
| CAVEAT<br>met by<br>and ex | <u>S - GERS</u> (Identify with an asterisk (*) those caveats which<br>intent without meeting the specific wording of the caveat<br>plain the reason for this conclusion in the COMMENTS sectio<br>Equipment is included in generic seismic testing | are<br>rule<br>n be | 10w | )   |         |
| **                         | equipment class                                                                                                                                                                                                                                    | Y                   | N   | U   | N/A     |
| 2                          | Meets all Bounding Spectrum caveats                                                                                                                                                                                                                | Y                   | N   | U   | N/A     |
| 3                          | Floor-mounted enclosure                                                                                                                                                                                                                            | Y                   | N   | Ŭ   | N/A     |
| 4                          | The switchgear is not a specially-designed type                                                                                                                                                                                                    | Ŷ                   | 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 ibs                                                                                                                                                                                                                                           | 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?                                                                                                                                                                                                            |                     |     |     | YN UNA  |
|                            | 방법 가지 않는 것이 같이 많이 많이 많이 많이 많이 했다.                                                                                                                                                                                                                  |                     |     |     |         |
| ANCHOR                     | AGE                                                                                                                                                                                                                                                |                     |     |     |         |
| 1.                         | Appropriate equipment characteristics determined                                                                                                                                                                                                   | (TT)                |     |     |         |
|                            | (mass, CG, natural freq., damping, center of rotation)                                                                                                                                                                                             | To                  | N   | U   | N/A     |
| 2.                         | Type of anchorage covered by GIP                                                                                                                                                                                                                   | (B                  | N   | 0   | N/A     |
| 3.                         | Sizes and locations of anchors determined                                                                                                                                                                                                          | ()                  | N   | U   | N/A     |
| 4.                         | Adequacy of anchorage installation evaluated                                                                                                                                                                                                       |                     |     |     |         |
|                            | (weld quality and length, nuts and washers, expansion                                                                                                                                                                                              |                     |     |     | Q       |
|                            | anchor tightness, etc.)                                                                                                                                                                                                                            |                     |     |     | UN UN/A |
| 5.                         | Factors affecting anchorage capacity or margin of                                                                                                                                                                                                  |                     |     |     |         |
|                            | safety considered: embedment length, anchor spacing,                                                                                                                                                                                               |                     |     |     |         |
|                            | ree-edge distance, concrete strength/condition, and                                                                                                                                                                                                | (5)                 | M   |     | N/A     |
| c                          | Concrete cracking                                                                                                                                                                                                                                  | U                   | 14  | 0   | N/A     |
| 0.                         | 1/4 inch                                                                                                                                                                                                                                           | (V)                 | 84  | ii. | N/A ·   |
|                            | 1/4-1101                                                                                                                                                                                                                                           | C                   | 14  | 0   | IIV A   |
|                            |                                                                                                                                                                                                                                                    |                     |     |     |         |

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SCREENING EVALUATION WORK SHEET (SEWS) Sheet 3 of 3

Equip. ID No. SW-1-9P1 Equip. Class 03 - Medium Voltage Switchgear Equipment Description \_ 36/480 VOLT AC TRFM DISCONECT SWITCH ANCHORAGE (Cont'd) Factors affecting essential relays considered: gap (Y) N U N/A under base, capacity reduction for expansion anchors Base has adequate stiffness and effect of prying 8. U N/A action on anchors considered 9. Strength of equipment base and load path U N/A to CG adequate N 10. Embedded steel, grout pad or large concrete pad adequacy evaluated N/A U N Are anchorage requirements met? INTERACTION EFFECTS Soft targets free from impact by nearby 1. N U N/A equipment or structures If equipment contains sensitive relays, equipment 2. free from all impact by nearby equipment or U N/A -structures N U Attached lines have adequate flexibility N/A 3. Overhead equipment or distribution systems are 4. not likely to collapse NN U N/A U Have you looked for and found no other adverse concerns? 5. N/A Is equipment free of interaction effects? NU IS EQUIPMENT SEISMICALLY ADEQUATE? YNU - Work Completed AN COMMENTS \* Rear of Cabinet to be attached to adjacent pal 4KUS-IDF Front is attached four places. 1 Refer to cale for SW-1-ENI.

Date: 5/3/93 Unit

Evaluated by:

# Duquesne Light Company Analysis Sheet

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-\* Q #\* M D 1 ? - 3 5 1 1 2 (1 - 90 )



i ANALYSIS NO **Duquesne** Light Company PAGE. OF PAGE. COMPILED BY DATE Analysis Sheet CHECKED BY DATE A31 Disconnect Switch 5W-1-8N1 5W-1-9P1 .8 Rear Equal Spaced 1612" 6 1/2" estimated N.4.55 center of ef disconnect switch (Not Cabinet) 9" 8. Frent Flan View Switch 12112 3-94 43" XX XXX Floor 

# **ENCLOSURE 4**