

	CALCULATION COVER SHEET	Page 1 ( Next <u>2</u> ) Total <u>6</u> Last <u>B1</u>
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NINE MILE POINT NUCLEAR STATION      Unit (1, 2 or 0=Both): 1      Discipline: STRUCTURAL

Title SCREENING EVALUATION WORK SHEETS FOR THE MAIN STEAM ISOLATION VALVE INSTRUMENT RACK (MSIVIR)	Calculation No. S0.0SEWSMSIVIR
(Sub)system(s) 01	Building TB
Floor Elev. 240	Index No. S0.0

Originator(s) CARMEN R. AGOSTA
Checker(s) / Approver(s) MOAAMED      ALN1

Rev	Description	Design Change No.	By	Date	Chk	Date	App	Date
00	INITIAL ISSUE	NA	CA	6-30-97	M.A	7-7-97	M.A	7-7-97

Computer Output/Microfilm Filed Separately (Yes / No / NA): NA      Safety Class (SR / NSR / Qxx) : SR

Superseded Document(s) : NONE

Document Cross Reference(s) - For additional references see page(s) : NA

Ref No	Document No.	Doc Type	Index	Sheet	Rev
1	NER-1S-012	NER	---	---	00
2	S0.0IPEEEHCLPF01	CALC	S0.0	---	00
3	S0.0SQUGANCHOR	CALC	S0.0	---	00

**General Reference(s) :**  
 4. GENERIC IMPLIMENTATION PROCEDURE (GIP)  
 5. NMPC Letter to NRC, File Code NMP1L 1044, dated March 11, 1996

Remarks :  
 NONE

Confirmation Required (Yes / No) : No See Page(s) : _____	Final Issue Status ( APP / FIO / VOI ) : APP	File Location ( Calc / Hold ) : Calc	Operations Acceptance Required ( Yes / No ) : No
Evaluation Number(s) / Revision : NR Copy of Applicability Review Attached (Yes / N/R)?N/R	Component ID(s) / EPN(s) / Line Number(s) : NA		
Key Words : NMP-1, STRUCTURAL, SQUG, SEWS, SEISMIC VERIFICATION			

9708070119 6PP



Nine Mile Point Nuclear Station

Unit: 1

Disposition:     

Originator/Date <u>DA</u> / <u>6-30-97</u>	Checker/Date <u>M.A</u> / <u>7-7-97</u>	Calculation No. <u>S0.0SEWSMSIVIR</u>	Revision <u>00</u>
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Ref.

**PURPOSE:** Document the Screening Evaluation Work Sheets (SEWS) for the Main Steam Isolation Valve Instrument Rack (MSIVIR) , equipment number MSIVIR.

This SEWS has been prepared as part of the commitment to use the SQUG (GIP) methodology to document the seismic adequacy of SSEL components.

**CONCLUSION:**

The MSIVIR anchor analysis and High Confidence Low Probability of Failure (HCLPF) evaluation is contained in the IPEEE HCLPF Analysis for Various Equipment calculation S0.0IPEEEHCLPF01 calculation. This calculation found the MSIVIR has a HCLPF of 2.1g. The NMP-1 plant HCLPF is 0.3g. Since  $0.3g < 2.1g$  and the anchor bolt tightness check results confirmed these anchors are tight, the SQUG outlier is resolved.

**ATTACHMENTS**

- A. SEWS for Equipment ID Number MSIVIR
- B. The Outlier Seismic Verification Sheet (OSVS) for Equipment ID Number MSIVIR

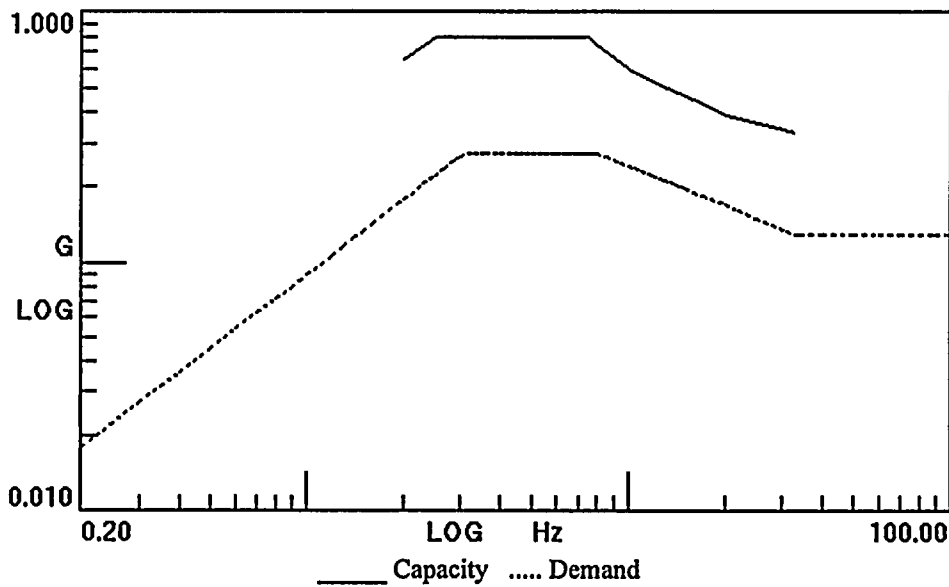
#2  
#3



<b>SCREENING EVALUATION WORK SHEET (SEWS)</b>		GIP Rev 2, Corrected, 2/14/92 Status: Yes Sheet 1 of 3
ID : MSIVIR* ( Rev. 1 )	Class : 18. Instruments on Racks	
Description : AP/MAIN STEAM ISO VLV INSTRUMENT RACK		
Building : TB	Floor El. : 261.00	Room, Row/Col : MSIV RMJ8
Manufacturer, Model, Etc. :		

**SEISMIC CAPACITY VS DEMAND**

1.	Elevation where equipment receives seismic input	261.00
2.	Elevation of seismic input below about 40' from grade (grade = 243.00)	Yes
3.	Equipment has fundamental frequency above about 8 Hz (est. frequency = )	SRT
4.	Capacity based on:	1.00 * Bounding Spectrum
5.	Demand based on:	1.00 * Design Basis Ground Response Spectrum



	File	Record
Capacity	H:\GIP\GIP\spectra.des	Label Bounding Spectrum
Demand 1	H:\GIP\PROJ003F\spectra.des	UNIT: PLANT BLDG: BUILDING E/Q: SSE ELEV: ELEVATION ROW/ COL: ALL DIR: DIR NODE: 1
Demand 2	H:\GIP\PROJ003F\spectra.des	UNIT: PLANT BLDG: BUILDING E/Q: SSE ELEV: ELEVATION ROW/ COL: ALL DIR: DIR NODE: 1

Does capacity exceed demand?

Yes

ATTACHMENT A  
CALC NO 5010SEWS MSIVR01  
REVISION 00  
PAGE NO 01



<b>SCREENING EVALUATION WORK SHEET (SEWS)</b>		GIP Rev 2, Corrected, 2/14/92 Status: Yes Sheet 2 of 3
ID : MSIVIR* ( Rev. 1 )	Class : 18. Instruments on Racks	
Description : AP/MAIN STEAM ISO VLV INSTRUMENT RACK		
Building : TB	Floor El. : 261.00	Room, Row/Col : MSIV RMJ8
Manufacturer, Model, Etc. :		

**CAVEATS - BOUNDING SPECTRUM**

IR/BS Caveat 1 - Earthquake Experience Equipment Class.	Yes
IR/BS Caveat 2 - Computers and Programmable Controllers Evaluated Separately.	Yes
IR/BS Caveat 3 - Structure Adequate.	Yes
IR/BS Caveat 4 - Adjacent Racks Bolted Together.	Yes
IR/BS Caveat 5 - Natural Frequency Relative to 8 Hz Limit Considered.	Yes
IR/BS Caveat 6 - Sufficient Slack and Flexibility of Attached Lines.	Yes
IR/BS Caveat 7 - Adequate Anchorage.	Yes
IR/BS Caveat 8 - Potential Chatter of Essential Relays Evaluated.	Yes
IR/BS Caveat 9 - No Other Concerns.	Yes

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

**ANCHORAGE**

1. The sizes and locations of anchors have been determined.	Yes
2. Appropriate equipment characteristics have been determined (mass, CG, natural freq., damping, center of rotation).	Yes
3. The type of anchorage is covered by the GIP.	Yes*
4. The adequacy of the anchorage installation has been evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Yes
5. Factors affecting anchorage capacity or margin of safety have been considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking.	Yes
6. For bolted anchorages, any gaps under the base are less than 1/4 .	Yes
7. Factors affecting essential relays have been considered: gaps under the base, capacity reduction for expansion anchors.	Yes
8. The base has adequate stiffness and the effect of prying action on anchors has been considered.	Yes
9. The strength of the equipment base and the load path to the CG is adequate.	Yes
10. The adequacy of embedded steel, grout pads or large concrete pads have been evaluated.	Yes
11. The anchorage capacity exceeds the demand.	Yes

Are anchorage requirements met? Yes

ATTACHMENT A  
 CALC NO SO.0505 MSIVIR01  
 REVISION 00  
 PAGE NO A2





<b>SCREENING EVALUATION WORK SHEET (SEWS)</b>		GIP Rev 2, Corrected, 2/14/92 Status: Yes Sheet 3 of 3
ID : MSIVIR* ( Rev. 1 )	Class : 18. Instruments on Racks	
Description : AP/MAIN STEAM ISO VLV INSTRUMENT RACK		
Building : TB	Floor El. : 261.00	Room, Row/Col : MSIV RMJ8
Manufacturer, Model, Etc. :		

**INTERACTION EFFECTS**

1. Soft targets are free from impact by nearby equipment or structures.	Yes
2. If the equipment contains sensitive relays, it is free from all impact by nearby equipment or structures.	Yes
3. Attached lines have adequate flexibility.	Yes
4. Overhead equipment or distribution systems are not likely to collapse.	Yes
5. No other adverse concerns were found.	Yes

Is equipment free of interaction effects? Yes

IS EQUIPMENT SEISMICALLY ADEQUATE? Yes

**COMMENTS**

SRT are W. Djordjevic and C. Agosta - Outlier Evaluation


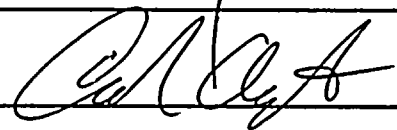
\* In Revision 0, this rack was declared an outlier because it uses Cinch type leaded anchors which are not covered by the GIP.

External analysis 95C2873-C-003 evaluates the anchorage using data developed by Westinghouse Savannah River (referenced in calculation) and shows a HCLPF PGA equal to 2.1g.

Subsequently, bolt tightness checking was conducted on <sup>180</sup> accessible Cinch anchor installations with only <sup>two</sup> one failure to hold tightness. Since this failure rate is less than 1% and the HCLPF is equivalent to about a 1% failure rate, no reduction factor is applied to Cinch anchors. / 09 7/15/95

Therefore, this equipment is found acceptable for A-46 design basis purposes and the outlier is resolved. The HCLPF remains at 2.1g PGA.

Evaluated by:

  
\_\_\_\_\_  
  
\_\_\_\_\_

Date:

11/17/95  
12/7/95

ATTACHMENT A  
CALC NO SRDSEWS MSIVR01  
REVISION 02  
PAGE NO A3



<b>OUTLIER SEISMIC VERIFICATION SHEET (OSVS)</b>		GIP Rev Sheet 1 of 1
ID : MSIVIR* (Rev. 0)	Class : 18. Instruments on Racks	
Description : AP/MAIN STEAM ISO VLV INSTRUMENT RACK		
Building : TB	Floor El. : 261.00	Room, Row/Col : MSIV RMJ8

**1. OUTLIER ISSUE DEFINITION - Mechanical and Electrical Equipment**

- a. Identify all the screening guidelines which are not met. (Check more than one if several guidelines could not be satisfied.)

Capacity vs. Demand	
Caveats	
Anchorage	X
Seismic Interaction	
Other	

- b. Describe all the reasons for the outlier (i.e., if all the listed outlier issues were resolved, then the signatories would consider this item of equipment to be verified for seismic adequacy).

MSIVIR\* is anchored with Cinch (lead) type anchors. Cinch type anchors are not covered by the GIP.

**2. PROPOSED METHOD OF OUTLIER RESOLUTION (Optional)**

- a. Defined proposed method(s) for resolving outlier.

Determine actual capacities of Cinch type anchors and compare them to demand loads or retrofit anchorage.

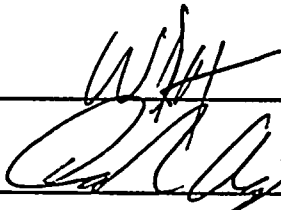

- b. Provide information needed to implement proposed method(s) for resolving outlier (e.g., estimate of fundamental frequency).

**3. COMMENTS**

**4. CERTIFICATION:**

The information on this OSVS is, to the best of our knowledge and belief, correct and accurate, and resolution of the outlier issues listed on the previous page will satisfy the requirements for this item of equipment to be verified for seismic adequacy:

Approved by:

\_\_\_\_\_  
  
 \_\_\_\_\_  


Date:

\_\_\_\_\_  
 1/11/94  
 \_\_\_\_\_  
 6/8/95

ATTACHMENT B  
 CALC NO 50.0 SEISM MSIM01  
 REVISION 00  
 PAGE NO B1

