Seismic Adequacy Evaluation for Application of the GIP Methodology for New and Replacement Equipment

2ESVPU0003

Unit 2 ESV Vacuum Pump No.3

Seismic Adequacy Evaluation
Checklist for Application of the GIP Methodology
to New and Replacement Equipment

1.	**Equipment Description:** 2ESVPU0003, Essential Siphon Vacuum Pump No. 3 Manufacture: SiemensModel No.: 2BE1152
2.	**GIP, Appendix B, Equipment Class Applicable to Equipment?** Yes☒ No☐ **If No, go to 11.**
3.	**Applicable GIP Equipment Class.** Class 05, Horizontal Pumps
4.	**Identify Licensing Basis Documents(s) which indicate that GIP is an Acceptable Method for Demonstrating Seismic Adequacy** Oconee FSAR Section 3.9.2.2 in conjunction with the Duke Energy Corp. Docket No 50-269, Amendment to Facility License Dated April 24, 1998.
5.	**A. Basis for Equipment Seismic Capacity** ☒ Earthquake experience ☐ GERS ☐ Existing Seismic Qualification Capacity Data (Attach copy of capacity data to this checklist)
	B. Basis for Equipment Seismic Demand ☐ In-Structure response spectra approved for USI A-46 ☐ 1.5 x SSE ground response spectra ☒ Other (Describe) Oconee Ground Response Spectrum for overburden, anchored at .15g with 5% damping **(Attach a copy of seismic demand spectrum to this checklist)**
	C. Equipment seismic capacity exceeds demand? Yes ☒ No ☐ **If No go to 9.**

6.	**A. Equipment meets intent of caveats and inclusion rules?** Yes ☒ No ☐ If Yes, proceed to No. 6.b., below. If No, proceed to No. 11., below.	
	B. Significant design differences with potential adverse impact on seismic adequacy identified? Yes ☐ No ☒ If Yes, proceed to No. 6.c., below. If No, proceed to No. 7., below.	
	C. Description of design differences and potential impact on seismic adequacy: N/A	
	D. Design difference has significant adverse impact on seismic adequacy? Yes ☐ No ☐ If Yes, proceed to No. 11., below. If No, document basis below or on sheet(s) attached this Checklist. N/A	

Seismic Adequacy Evaluation
Checklist for Application of the GIP Methodology
to New and Replacement Equipment

7.	**A. Equipment anchorage uses existing bolt pattern ?** Yes ☐ No ☒ If Yes, proceed to No. 7.a.(1), below. If No, proceed to No. 7.a.(2), below. **(1) Anchorage adequate for GIP methodology utilizing GIP rules for anchorage capacity?** Yes ☐ No ☐ **If Yes, proceed to No. 7.b.** **If No, complete Nos. 7.b and 8; then go to 9.** **(2) Anchorage adequate for GIP methodology utilizing current licensing criteria factors of safety for anchors?** Yes ☒ No ☐ If Yes, proceed to No. 8. If No, complete No. 8. And go to 9.
	B. Anchorage meets GIP installation Requirements ? Yes ☒ No ☐ If Yes, go to No. 8. If No, complete No. 8. And go to 9.
8.	**Installed Equipment Free of Significant, Credible Seismic Interaction Concerns?** Yes ☒ No ☐ If Yes, go to No. 10. If No, go to 9.
9.	**GIP Outlier Evaluation Indicates that Screening Criteria Discrepancies ("No" answers to 5.c.,6.a.,7.b., or 8) are Resolved?** Yes ☐ No ☐ If Yes, go to No. 10. If No, go to 11.
10.	**Complete Seismic Adequacy documentation per GIP and applicable plant Quality Assurance/Quality Control Procedures. Confirm review and approval by Seismic Capacity Engineers (signatures below) and attach applicable documentation to this checklist. Seismic Adequacy Evaluation Complete.**
11.	**Use other acceptable methods per plant licensing basis. Describe alternate method. Attach applicable documentation** N/A

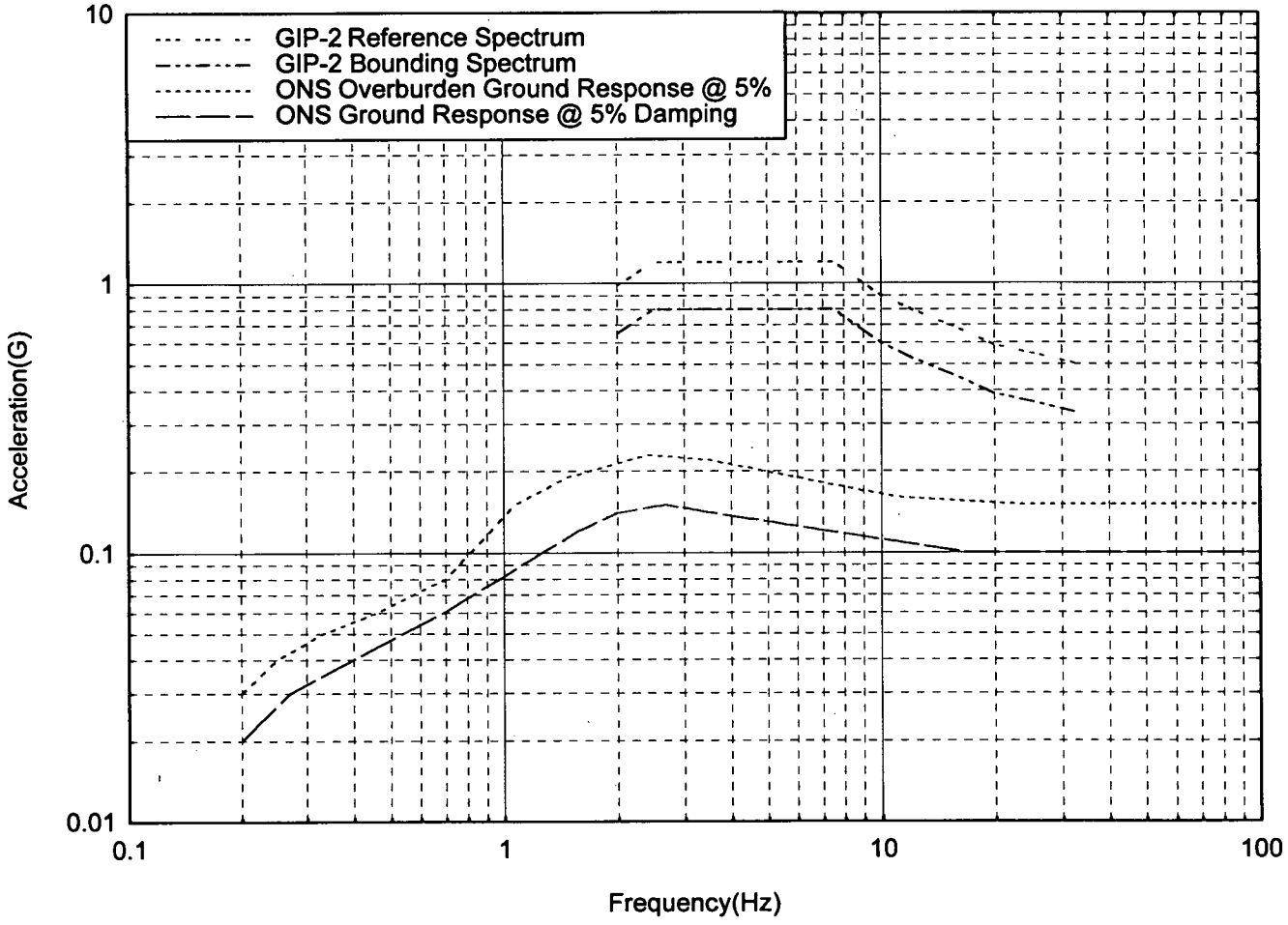
Seismic Capability Engineer Approval

6/16/98
Date

Seismic Capability Engineer Approval

6/16/98
Date

ONS Ground Responses vs GIP-2 Bounding & Reference Spectrums



Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 2ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

CAVEATS - BOUNDING SPECTRUM

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	Driver and pump connected by rigid base or skid	Y N U	N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U	N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U	N/A
5.	Base vibration isolators adequate for seismic loads	Y N U	N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U	N/A
7.	Anchorage adequate (See checklist below for details)	Y N U	N/A
8.	Relays mounted on equipment evaluated	Y N U	N/A
9.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 2ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE [Y] N U

COMMENTS

See 2ESVPU0001 for complete SEWS evaluation.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 2ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Evaluated by:

R.P.Childs
Date: 04/15/98

L.B.Elrod
Date: 04/15/98

Sketch 1

ATTACHMENT 2

Oconee Unit 1 and 3 ECCW Upgrade Project

Interim Screening Evaluation Work Sheets (SEWS)

Unit 1:

1ESV1 Unit 1 Essential Siphon Vacuum Panel No. 1

1ESVLCP1 Unit 1 Essential Siphon Vacuum Local Control Cabinet No. 1

1ESVPU0001 Unit 1 Essential Siphon Vacuum Pump No. 1

1ESVPU0002 Unit 1 Essential Siphon Vacuum Pump No. 2

1ESVPU0003 Unit 1 Essential Siphon Vacuum Pump No. 3

Unit 3:

3ESV1 Unit 3 Essential Siphon Vacuum Panel No. 1

3ESV2 Unit 3 Essential Siphon Vacuum Panel No. 2

3ESV1 Unit 3 Essential Siphon Vacuum Panel No. 3

3ESVLCP1 Unit 3 Essential Siphon Vacuum Local Control Cabinet No. 1

3ESVPU0001 Unit 3 Essential Siphon Vacuum Pump No. 1

3ESVPU0002 Unit 3 Essential Siphon Vacuum Pump No. 2

3ESVPU0003 Unit 3 Essential Siphon Vacuum Pump No. 3

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.1

Location: Bldg. AB Floor El. 796'+6" Room, Row/Col EQ.ROOM

Manufacturer, Model, Etc. (optional) Hoffman A-603624FS

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	No computers or programmable controllers	Y N U	N/A
3.	No strip chart recorders	Y N U	N/A
4.	Steel frame and sheet metal structurally adequate	Y N U	N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U	N/A
6.	Drawers and equipment on slides restrained from falling out	Y N U	N/A
7.	All doors secured by latch or fastener	Y N U	N/A
8.	Attached lines have adequate flexibility	Y N U	N/A
9.	Anchorage adequate (See checklist below for details)	Y N U	N/A
10.	Relays mounted on equipment evaluated	Y N U	N/A
11.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.1

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U N/A

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESV1. Unit 1 ECCW has not been completed. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

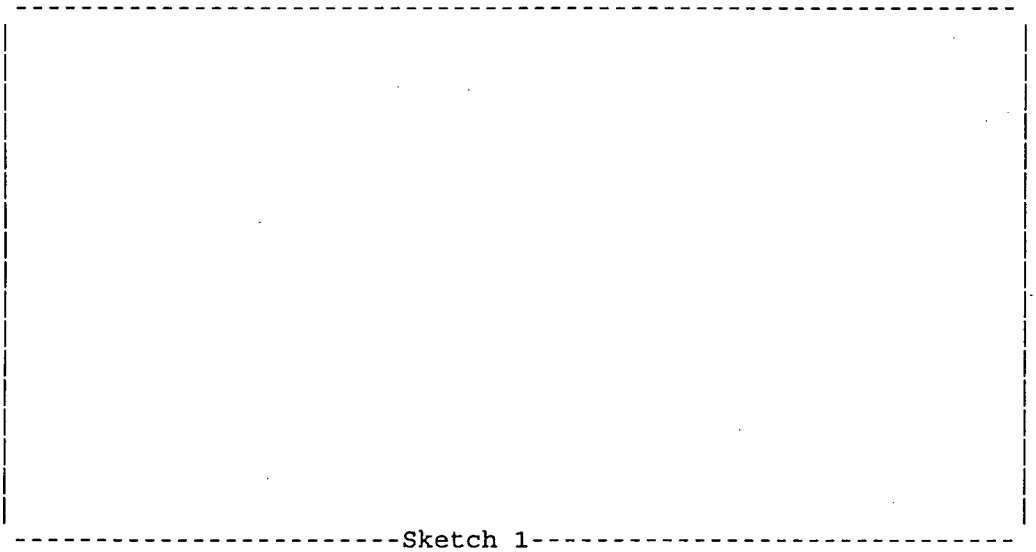
Equipment Description Essential Siphon Vacuum PanelNo.1

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98



Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Hoffman A-727224FSD

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	No computers or programmable controllers	Y N U	N/A
3.	No strip chart recorders	Y N U	N/A
4.	Steel frame and sheet metal structurally adequate	Y N U	N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U	N/A
6.	Drawers and equipment on slides restrained from falling out	Y N U	N/A
7.	All doors secured by latch or fastener	Y N U	N/A
8.	Attached lines have adequate flexibility	Y N U	N/A
9.	Anchorage adequate (See checklist below for details)	Y N U	N/A
10.	Relays mounted on equipment evaluated	Y N U	N/A
11.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U N/A

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVLCP1. Unit 3 ECCW has not been completed. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

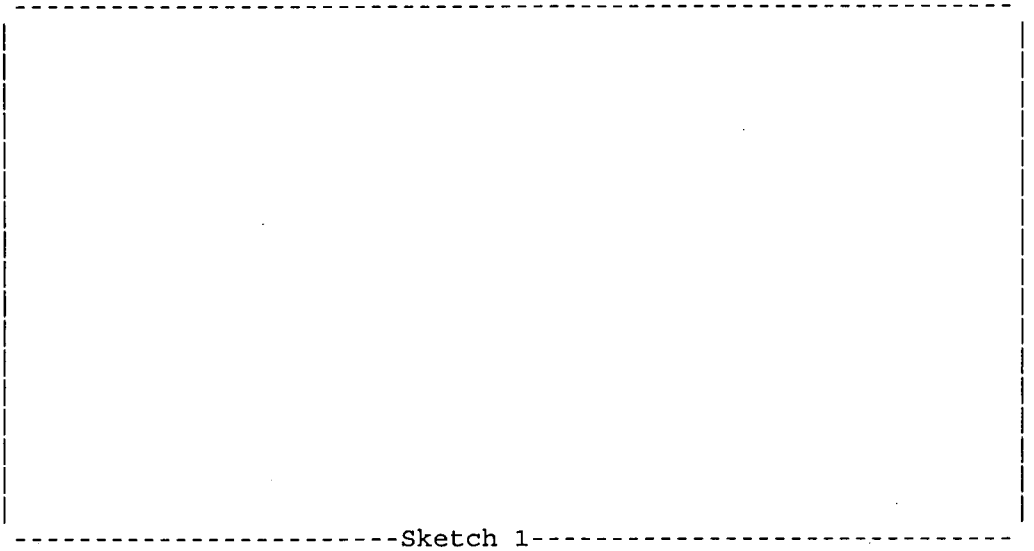
Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98



Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U N/A
2.	Driver and pump connected by rigid base or skid	Y N U N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U N/A
5.	Base vibration isolators adequate for seismic loads	Y N U N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U N/A
7.	Anchorage adequate (See checklist below for details)	Y N U N/A
8.	Relays mounted on equipment evaluated	Y N U N/A
9.	Have you looked for and found no other adverse concerns?	Y N U N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U N/A
2.	Type of anchorage covered by GIP	Y N U N/A
3.	Sizes and locations of anchors determined	Y N U N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 1 ECCW has not been completed. Pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U N/A
2.	Driver and pump connected by rigid base or skid	Y N U N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U N/A
5.	Base vibration isolators adequate for seismic loads	Y N U N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U N/A
7.	Anchorage adequate (See checklist below for details)	Y N U N/A
8.	Relays mounted on equipment evaluated	Y N U N/A
9.	Have you looked for and found no other adverse concerns?	Y N U N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U N/A
2.	Type of anchorage covered by GIP	Y N U N/A
3.	Sizes and locations of anchors determined	Y N U N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 1 ECCW has not been completed. Pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	Driver and pump connected by rigid base or skid	Y N U	N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U	N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U	N/A
5.	Base vibration isolators adequate for seismic loads	Y N U	N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U	N/A
7.	Anchorage adequate (See checklist below for details)	Y N U	N/A
8.	Relays mounted on equipment evaluated	Y N U	N/A
9.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 1 ECCW has not been completed. Pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 1ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.1

Location: Bldg. AB Floor El. 796'+6" Room, Row/Col EQ.ROOM

Manufacturer, Model, Etc. (optional) Hoffman A-363612LP

SEISMIC CAPACITY VS DEMAND

1.	Elevation where equipment receives seismic input	796'+6"	
2.	Elevation of seismic input below about 40' from grade	[Y] N U	
3.	Equipment has fundamental frequency above about 8 Hz	Y [N] U N/A *	
4.	Capacity based on: Existing Documentation	DOC	
	Bounding Spectrum	BS	
	1.5 x Bounding Spectrum	[ABS]	
	GERS	GERS	
5.	Demand based on: Ground Response Spectrum	GRS	
	1.5 x Ground Response Spectrum	AGRS	
	Conserv. Des. In-Str. Resp. Spec.	CRS	
	Realistic M-Ctr. In-Str. Resp. Spec.	[RRS]	

Does capacity exceed demand? [Y] N U *

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

1.	Equipment is included in earthquake experience equipment class	[Y] N U N/A *
2.	No computers or programmable controllers	[Y] N U N/A
3.	No strip chart recorders	[Y] N U N/A
4.	Steel frame and sheet metal structurally adequate	[Y] N U N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U [N/A]
6.	Drawers and equipment on slides restrained from falling out	Y N U [N/A] *
7.	All doors secured by latch or fastener	[Y] N U N/A
8.	Attached lines have adequate flexibility	[Y] N U N/A
9.	Anchorage adequate (See checklist below for details)	[Y] N U N/A
10.	Relays mounted on equipment evaluated	Y N [U] N/A *
11.	Have you looked for and found no other adverse concerns?	[Y] N U N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	[Y] N U N/A
2.	Type of anchorage covered by GIP	[Y] N U N/A *
3.	Sizes and locations of anchors determined	[Y] N U N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.1

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	[Y]	N	U	N/A	*
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	[Y]	N	U	N/A	
6.	For bolted anchorages, gap under base less than 1/4-inch	[Y]	N	U	N/A	
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	[Y]	N	U	N/A	
8.	Base has adequate stiffness and effect of prying action on anchors considered	[Y]	N	U	N/A	
9.	Strength of equipment base and load path to CG adequate	[Y]	N	U	N/A	
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	[N/A]	
Are anchorage requirements met?					[Y] N U N/A *	

INTERACTION EFFECTS

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

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

Unit 3 ECCW has not been completed. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

COMMENTS FROM SEISMIC CAPACITY VS DEMAND
3 Panel is conservativly assumed to have a fundamental freq. < 8 Hz.
Does capacity exceed demand? Demand based on 5% damped instructure resonse spectra @ 796' +6" in the AB

COMMENTS OF CAVEATS - BOUNDING SPECTRUM
1

e Unit 3 ESV panels are judged to meet the inclusion rules for Enclosed witchboards as listed below. The cabinets are wall mounted and consist of a steel frame with sheet metal panals. Internal components are mounted on the front face and on the interior walls. The front of the panel consist of a single swing door.

****

Inclusion Rules for GIP Equipment Class 20 (I & C Panels & Cabinet)

1. Includes all types of electrical panels that support instrumentation and controls.
2. Includes both the sheet metal enclosure and typical control and instrumentation components mounted on or inside the enclosure.
3. Includes a wide diversity of sizes, types, functions, and components.
4. Panels and cabinet structures generally consist of a steel frame supporting sheet metal panels to which instrumentation and control components are bolted or clamped.
5. Cabinet structures range from a single panel, braced against or built into a wall, to a free standing cabinet enclosure.
6. Enclosures are generally categorized as either Switchboards or Benchboards

**********Vertical Switchboards:**********

1. A vertical Switchboard is a single reinforced sheet metal instrument panel, which is either braced against an adjacent wall or built into it.

Enclosed Switchboard:

An enclosed switchboard is a free standing enclosed sheet metal cabinet with mponents mounted on the front face, and possibly on the interior walls.
2. Front or rear panel is usually hinged as a single or double swing door to allow access to the interior.

**********Dual Switchboard:**********

1. A duel switchboard consists of two vertical panels braced against each other to form a freestanding structure, with components mounted on both front and rear panels.
2. The sides are usually open ,and the two panels are joined by cross members spanning between their tops.

**********Duplex Switchboard:**********

1. Similar to a dual Switchboard, except that it consist of a panel fully enclosed by sheet metal on all sides, with access through doors in the two side panels.

**********Benchboards**********

1. Consists of a control desk with an attached vertical panel.
2. A control desk has components mounted on the desk top, and interior access through swinging doors in the rear.
3. The single panel is similar to a vertical Switchboard and is normally braced against or built into a wall.

4. A dual benchboard is similar to a duel switchboard, but the lower half of the front panel is a desk console.
5. A duplex benchboard is similar to a Duplex Switchboard, a totally enclosed panel, but with a desk console in the lower half of the panel.

Panels and cabinet enclosures normally consist of steel angles, channels, or square tubes welded together, with sheet metal siding attached by spot welds. Large panels are typically made of individual sections bolted together through adjoining framing. The cabinet may or may not include a sheet metal floor or ceiling.

The Instrument and Control Panels and cabinets equipment class includes the sheet metal enclosure, switches, push buttons, panel lights, indicators, anunciators, gauges, meters, recorders, relays (provided they meet relay requirements), controllers solid state circuit boards, power supplies, tubing, wiring and terminal blocks.

Design Difference Evaluation:

Cabinets are Hoffman A-363612LP. The new cabinets were compared to similar existing Hoffman cabinets at Oconee which had been previously evaluated per the GIP and found to seismically adequate. In addition, the 1997 Hoffman catalog was compared to the October 1976 Hoffman catalog to ensure that no significant design or material variations existed. Both new and old cabinets are made of 14 gauge steel, all seams are continuously welded and there are no holes or knockouts. All door hinges and internal frame structures were found to be identical. Both new and existing doors have 3 point latching door handles. These cabinets were found to be identical in construction to existing Hoffman cabinets.
The structural load path of Hoffman type enclosures is judged to be significantly more rugged than that shown for Enclosed Switchboards in Fig. 20-2 of EPRI NP-7149-D. This is based on the fact that the unit 3 ESV panels are smaller, more compact and are ruggedly wall mounted. Overall construction of the Hoffman cabinets is judged to be equivalent to typical Control and Instrumentation Panels & Cabinets represented in the earthquake experience database.

All internals were not present at inspection. Final inspection to be performed prior cabinet being declared operational.
6 There are no drawers or equipment on slides in the cabinets
10 All internal components required to function either during or after a seismic event have been evaluated as required per UFSAR 3.10. Field mounting of relays to be inspected prior to start up of system.

COMMENTS OF ANCHORAGE
2 Anchored with 4 HN 3817 sleeve anchors.
4 Anchors were installed per QA procedure MP/0/A/1800/35.
Are anchorage requirements met? See calculation in OSC-6040.

COMMENTS OF INTERACTION EFFECTS
Is equipment free of interaction effects? Cabinet must be walked for interaction prior to putting into service. All adjacent equipment may not have been installed.

SCREENING EVALUATION WORK SHEET (SEWS)

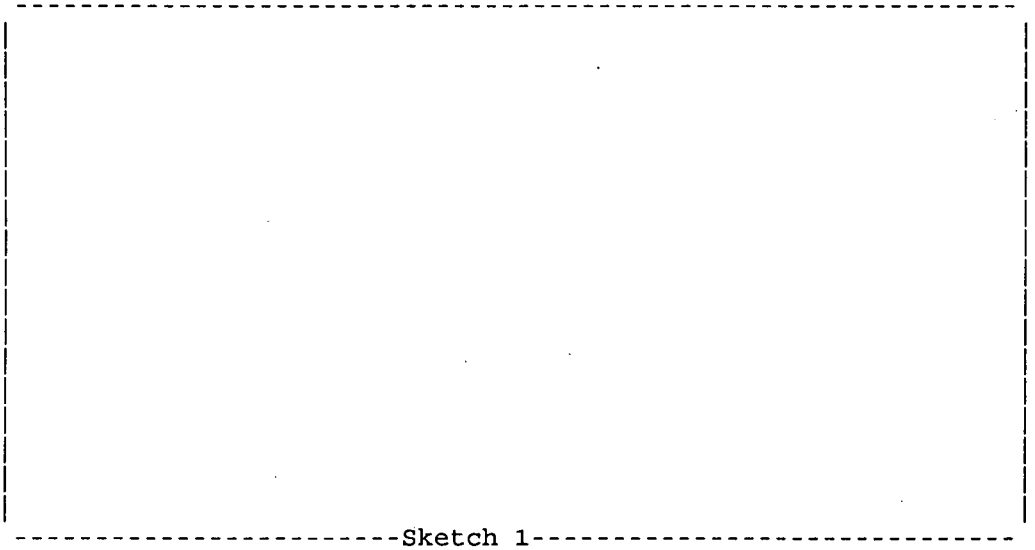
Equip. ID No. 3ESV1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.1

Evaluated by:

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 04/01/98



Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV2 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.2

Location: Bldg. AB Floor El. 796'+6" Room, Row/Col EQ.ROOM

Manufacturer, Model, Etc. (optional) Hoffman A-363612LP

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	No computers or programmable controllers	Y N U	N/A
3.	No strip chart recorders	Y N U	N/A
4.	Steel frame and sheet metal structurally adequate	Y N U	N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U	N/A
6.	Drawers and equipment on slides restrained from falling out	Y N U	N/A
7.	All doors secured by latch or fastener	Y N U	N/A
8.	Attached lines have adequate flexibility	Y N U	N/A
9.	Anchorage adequate (See checklist below for details)	Y N U	N/A
10.	Relays mounted on equipment evaluated	Y N U	N/A
11.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV2 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.2

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U N/A

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 3ESV1. Unit 3 ECCW has not been completed. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV2 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.2

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B. Elrod

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV3 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.3

Location: Bldg. AB Floor El. 796'+6" Room, Row/Col EQ.ROOM

Manufacturer, Model, Etc. (optional) Hoffman A-363612LP

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	No computers or programmable controllers	Y N U	N/A
3.	No strip chart recorders	Y N U	N/A
4.	Steel frame and sheet metal structurally adequate	Y N U	N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U	N/A
6.	Drawers and equipment on slides restrained from falling out	Y N U	N/A
7.	All doors secured by latch or fastener	Y N U	N/A
8.	Attached lines have adequate flexibility	Y N U	N/A
9.	Anchorage adequate (See checklist below for details)	Y N U	N/A
10.	Relays mounted on equipment evaluated	Y N U	N/A
11.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV3 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.3

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U N/A

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 3ESV1. Unit 3 ECCW has not been completed. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESV3 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.3

Evaluated by:

R.P.Childs

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Hoffman A-727224FSD

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	No computers or programmable controllers	Y N U	N/A
3.	No strip chart recorders	Y N U	N/A
4.	Steel frame and sheet metal structurally adequate	Y N U	N/A
5.	Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain essential relays	Y N U	N/A
6.	Drawers and equipment on slides restrained from falling out	Y N U	N/A
7.	All doors secured by latch or fastener	Y N U	N/A
8.	Attached lines have adequate flexibility	Y N U	N/A
9.	Anchorage adequate (See checklist below for details)	Y N U	N/A
10.	Relays mounted on equipment evaluated	Y N U	N/A
11.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

ANCHORAGE (Cont'd)

4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U N/A

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVLCP1. Unit 3 has not been placed inservice yet. Cabinet is seismically adequate pending acceptable interaction and internal component mounting walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVLCP1 Equip. Class 20 - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

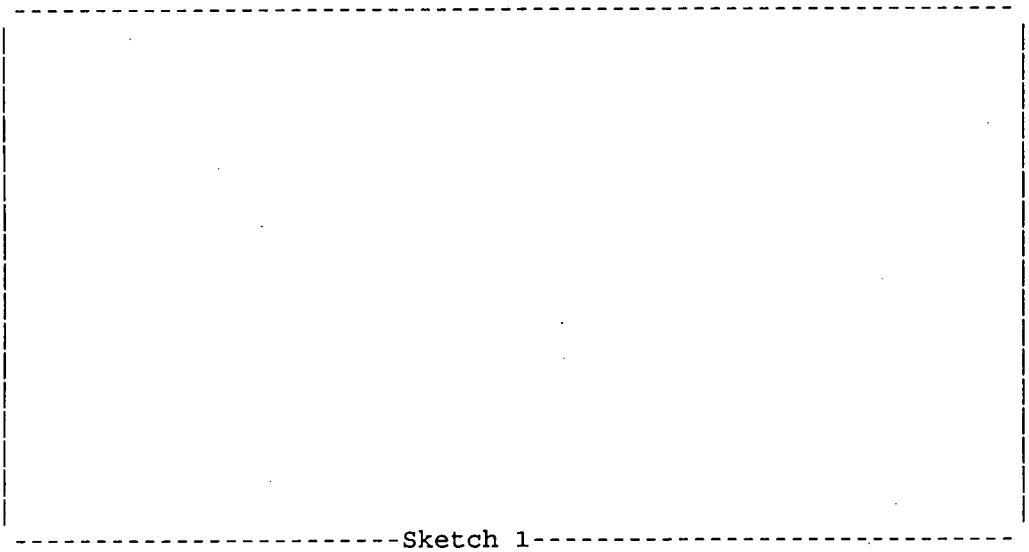
Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B. Elrod

L.B.Elrod
Date: 06/15/98



Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	Driver and pump connected by rigid base or skid	Y N U	N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U	N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U	N/A
5.	Base vibration isolators adequate for seismic loads	Y N U	N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U	N/A
7.	Anchorage adequate (See checklist below for details)	Y N U	N/A
8.	Relays mounted on equipment evaluated	Y N U	N/A
9.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 3 ECCW has not been completed. pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0001 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.1

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B. Elrod

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

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

1.	Equipment is included in earthquake experience equipment class	Y N U	N/A
2.	Driver and pump connected by rigid base or skid	Y N U	N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U	N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U	N/A
5.	Base vibration isolators adequate for seismic loads	Y N U	N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U	N/A
7.	Anchorage adequate (See checklist below for details)	Y N U	N/A
8.	Relays mounted on equipment evaluated	Y N U	N/A
9.	Have you looked for and found no other adverse concerns?	Y N U	N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U	N/A
2.	Type of anchorage covered by GIP	Y N U	N/A
3.	Sizes and locations of anchors determined	Y N U	N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U	N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 3 ECCW has not been completed. pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0002 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.2

Evaluated by:

R.P. Childs

R.P.Childs
Date: 06/15/98

L.B. Elrod

L.B.Elrod
Date: 06/15/98

Sketch 1

Revision 2, Corrected, 6/28/91
Status Y N U
Sheet 1 of _____
Rev. 0

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Location: Bldg. ESV Floor El. 796'+6" Room, Row/Col N/A

Manufacturer, Model, Etc. (optional) Seimens 2BE1152

Horsepower/Motor Rating (opt.)_____ RPM (opt.)____ Head (opt.)_____ Flow Rate (opt.)_____

SEISMIC CAPACITY VS DEMAND

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

Does capacity exceed demand? Y N U

CAVEATS - BOUNDING SPECTRUM

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

1.	Equipment is included in earthquake experience equipment class	Y N U N/A
2.	Driver and pump connected by rigid base or skid	Y N U N/A
3.	No indication that shaft does not have thrust restraint in both axial directions	Y N U N/A
4.	No risk of excessive nozzle loads such as gross pipe motion or differential displacement	Y N U N/A
5.	Base vibration isolators adequate for seismic loads	Y N U N/A
6.	Attached lines (cooling, air, electrical) have adequate flexibility	Y N U N/A
7.	Anchorage adequate (See checklist below for details)	Y N U N/A
8.	Relays mounted on equipment evaluated	Y N U N/A
9.	Have you looked for and found no other adverse concerns?	Y N U N/A

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

ANCHORAGE

1.	Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y N U N/A
2.	Type of anchorage covered by GIP	Y N U N/A
3.	Sizes and locations of anchors determined	Y N U N/A
4.	Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y N U N/A

SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. 3ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

ANCHORAGE (Cont'd)

5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A
7.	Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A
8.	Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A
9.	Strength of equipment base and load path to CG adequate	Y	N	U	N/A
10.	Embedded steel, grout pad or large concrete pad adequacy evaluated	Y	N	U	N/A

Are anchorage requirements met? Y N U

INTERACTION EFFECTS

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

Is equipment free of interaction effects? Y N U

IS EQUIPMENT SEISMICALLY ADEQUATE Y N [U]

COMMENTS

This SEWS form is fully enveloped by the SEWS form for 2ESVPU0001. Unit 3 ECCW has not been completed. pump is acceptable pending final walkdown.

SCREENING EVALUATION WORK SHEET (SEWS)

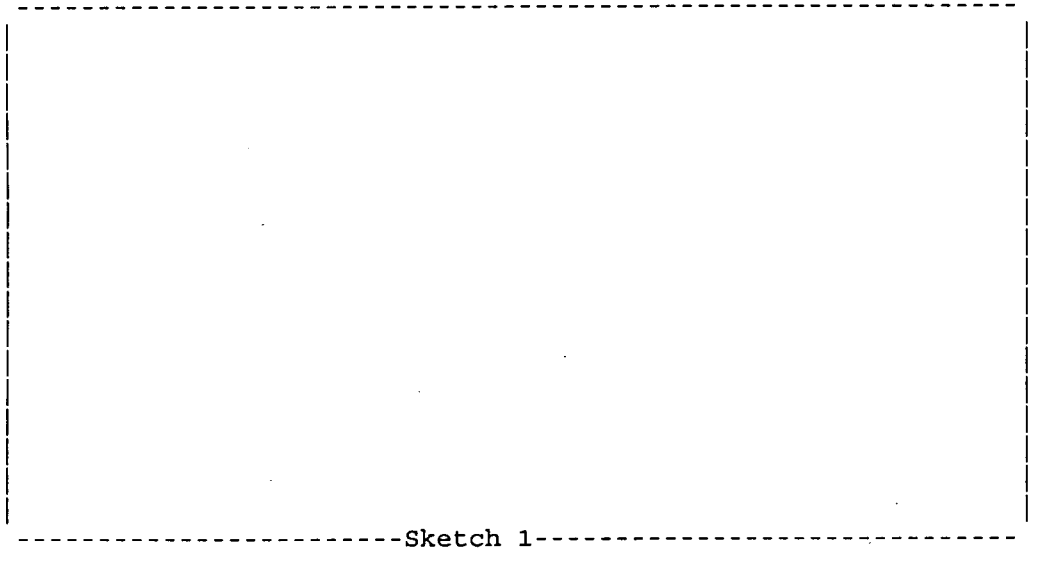
Equip. ID No. 3ESVPU0003 Equip. Class 05 - Horizontal Pumps

Equipment Description Essential Siphon Vacuum Pump No.3

Evaluated by:

R.P.Childs
Date: 06/15/98

L.B.Elrod
Date: 06/15/98



Sketch 1