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

# **2ESVPU0003**

Unit 2 ESV Vacuum Pump No.3

9807070189 PDR ADOCK

000269 PDR

## 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? If No, go to 11.
3.	Applicable GIP Equipment Class. Class 05, Horizontal Pumps
<b>4.</b>	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.
	<ul> <li>A. Basis for Equipment Seismic Capacity</li> <li>➢ Earthquake experience</li> <li>☐ GERS</li> <li>☐ Existing Seismic Qualification Capacity Data (Attach copy of capacity data to this checklist)</li> </ul>
	<ul> <li>B. Basis for Equipment Seismic Demand</li> <li>□ In-Structure response spectra approved for USI A-46</li> <li>□ 1.5 x SSE ground response spectra</li> <li>○ Other (Describe)</li> <li>○ Oconee Ground Response Spectrum for overburden, anchored at .15g with 5% damping</li> </ul>
	(Attach a copy of seismic demand spectrum to this checklist)
	C. Equipment seismic capacity exceeds demand?
	If No go to 9.

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

6.	A. Equipment meets intent of caveats and inclusion rules?	Yes No
andra in a second a second	If Yes, proceed to No. 6.b., below.	
	If No, proceed to No. 11., below. B. Significant design differences with potential adverse	Yes No 🖂
	impact on seismic adequacy identified? 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 N/A	adequacy:
	D. Design difference has significant	Yes No
	adverse impact on seismic adequacy? 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	Yes 🗌	No
	utilizing GIP rules for anchorage capacity?		
-	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	Yes 🔀	No
	utilizing current licensing criteria factors of		
	safety for anchors?		
	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	Yes 🛛	No
	Interaction Concerns?		
	If Yes, go to No. 10.		
	If No, go to 9.		
9.	GIP Outlier Evaluation Indicates that	Yes 🔲 🐰	No
	Screening Criteria Discrepancies		
	("No" answers to 5.c.,6.a.,7.b., or 8) are		
	Resolved?		
	If Yes, go to No. 10.		
	If No, go to 11.		
10.	Complete Seismic Adequacy documentation per GIP and		
in the second	applicable plant Quality Assurance/Quality Control Procedures.		
	Confirm review and approval by Seismic Capacity Engineers (sign	natures bel	ow) and
	attach applicable documentation to this checklist. Seismic Adequa	cy Evaluat	ion
	Complete.		
11.	Use other acceptable methods per plant licensing basis. Describe a	lternate m	ethod.
	Attach applicable documentation		
	N/A		

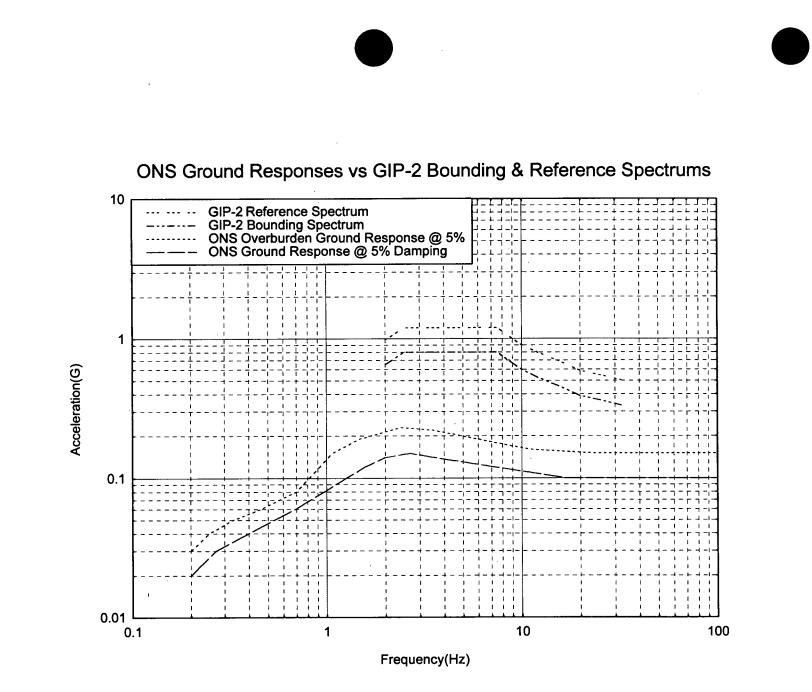
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Seismic Capability Engineer Approval

Seismic Capability Engineer Approval

6/16/98 Date

1/16/95 Date



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Equip. ID No. <u>2ESVPU0003</u> Equip. Class <u>05 - Horizontal</u>	Pump	s				
Equipment Description Essential Siphon Vacuum Pump No.3						
Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row/C	ol <u>N</u>	<u>/</u> A				
Manufacturer, Model, Etc. (optional) <u>Seimens 2BE1152</u>						
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	F	low	Ra	te (opi	t.)_	
SEISMIC CAPACITY VS DEMAND 1. Elevation where equipment receives seismic input 2. Elevation of seismic input below about 40' from grade 3. Equipment has fundamental frequency above about 8 Hz 4. Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum GERS 5. Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec. Does capacity exceed demand? Set the set of th	DO BS AB GE GR AG CR RR	N C S RS S S S	U	N/A Y N	- U	
<u>CAVEATS - BOUNDING SPECTRUM</u> (Identify with an asterisk (*) those ca are met by intent without meeting the specific wording of the cavea explain the reason for this conclusion in the COMMENTS section belo	t ru					
1. Equipment is included in earthquake experience equipment class	Y	N	U	N/A		
<ol> <li>Driver and pump connected by rigid base or skid</li> <li>No indication that shaft does not have thrust</li> </ol>				N/A		
restraint in both axial directions	Y	N	U	N/A		
4. No risk of excessive nozzle loads such as gross				NT / 7		
pipe motion or differential displacement 5. Base vibration isolators adequate for seismic loads	Y Y		ប ប	N/A N/A		
<ol> <li>Attached lines (cooling, air, electrical) have adequate flexibility</li> </ol>	Y	N	U	N/A		
7. Anchorage adequate (See checklist below for details)			U			
8. Relays mounted on equipment evaluated			U			
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						
<ol> <li>Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> </ol>	Y	N	U	N/A		
2. Type of anchorage covered by GIP			U	N/A		
3. Sizes and locations of anchors determined			U			
4. Adequacy of anchorage installation evaluated						
(weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N	U	N/A		
_						

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uip. ID No. <u>2ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

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.						
		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	σ	N/A	
]	L0.					4-	
_		pad adequacy evaluated	Y	N	U	N/A	
Are	e an	chorage requirements met?				YNU	
INT	TERA	CTION EFFECTS					
INT		<u>CTION EFFECTS</u> Soft targets free from impact by nearby					
<u>IN7</u>			Y	N	U	N/A	
<u>IN7</u>		Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment	Y	N	U	N/A	
INT	1.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or					
INT	1.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures	Y	N	U	N/A	
	1. 2. 3.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Attached lines have adequate flexibility	Y		U		
	1. 2.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are	Y Y	N N	บ บ	N/A N/A	
	1. 2. 3. 4.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are not likely to collapse	Y Y Y	N N N	บ บ บ	N/A N/A N/A	
	1. 2. 3. 4. 5.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are not likely to collapse Have you looked for and found no other adverse concerns?	Y Y	N N N	บ บ	N/A N/A N/A N/A	
	1. 2. 3. 4. 5.	Soft targets free from impact by nearby equipment or structures If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are not likely to collapse	Y Y Y	N N N	บ บ บ	N/A N/A N/A	

## COMMENTS

See 2ESVPU0001 for complete SEWS evaluation.

Equip. ID No. <u>2ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

Equipment Description Essential Siphon Vacuum Pump No.3

valuated by:

R.P.Childs

Date: 04/15/98

L.B.Elrod

Date: 04/15/98

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-----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

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

uip. ID No. <u>1ESV1</u> Equip. Class <u>20</u> - Instr. & C	ontrol	Pane	els & Ca	abinets
Equipment Description Essential Siphon Vacuum PanelNo.1				
Location: Bldg. <u>AB</u> Floor El. <u>796'+6"</u> Room, Row/	Col <u>EQ.</u>	ROOM	1	
Manufacturer, Model, Etc. (optional) <u>Hoffman A-603624FS</u>				
SEISMIC CAPACITY VS DEMAND				
<ol> <li>Elevation where equipment receives seismic input</li> <li>Elevation of seismic input below about 40' from grade</li> </ol>	Y N	TT		-
3. Equipment has fundamental frequency above about 8 Hz			N/A	
4. Capacity based on: Existing Documentation	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	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 care met by intent without meeting the specific wording of the cave plain the reason for this conclusion in the COMMENTS section bel	at rule			
1. Equipment is included in earthquake experience equipment class	V N	ŢŢ	N/A	
2. No computers or programmable controllers	YN		,	
3. No strip chart recorders	Y N			
4. Steel frame and sheet metal structurally adequate	Y N	U	N/A	
<ol> <li>Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain</li> </ol>				
essential relays	Y N	U	N/A	
<ol><li>Drawers and equipment on slides restrained</li></ol>				
from falling out	Y N		· .	
<ol> <li>All doors secured by latch or fastener</li> <li>Attached lines have adequate flexibility</li> </ol>	Y N Y N		-	
<ol> <li>8. Attached lines have adequate flexibility</li> <li>9. Anchorage adequate (See checklist below for details)</li> </ol>	Y N Y N			
10. Relays mounted on equipment evaluated	Y N			
11. Have you looked for and found no other adverse concerns?	Y N	U		
Is the intent of all the caveats met for Bounding Spectrum?			Y N	U N/A
ANCHORAGE				
<ol> <li>Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> </ol>	Y N	TT	N/A	
2. Type of anchorage covered by GIP	Y N			
3. Sizes and locations of anchors determined	Y N			

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Sheet	2	of			

Equip. ID No. <u>1ESV1</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

Equipment Description Essential Siphon Vacuum PanelNo.1

#### ANCHORAGE (Cont'd) Adequacy of anchorage installation evaluated 4 (weld quality and length, nuts and washers, expansion anchor tightness, etc.) Y N U N/A Factors affecting anchorage capacity or margin of 5. safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition, and concrete cracking U N/A Y N For bolted anchorages, gap under base less than 6. 1/4-inch Y Ν U N/A Factors affecting essential relays considered: gap 7. under base, capacity reduction for expansion anchors U N/A Y N Base has adequate stiffness and effect of prying 8. action on anchors considered U N/A Y Ν 9. Strength of equipment base and load path to CG adequate Y Ν U N/A Embedded steel, grout pad or large concrete 10. pad adequacy evaluated YNU N/A Are anchorage requirements met? Y N U N/A INTERACTION EFFECTS Soft targets free from impact by nearby 1. equipment or structures Y N U N/A If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures Y Ν U N/A Attached lines have adequate flexibility U Y Ν N/A 3. Overhead equipment or distribution systems are 4. not likely to collapse Y N TT N/A Have you looked for and found no other adverse concerns? Y N U N/A 5. Y N U Is equipment free of interaction effects? 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.

Equip. ID No. <u>1ESV1</u> Equip. Class <u>20</u> - Instr. & Control Panels & Cabinets

uipment Description Essential Siphon Vacuum PanelNo.1

Evaluated by:

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

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

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Sketch 1	

	SCREENING	EVALUATION WORK SHEET (SEWS)	Revisio Status Sheet Rev.				Y N			28/91
uip.	ID No. 1ESVLCP1	Equip. Class <u>20 - Instr</u>	. & Cont	rol	Pa	ane	ls &	Cal	bine	ets
Equipme	ent Description <u>Esse</u>	ntial Siphon Vacuum Local Control P.	anel Cab	oine	<u>t 1</u>	No.	1			
Locatio	on: Bldg. <u>ESV</u>	Floor El. <u>796'+6"</u> Room,	Row/Col	l <u>n/</u>	<u>A</u>			-		
Manufac	cturer, Model, Etc.	(optional) <u>Hoffman A-727224FSD</u>								
<u>SEISMIC</u> 1. 2. 3. 4.	Elevation of seismi Equipment has fundation	ipment receives seismic input c input below about 40' from grade mental frequency above about 8 Hz Existing Documentation		Y Y DOC	N		N/A			
5.	Demand based on:	Bounding Spectrum 1.5 x Bounding Spectrum GERS Ground Response Spectrum 1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec.		BS ABS GER GRS AGR CRS	s s					
Does ca	apacity exceed deman	Realistic M-Ctr. In-Str. Resp. Spe d?	с.	RRS			Y	N	υ	
e met plair	t by intent without In the reason for thi	M (Identify with an asterisk (*) the meeting the specific wording of the s conclusion in the COMMENTS section of in conthemake experience	caveat	rul						
1.	equipment is includ	ed in earthquake experience		Y	N	U	N/A			
2.		grammable controllers					N/A			
3.	No strip chart reco						N/A			
4. 5.	Adjacent cabinets o to impact, or secti	et metal structurally adequate r panels which are close enough ons of multi-bay cabinets or together if they contain		Y	N	U	N/A			
	essential relays			Y	N	U	N/A			
6.		nt on slides restrained								
	from falling out				N	U				
7.	All doors secured b					U				
8.		adequate flexibility				U				
9.		(See checklist below for details)				U				
10.	Relays mounted on e		- 0		N		N/A			
11. Is the		and found no other adverse concern aveats met for Bounding Spectrum?	S ?	Y	N	U	N/A Y	N	U	N/A

## ANCHORAGE

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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	Ν	U	N/A
3.	Sizes and locations of anchors determined	Y	N	U	N/A

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#### SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. <u>1ESVLCP1</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

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

#### ANCHORAGE (Cont'd)

ANCHOR	AGE (CONC 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								
5.	safety considered: embedment length, anchor spacing,								
	free-edge distance, concrete strength/condition, and								
	concrete cracking	v	N	IJ	N/A				
6.	For bolted anchorages, gap under base less than	-	-	Ŭ					
0.	1/4-inch	v	N	ττ	N/A				
7	•	1	14	U	<b>N/A</b>				
7.	Factors affecting essential relays considered: gap	v	NT	**	N/A				
	under base, capacity reduction for expansion anchors	Ĩ	IN	U	N/A				
8.	Base has adequate stiffness and effect of prying		17		<b>N7 / 7</b>				
	action on anchors considered	Ŷ	N	U	N/A				
9.	Strength of equipment base and load path								
	to CG adequate	Ŷ	Ν	U	N/A				
10.	Embedded steel, grout pad or large concrete								
	pad adequacy evaluated	Y	N	U	N/A				
Are an	chorage requirements met?				Y	Ν	U	N/A	
INTERA	ACTION EFFECTS								
<b>1</b> .	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	Ν	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	Ν	U	N/A				
5.	Have you looked for and found no other adverse concerns?				N/A				
	sipment free of interaction effects?	_		-	Y	N	IJ		
is equ					-		-		
TS FOT	JIPMENT SEISMICALLY ADEQUATE				Y	N	បោ		
	TITEMT OFFICIENT ADEVIATE				-		.01		
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#### 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.

Equip. ID No. <u>1ESVLCP1</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

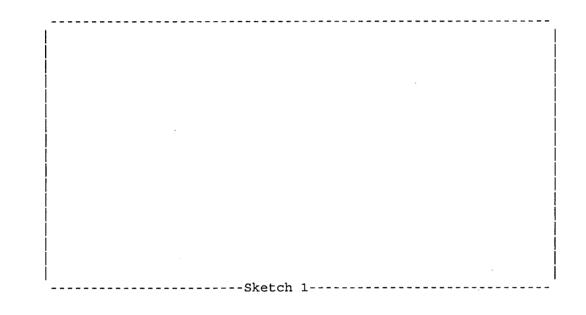
ipment Description Essential Siphon Vacuum Local Control Panel Cabinet No.1

Evaluated by:

R. Date: 06/15/98

L.B.Elrod

Date: 06/15/98



Revis Statu SCREENING EVALUATION WORK SHEET (SEWS) Sheet Rev.	s			Y N		6/2	8/91	-
uip. ID No. <u>1ESVPU0001</u> Equip. Class <u>05 - Horizontal</u>	Pumps							
Equipment Description Essential Siphon Vacuum Pump No.1								
Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row/C	ol <u>N/</u>	A						
Manufacturer, Model, Etc. (optional) <u>Seimens 2BE1152</u>								
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	Fl	ow	Ra	te (d	opt.	)		
<pre>SEISMIC CAPACITY VS DEMAND 1. Elevation where equipment receives seismic input 2. Elevation of seismic input below about 40' from grade 3. Equipment has fundamental frequency above about 8 Hz 4. Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum GERS 5. Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec. Does capacity exceed demand? CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those callain the reason for this conclusion in the COMMENTS section belo 1. Equipment is included in earthquake experience</pre>	DOC BS ABS GER GRS AGR CRS RRS veats t rul	N S S wł	U	h	N	υ		
equipment class	Y	N	U	N/A				
<ol> <li>Driver and pump connected by rigid base or skid</li> <li>No indication that shaft does not have thrust</li> </ol>	Y	N	U	N/A				
restraint in both axial directions	Y	N	U	N/A				
<ol> <li>No risk of excessive nozzle loads such as gross pipe motion or differential displacement</li> </ol>	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			U	· · ·				
7. Anchorage adequate (See checklist below for details) 8. Relays mounted on equipment evaluated			ប ប	N/A N/A				
9. Have you looked for and found no other adverse concerns?			U					
Is the intent of all the caveats met for Bounding Spectrum?					N	U	N/A	
<ul> <li><u>ANCHORAGE</u></li> <li>1. 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</li> </ul>	Y	N N N	บ บ บ	N/A N/A N/A				

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Sheet	2	of				

Equip. ID No. <u>1ESVPU0001</u> Equip. Class <u>05 - Horizontal Pumps</u>

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	t.			·
Ŭ	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				
0	action on anchors considered	Y	N	U	N/A
9	. Strength of equipment base and load path	_		_	-,
2	to CG adequate	Y	N	U	N/A
10		_			
10	pad adequacy evaluated	Y	N	U	N/A
Aro	anchorage requirements met?	. –		_	YNU
ALC	anchorage requirements met:				
INTE	RACTION EFFECTS				
	. Soft targets free from impact by nearby				
	equipment or structures	Y	N	U	N/A
2					
	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
	. 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?	Ŷ			N/A
-	quipment free of interaction effects?	-		-	YNU
19 E	quipment file of interaction effects.				•
IS E	QUIPMENT 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.  $\rho$ ump is acceptable pending final walkdown.

Equip. ID No. <u>1ESVPU0001</u> Equip. Class <u>05 - Horizontal Pumps</u>

ipment Description Essential Siphon Vacuum Pump No.1

Evaluated by:

R.P.Childs

Date: 06/15/98

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

------Sketch 1------

Revision 2, Corrected, 6/28/91 Y N U Status SCREENING EVALUATION WORK SHEET (SEWS) Sheet 1 of 0 Rev. uip. ID No. 1ESVPU0002 \_\_\_\_\_ Equip. Class <u>05 - Horizontal Pumps</u> Equipment Description Essential Siphon Vacuum Pump No.2 Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row/Col <u>N/A</u> Manufacturer, Model, Etc. (optional) Seimens 2BE1152 Horsepower/Motor Rating (opt.) \_\_\_\_\_ RPM (opt.) \_\_\_\_\_ Head (opt.) \_\_\_\_\_ Flow Rate (opt.) \_\_\_\_\_ SEISMIC CAPACITY VS DEMAND Elevation where equipment receives seismic input 1. Y N U Elevation of seismic input below about 40' from grade 2. Y N U N/A Equipment has fundamental frequency above about 8 Hz 3. Capacity based on: Existing Documentation DOC 4. Bounding Spectrum BS 1.5 x Bounding Spectrum ABS GERS GERS Ground Response Spectrum GRS 5. Demand based on: 1.5 x Ground Response Spectrum AGRS Conserv. Des. In-Str. Resp. Spec. CRS Realistic M-Ctr. In-Str. Resp. Spec. RRS Y N U Does capacity exceed demand? CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (\*) those caveats which met by intent without meeting the specific wording of the caveat rule and lain the reason for this conclusion in the COMMENTS section below) 1. Equipment is included in earthquake experience equipment class Y N U N/A YNU N/A 2. Driver and pump connected by rigid base or skid 3. No indication that shaft does not have thrust restraint in both axial directions YNU N/A 4. No risk of excessive nozzle loads such as gross YNU N/A pipe motion or differential displacement 5. Base vibration isolators adequate for seismic loads YNU N/A 6. Attached lines (cooling, air, electrical) have Y N U N/A adequate flexibility 7. Anchorage adequate (See checklist below for details) Y N U N/A 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? Is the intent of all the caveats met for Bounding Spectrum? Y N U N/A ANCHORAGE 1. Appropriate equipment characteristics determined Y N U N/A (mass, CG, natural freq., damping, center of rotation) Y N U N/A 2. Type of anchorage covered by GIP 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 Y N U N/A anchor tightness, etc.)

Rev	risi	on	2,	Corrected,	6/28/91
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Sheet 2 of

#### SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. <u>1ESVPU0002</u> Equip. Class <u>05 - Horizontal Pumps</u>

Equipment Description Essential Siphon Vacuum Pump No.2

## ANCHORAGE (Cont'd)

	<ol> <li>Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing,</li> </ol>						
	free-edge distance, concrete strength/condition, and concrete cracking	Y	N	U	N/A		
	<ol> <li>For bolted anchorages, gap under base less than 1/4-inch</li> </ol>	Y	N	IJ	N/A		
	7. Factors affecting essential relays considered: gap						
	under base, capacity reduction for expansion anchors	Y	N	U	N/A		
	<ol> <li>Base has adequate stiffness and effect of prying action on anchors considered</li> </ol>	Y	N	U	N/A		
	9. Strength of equipment base and load path						
	to CG adequate	Y	N	U	N/A		
1	LO. Embedded steel, grout pad or large concrete						
	pad adequacy evaluated e anchorage requirements met?	Y	N	U	N/A Y		U
7 110	TERACTION EFFECTS						
TUT	1. Soft targets free from impact by nearby						
	equipment or structures	v	N	IJ	N/A		
	2. If equipment contains sensitive relays, equipment	-		0	,		
	free from all impact by nearby equipment or						
	structures	Y	N	U	N/A		
	3. Attached lines have adequate flexibility	Y	Ν	U	N/A		
	4. Overhead equipment or distribution systems are						
	not likely to collapse				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	Ν	U
<u> 15</u>	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.



Equip. ID No. <u>1ESVPU0002</u> Equip. Class <u>05 - Horizontal Pumps</u>

ipment Description Essential Siphon Vacuum Pump No.2

Evaluated by:

R.P.Childs

Date: 06/15/98

L.B.Elrod

Date: 06/15/98

-----------Sketch 1------

Revision SCREENING EVALUATION WORK SHEET (SEWS) Rev.				Y N		6/28	3/91
uip. ID No. <u>1ESVPU0003</u> Equip. Class <u>05 - Horizontal Pu</u>	imps	5					
Equipment Description Essential Siphon Vacuum Pump No.3				<u> </u>		_	
Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row/Col	L <u>N/</u>	'A					
Manufacturer, Model, Etc. (optional) <u>Seimens 2BE1152</u>							
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	_ Fl	.ow	Ra	te (c	pt.	)	
SEISMIC CAPACITY VS DEMAND							
1. Elevation where equipment receives seismic input							
	Y	N	U				
2. Distantion of borbando input attended in Jeans				N/A			
4. Capacity based on: Existing Documentation	DOC	2					
Bounding Spectrum	BS						
1.5 x Bounding Spectrum	ABS	5					
GERS	GER	S					
5. Demand based on: Ground Response Spectrum	GRS	5					
1.5 x Ground Response Spectrum	AGF						
Conserv. Des. In-Str. Resp. Spec.	CRS						
Realistic M-Ctr. In-Str. Resp. Spec.	RRS	3					
Does capacity exceed demand?				Y	N	U	
CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those cave e met by intent without meeting the specific wording of the caveat blain the reason for this conclusion in the COMMENTS section below) 1. Equipment is included in earthquake experience	rul	sw. .e	hic and	h			
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	Ν	U	N/A			
<ol><li>No risk of excessive nozzle loads such as gross</li></ol>							
pipe motion or differential displacement		Ν	U				
5. Base vibration isolators adequate for seismic loads	Y	Ν	U	N/A			
6. Attached lines (cooling, air, electrical) have				<b>NT / N</b>			
adequate flexibility	Y		U				
7. Anchorage adequate (See checklist below for details)	Y Y		บ บ				
8. Relays mounted on equipment evaluated 9. Have you looked for and found no other adverse concerns?	Y		U	· .			
Is the intent of all the caveats met for Bounding Spectrum?	<b>-</b>	14	0	мл	N	ו דו	J/D
				v		•	•, ••
is the intent of all the caveats met for bounding spectrum:				Y .	IN		
				Y	IN		
ANCHORAGE				Y .	IN		
ANCHORAGE	Y	N	U		IA		
ANCHORAGE 1. Appropriate equipment characteristics determined			บ บ		IA		
<u>ANCHORAGE</u> 1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)		N		N/A N/A	14		
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	Y	N	υ	N/A N/A	IN		
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	Y Y	N N	บ บ	N/A N/A N/A	IN		
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	Y Y	N N	บ บ	N/A N/A	IN		

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Revisio	m	2,	Corrected,	6/28/	′91
Sheet	2	of			

Equip. ID No. <u>1ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

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	Ν	U	N/A		
	7. Factors affecting essential relays considered: gap						
	under base, capacity reduction for expansion anchors	Y	Ν	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		
1	10. Embedded steel, grout pad or large concrete	_			•		
-	pad adequacy evaluated	Y	N	U	N/A		
7~~~	e anchorage requirements met?	-	•••	•	Y	N	U
Are	e anchorage requirements met:				-		•
דיזא ד	TERACTION EFFECTS						
1111	1. Soft targets free from impact by nearby						
	I. Sold dargeds free from impact by nearby						
	amigment on atmictured	v	N	TT	м/д		
	equipment or structures	Y	N	U	N/A		
	2. If equipment contains sensitive relays, equipment	Y	N	U	N/A		
	2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or						
	2. If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures	Y	N	U	N/A		
	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> </ol>		N		N/A		
	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> <li>Overhead equipment or distribution systems are</li> </ol>	Y Y	N N	บ บ	N/A N/A		
	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> <li>Overhead equipment or distribution systems are not likely to collapse</li> </ol>	Y Y Y	N N N	บ บ บ	N/A N/A N/A		
	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> <li>Overhead equipment or distribution systems are not likely to collapse</li> <li>Have you looked for and found no other adverse concerns?</li> </ol>	Y Y Y	N N	บ บ บ	N/A N/A N/A N/A		
	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> <li>Overhead equipment or distribution systems are not likely to collapse</li> </ol>	Y Y Y	N N N	บ บ บ	N/A N/A N/A	N	U
Is	<ol> <li>If equipment contains sensitive relays, equipment free from all impact by nearby equipment or structures</li> <li>Attached lines have adequate flexibility</li> <li>Overhead equipment or distribution systems are not likely to collapse</li> <li>Have you looked for and found no other adverse concerns?</li> </ol>	Y Y Y	N N N	บ บ บ	N/A N/A N/A N/A Y		ָ ז נט

#### COMMENTS

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



Equip. ID No. <u>1ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

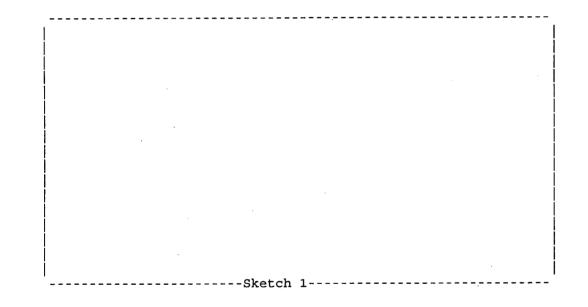
ipment Description Essential Siphon Vacuum Pump No.3

Evaluated by:

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

L.B.Elrod

Date: 06/15/98



SCREENING EVA	ALUATION WORK SHEET (SEWS)	Revision Status Sheet 1 Rev. 0			recte Y N			8/91
uip. ID No. <u>3ESV1</u>	Equip. Class <u>20 - Instr</u>	. & Contro	l Pa	ne	ls &	Ca	bine	ts
Equipment Description Essenti	al Siphon Vacuum PanelNo.1							
Location: Bldg. <u>AB</u>	Floor El. <u>796'+6"</u> Room,	Row/Col <u>E</u>	Q.RC	MOM				
Manufacturer, Model, Etc. (op	otional) <u>Hoffman A-363612LP</u>							
<ol> <li>Elevation of seismic i</li> <li>Equipment has fundament</li> <li>Capacity based on: Ex</li> <li>Bo</li> <li>1.</li> <li>GE</li> <li>Demand based on: Gr</li> <li>Co</li> </ol>	ment receives seismic input input below about 40' from grade ital frequency above about 8 Hz disting Documentation bunding Spectrum 5 x Bounding Spectrum ERS cound Response Spectrum 5 x Ground Response Spectrum onserv. Des. In-Str. Resp. Spec. ealistic M-Ctr. In-Str. Resp. Spec	[Y] Y DO BS [AB GE GR AG CR	C S] RS S RS S	U	N/A		Ū *	
<ul> <li>met by intent without meet blain the reason for this of equipment is included equipment class</li> <li>No computers or prografication</li> <li>No strip chart recorded</li> <li>Steel frame and sheet</li> <li>Adjacent cabinets or p to impact, or sections panels, are bolted tog essential relays</li> <li>Drawers and equipment from falling out</li> <li>All doors secured by 1</li> <li>Attached lines have ad</li> <li>Anchorage adequate (See 10. Relays mounted on equi 11. Have you looked for an Is the intent of all the cave</li> </ul>	ers metal structurally adequate panels which are close enough s of multi-bay cabinets or gether if they contain on slides restrained atch or fastener dequate flexibility se checklist below for details) pment evaluated ad found no other adverse concerns eats met for Bounding Spectrum? characteristics determined	caveat ru n below) [Y] [Y] [Y] [Y] [Y] [Y] [Y] Y \$? [Y]	lea NNNNN NNNNNNNNNN	und UUUUUU UUUUUUUUUUUUUUUUUUUUUUUUUUUUU	N/A N/A N/A [N/A] N/A N/A N/A N/A N/A Y	*	(ប)	N/A
(mass, CG, natural fre 2. Type of anchorage cove 3. Sizes and locations of		[Y]	N	U	N/A N/A N/A	*		

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#### SCREENING EVALUATION WORK SHEET (SEWS)

Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u> Equip. ID No. <u>3ESV1</u>

Equipment Description Essential Siphon Vacuum PanelNo.1

#### ANCHORAGE (Cont'd)

ANCHOR	AGE (COILE U)								
4.	Adequacy of anchorage installation evaluated								
	(weld quality and length, nuts and washers, expansion								
	anchor tightness, etc.)	[Y]	Ν	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]	Ν	U	N/A				
6.	For bolted anchorages, gap under base less than								
	1/4-inch	[Y]	Ν	U	N/A				
7.	Factors affecting essential relays considered: gap								
	under base, capacity reduction for expansion anchors	[Y]	Ν	U	N/A				
8.	Base has adequate stiffness and effect of prying								
	action on anchors considered	[Y]	Ν	U	N/A				
9.	Strength of equipment base and load path								
	to CG adequate	[Y]	Ν	U	N/A				
10.	Embedded steel, grout pad or large concrete				F (				
	pad adequacy evaluated	Y	Ν	U	[N/A]			/-	
Are ai	nchorage requirements met?				[Y]	Ν	U	N/A	*
INTER/	ACTION_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				N/A				
3.	Attached lines have adequate flexibility	[Y]	N	U	N/A				
4.	Overhead equipment or distribution systems are								
	not likely to collapse	• •			N/A				
5.	Have you looked for and found no other adverse concerns?	[Y]	Ν	U	N/A				
Is equ	uipment free of interaction effects?				Y	N	(U) <sup>4</sup>	ł	
IS EQU	JIPMENT 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 Fitchboards 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

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.

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.

Consists of a control desk with an attached vertical panel.
 A control desk has components mounted on the desk top, and interior access through swinging doors in the rear.
 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.

nels and cabinet enclosures normally consist of steel angles, channels, or square bes welded together, with sheet metal siding attached by spot welds. Large panels e 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

resented 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.

Equip. ID No. <u>3ESV1</u> Equip. Class <u>20</u> - Instr. & Control Panels & Cabinets

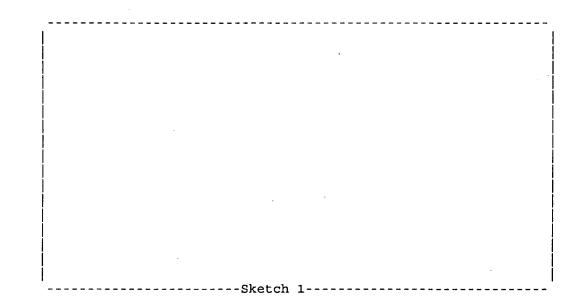
ipment Description Essential Siphon Vacuum PanelNo.1

Evaluated by:

R. Childs Date: 06/15/98

L.B.Elrod

Date: 04/01/98



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uip. ID No. <u>3ESV2</u>	Equip. Class <u>20 - Instr. &amp; Co</u>	ontro	<u>l P</u>	ane	ls &	Cab	<u>sine</u>	ets
Equipment Description Esse	ntial Siphon Vacuum PanelNo.2							
Location: Bldg. <u>AB</u>	Floor El. <u>796'+6"</u> Room, Row/(	Col <u>E</u>	Q.R	<u>00M</u>				
Manufacturer, Model, Etc.	(optional) Hoffman A-363612LP							
SEISMIC CAPACITY VS_DEMAND								
1. Elevation where equ	ipment receives seismic input		N7					
	c input below about 40' from grade mental frequency above about 8 Hz		N N		N/A			
	Existing Documentation	DO		0	N/A			
4. capacitoj babea ent	Bounding Spectrum	BS						
	1.5 x Bounding Spectrum	AB						
	GERS	GE						
5. Demand based on:	Ground Response Spectrum	GR AG						
-	1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec.	CR						
	Realistic M-Ctr. In-Str. Resp. Spec.	RR						
Does capacity exceed deman					Y	N	U	
CAUEATE - BOINDING SDECTOR	$\underline{M}$ (Identify with an asterisk (*) those ca	aveat	s w	hic	h			
	meeting the specific wording of the caves							
	s conclusion in the COMMENTS section belo							
	led in earthquake experience				,			
equipment class					N/A			
	grammable controllers				N/A N/A			
<ol> <li>No strip chart reco</li> <li>Steel frame and she</li> </ol>	et metal structurally adequate				N/A			
	or panels which are close enough	-		Ŭ	,			
	ons of multi-bay cabinets or							
	together if they contain							
essential relays		Y	N	U	N/A			
	ent on slides restrained							
from falling out	w latch on factors	Y Y	N N	บ บ	· .			
	y latch or fastener adequate flexibility	-		U U				
	(See checklist below for details)			U	· .			
10. Relays mounted on e		Ŷ		U	· · ·			
	and found no other adverse concerns?	Y	N	U	N/A			
Is the intent of all the c	aveats met for Bounding Spectrum?				Y	N	U	N/A
ANCHORAGE								
1. Appropriate equipme	ent characteristics determined		17		NT / 7			
	freq., damping, center of rotation)	Y Y		U U	N/A N/A			
2. Type of anchorage of a Sizes and locations	overed by GIP of anchors determined			U U				
<ol><li>Sizes and locations</li></ol>	OF anomore decermined	T	74	0	11/A			

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SCREENING EVALUATION WORK SHEET (SEWS)

Equip.	ID No. <u>3ESV2</u> Equip. Class <u>20 - Instr. &amp;</u>	Contro	<u>1 P</u>	ane	ls &	Ca	bin	ets
Equipm	ent Description Essential Siphon Vacuum PanelNo.2							
ANCHOR	AGE (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	υ	N/A			
10.	Embedded steel, grout pad or large concrete							
	pad adequacy evaluated	Y	N	U	N/A			
Are an	chorage requirements met?				Y	N	U	N/A
INTERA	CTION EFFECTS							
1.	Soft targets free from impact by nearby							
	equipment or structures	Y	Ν	U	N/A			
<u>è</u> .	If equipment contains sensitive relays, equipment							
	free from all impact by nearby equipment							
	or structures	Y		U				
3.	Attached lines have adequate flexibility	Y	N	U	N/A			
4.	Overhead equipment or distribution systems are							
	not likely to collapse	Y			N/A			
5.	Have you looked for and found no other adverse concerns?	Y	N	U				
Is equ	ipment free of interaction effects?				Y	N	U	
TS FOU	IIPMENT SEISMICALLY ADEQUATE				Y	N	[U]	
20 200								

## COMMENTS

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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.

Equip. ID No. <u>3ESV2</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

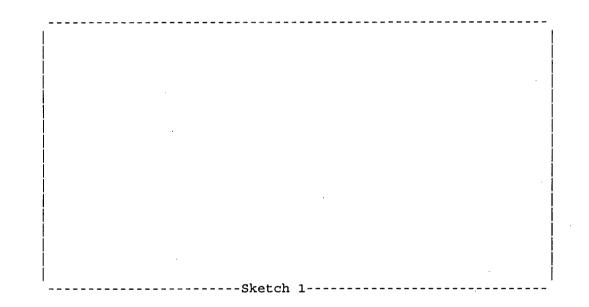
ipment Description Essential Siphon Vacuum PanelNo.2

Evaluated by:

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

L.B.Elrod

Date: 06/15/98



Revision 2, Corrected, 6/28/91 Y N U Status SCREENING EVALUATION WORK SHEET (SEWS) Sheet 1 of Rev. 0 Equip. Class <u>20</u> - Instr. & Control Panels & Cabinets uip. ID No. <u>3ESV3</u> 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 Elevation where equipment receives seismic input 1. Elevation of seismic input below about 40' from grade YNU 2. Y N U N/A Equipment has fundamental frequency above about 8 Hz 3. Capacity based on: Existing Documentation DOC 4. Bounding Spectrum BS 1.5 x Bounding Spectrum ABS GERS GERS Ground Response Spectrum Demand based on: GRS 5. AGRS 1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec. CRS Realistic M-Ctr. In-Str. Resp. Spec. RRS Does capacity exceed demand? YNU <u>CAVEATS - BOUNDING SPECTRUM</u> (Identify with an asterisk (\*) those caveats which met by intent without meeting the specific wording of the caveat rule and plain the reason for this conclusion in the COMMENTS section below) 1. Equipment is included in earthquake experience Y N U N/A equipment class Y N U No computers or programmable controllers N/A 2. Y N U No strip chart recorders N/A 3. Y N U 4. Steel frame and sheet metal structurally adequate N/A Adjacent cabinets or panels which are close enough 5. to impact, or sections of multi-bay cabinets or panels, are bolted together if they contain Y N U N/A essential relays Drawers and equipment on slides restrained 6. from falling out Y N U N/A Y N U N/A 7. All doors secured by latch or fastener Y N U N/A 8. Attached lines have adequate flexibility Anchorage adequate (See checklist below for details) YNU N/A 9. Relays mounted on equipment evaluated Y N U N/A 10. Have you looked for and found no other adverse concerns? Y N U N/A 11. 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 Y N U Type of anchorage covered by GIP N/A 2. YNU Sizes and locations of anchors determined N/A 3

Revision 2, Corrected, 6/28/91 Sheet 2 of \_\_\_\_\_

## SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. <u>3ESV3</u> Equip. Class <u>20</u> - Instr. & Control Panels & Cabinets

Equipment Description Essential Siphon Vacuum PanelNo.3

### ANCHORAGE (Cont'd)

ANCHOR	AGE (Cont'd)							
4.	Adequacy of anchorage installation evaluated							
	(weld quality and length, nuts and washers, expansion				1-			
	anchor tightness, etc.)	Y	Ν	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	Ν	U	N/A			
6.	For bolted anchorages, gap under base less than				/-			
	1/4-inch	Y	Ν	U	N/A			
7.	Factors affecting essential relays considered: gap				/-			
	under base, capacity reduction for expansion anchors	Y	Ν	U	N/A			
8.	Base has adequate stiffness and effect of prying				/-			
	action on anchors considered	Y	Ν	U	N/A			
9.	Strength of equipment base and load path				/-			
	to CG adequate	Y	Ν	U	N/A			
10.	Embedded steel, grout pad or large concrete				(-			
	pad adequacy evaluated	Y	N	υ	N/A		/-	
Are an	chorage requirements met?				Y N	U	N/A	
INTERA	CTION EFFECTS							
1.	Soft targets free from impact by nearby							
	equipment or structures	Y	N	U	N/A			
<b>.</b> .	If equipment contains sensitive relays, equipment							
	free from all impact by nearby equipment							
	or structures				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/A			
5.	Have you looked for and found no other adverse concerns?	Y	N	U	N/A			
Is equ	ipment free of interaction effects?				Y N	U		
					<b>V N</b>	[11]		
<u>IS EQU</u>	JIPMENT SEISMICALLY ADEQUATE				Y N	[0]		

#### 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.

Equip. ID No. <u>3ESV3</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

ipment Description Essential Siphon Vacuum PanelNo.3

Evaluated by:

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

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

\_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ -----Sketch 1-----

Sta	vision 2, Corrected, 6/28/91 atus Y N U eet 1 of 7. 0
uip. ID No. <u>3ESVLCP1</u> Equip. Class <u>20 - Instr. &amp;</u>	Control Panels & Cabinets
Equipment Description Essential Siphon Vacuum Local Control Panel	Cabinet No.1
Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row	V/Col <u>N/A</u>
Manufacturer, Model, Etc. (optional) <u>Hoffman A-727224FSD</u>	
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         <ul> <li>Bounding Spectrum</li> <li>1.5 x Bounding Spectrum</li> <li>GERS</li> </ul> </li> <li>Demand based on: Ground Response Spectrum         <ul> <li>1.5 x Ground Response Spectrum</li> <li>1.5 x Ground Response Spectrum</li> <li>Spectrum</li> <li>Spectrum</li> <li>Spectrum</li> <li>Spectrum</li> <li>Spectrum</li> <li>Spectrum</li> </ul> </li> </ol>	Y N U Y N U N/A DOC BS ABS GERS GRS GRS AGRS CRS
Realistic M-Ctr. In-Str. Resp. Spec. Does capacity exceed demand? CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those e met by intent without meeting the specific wording of the cav plain the reason for this conclusion in the COMMENTS section be	veat rule and
<ol> <li>Equipment is included in earthquake experience equipment class</li> <li>No computers or programmable controllers</li> <li>No strip chart recorders</li> <li>Steel frame and sheet metal structurally adequate</li> <li>Adjacent cabinets or panels which are close enough to impact, or sections of multi-bay cabinets or</li> </ol>	Y N U N/A Y N U N/A Y N U N/A Y N U N/A
<ul> <li>panels, are bolted together if they contain essential relays</li> <li>6. Drawers and equipment on slides restrained from falling out</li> <li>7. All doors secured by latch or fastener</li> <li>8. Attached lines have adequate flexibility</li> <li>9. Anchorage adequate (See checklist below for details)</li> <li>10. Relays mounted on equipment evaluated</li> <li>11. 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 Y N U N/A
<ul> <li><u>ANCHORAGE</u></li> <li>1. 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> </ul>	Y N U N/A Y N U N/A Y N U N/A

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Revision 2, Corrected, 6/28/91 Sheet 2 of \_\_\_\_\_

#### SCREENING EVALUATION WORK SHEET (SEWS)

Equip. ID No. <u>3ESVLCP1</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

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

ANCHOR	AGE (Cont'd)							
4.	Adequacy of anchorage installation evaluated							
	(weld quality and length, nuts and washers, expansion							
	anchor tightness, etc.)	Y	Ν	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 an	chorage requirements met?				Y	N	U	N/A
INTERA	CTION EFFECTS							
	Soft targets free from impact by nearby							
	equipment or structures	Y	N	U	N/A			
	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	Ν	υ	N/A			
Is equ	ipment free of interaction effects?				Y	N	U	
TO DOL					Y	N	[ប]	
<u>is equ</u>	IPMENT SEISMICALLY ADEQUATE				-		[0]	

#### 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.

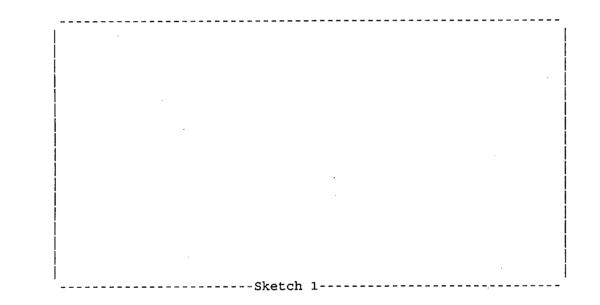
Equip. ID No. <u>3ESVLCP1</u> Equip. Class <u>20 - Instr. & Control Panels & Cabinets</u>

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

Evaluated by:

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

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



Stat	sion 2 us t 1 o 0		Y N		6/2	28/91
uip. ID No. <u>3ESVPU0001</u> Equip. Class <u>05 - Horizontal</u>	Pumps					
Equipment Description Essential Siphon Vacuum Pump No.1						
Location: Bldg. ESV Floor El. 796'+6" Room, Row/	Col <u>N/</u>	A				
Manufacturer, Model, Etc. (optional) <u>Seimens 2BE1152</u>						
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	Fl	ow Ra	ite (c	pt.	.)	
<u>SEISMIC CAPACITY VS DEMAND</u> 1. Elevation where equipment receives seismic input 2. Elevation of seismic input below about 40' from grade	Y					
<ol> <li>Equipment has fundamental frequency above about 8 Hz</li> <li>Capacity based on: Existing Documentation Bounding Spectrum</li> <li>1.5 x Bounding Spectrum GERS</li> </ol>	Y DOC BS ABS GER		N/A			
5. Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum Conserv. Des. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec. Does capacity exceed demand?	GRS AGR CRS RRS	S	Y			
CAVEATS - BOUNDING SPECTRUM (Identify with an asterisk (*) those of met by intent without meeting the specific wording of the cave plain the reason for this conclusion in the COMMENTS section bel 1. Equipment is included in earthquake experience	at rul					
equipment class			N/A			
<ol> <li>Driver and pump connected by rigid base or skid</li> <li>No indication that shaft does not have thrust</li> </ol>	Y	N U	N/A			
restraint in both axial directions 4. No risk of excessive nozzle loads such as gross	Y	N U	N/A			
pipe motion or differential displacement		N U				-
<ol> <li>Base vibration isolators adequate for seismic loads</li> <li>Attached lines (cooling, air, electrical) have</li> </ol>		N U				
adequate flexibility		N U				
7. Anchorage adequate (See checklist below for details)		N U N U	• .			
8. Relays mounted on equipment evaluated 9. Have you looked for and found no other adverse concerns?		N U				
Is the intent of all the caveats met for Bounding Spectrum?	-			N	U	N/A
ANCHORAGE						
<ol> <li>Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)</li> </ol>	v	א נו	N/A			
2. Type of anchorage covered by GIP		N U				
<ol> <li>Sizes and locations of anchors determined</li> <li>Adequacy of anchorage installation evaluated</li> </ol>	Y	N U	N/A			
(weld quality and length, nuts and washers, expansion anchor tightness, etc.)	Y	N U	N/A			

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Sheet	2	of		

Equip. ID No. <u>3ESVPU0001</u> Equip. Class <u>05 - Horizontal Pumps</u>

Equipment Description Essential Siphon Vacuum Pump No.1

## ANCHORAGE (Cont'd)

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	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
		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.	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	e an	chorage requirements met?				YNU
INT	rera	CTION EFFECTS				
-	1.		Y	N	U	N/A
	2.					,
		If equipment contains sensitive relays, equipment free from all impact by nearby equipment or				
		free from all impact by nearby equipment or structures				N/A
		free from all impact by nearby equipment or structures Attached lines have adequate flexibility				N/A N/A
	3.	free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are not likely to collapse	Y Y	N N	บ บ	N/A N/A
Is	3. 4. 5.	free from all impact by nearby equipment or structures Attached lines have adequate flexibility Overhead equipment or distribution systems are	Y	N N	บ บ	N/A

#### 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.

Equip. ID No. <u>3ESVPU0001</u> Equip. Class <u>05 - Horizontal Pumps</u>

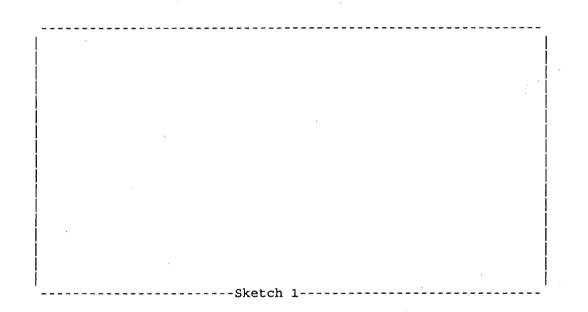
uipment Description Essential Siphon Vacuum Pump No.1

Evaluated by:

~ <sup>~</sup>

R. Childs Date: 06/15/98

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



Statu	us t 1 c		У	rected, / N U		28/91	
uip. ID No. <u>3ESVPU0002</u> Equip. Class <u>05 - Horizontal</u>	Pumps	5					-
Equipment Description Essential Siphon Vacuum Pump No.2							-
Location: Bldg. <u>ESV</u> Floor El. <u>796'+6"</u> Room, Row/G	Col <u>N/</u>	'A		<del></del>			-
Manufacturer, Model, Etc. (optional) <u>Seimens 2BE1152</u>							-
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	F1	low	Rat	e (opt	.)_		
SEISMIC CAPACITY VS DEMAND							
1. Elevation where equipment receives seismic input					-		
2. Elevation of seismic input below about 40' from grade	Y		-				
3. Equipment has fundamental frequency above about 8 Hz			U	N/A			
4. Capacity based on: Existing Documentation	DOC BS						
Bounding Spectrum 1.5 x Bounding Spectrum	ABS						
GERS	GER						
5. Demand based on: Ground Response Spectrum	GRS						
1.5 x Ground Response Spectrum	AGR	٤S					
Conserv. Des. In-Str. Resp. Spec.	CRS						
Realistic M-Ctr. In-Str. Resp. Spec.	RRS	5					
Does capacity exceed demand?				Y N	U		
<u>CAVEATS - BOUNDING SPECTRUM</u> (Identify with an asterisk (*) those can e met by intent without meeting the specific wording of the cavea				1			
plain the reason for this conclusion in the COMMENTS section belo							
1. Equipment is included in earthquake experience							
equipment class	Y	N	U	N/A			
2. Driver and pump connected by rigid base or skid 3. No indication that shaft does not have thrust	Y	N	U	N/A			
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	Ν		N/A			
5. Base vibration isolators adequate for seismic loads	Y	N	U	N/A			
6. Attached lines (cooling, air, electrical) have	v	NT	<b>T</b> T	NT / 7			
adequate flexibility 7. Anchorage adequate (See checklist below for details)		N N		N/A N/A			
8. Relays mounted on equipment evaluated		N		N/A			
9. Have you looked for and found no other adverse concerns?		N		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)				N/A			
2. Type of anchorage covered by GIP				N/A			
3. Sizes and locations of anchors determined	Y	Ν	U	N/A			
<ol> <li>Adequacy of anchorage installation evaluated (weld quality and length, nuts and washers, expansion</li> </ol>							
anchor tightness, etc.)	Y	N	U	N/A			
	-		-				



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Sheet	2	of		

Equip. ID No. <u>3ESVPU0002</u> Equip. Class <u>05 - Horizontal Pumps</u>

Equipment Description Essential Siphon Vacuum Pump No.2

ANCHORAGE (Cont'd)

<u></u>	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	Y	۸T	**	N/A	
	7.	1/4-inch Factors affecting essential relays considered: gap	I	ŢN.	0	N/A	
	/.	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	
1	.0.	Embedded steel, grout pad or large concrete					
		pad adequacy evaluated	Y	N	U	N/A	
Are	e and	chorage requirements met?				YNI	U
INT	ERAG	CTION EFFECTS					
		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/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/A	
_		Have you looked for and found no other adverse concerns?	Y	N	U	•	-
IS	equi	ipment free of interaction effects?				YNU	U
IS	EQU	IPMENT SEISMICALLY ADEQUATE				Y N [1	נט]

#### 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.



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Equip. ID No. <u>3ESVPU0002</u> Equip. Class <u>05 - Horizontal Pumps</u>

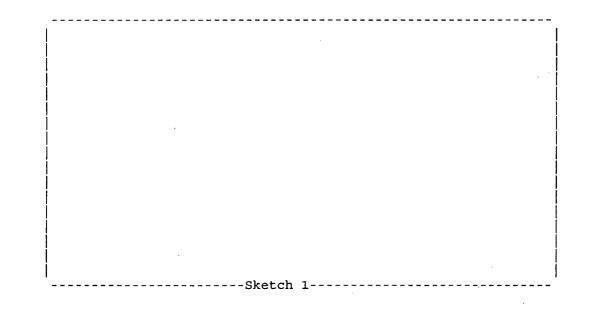
uipment Description Essential Siphon Vacuum Pump No.2

Evaluated by:

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

L.B.Elrod

Date: 06/15/98



<u>SCREE</u> I	NING EVALUATION WORK SHEET (SEWS)	Sheet :			Y N	U		28/
quip. ID No. <u>3ESVPU0</u>	003	izontal Pur	nps		*** <b>*</b>			
Equipment Description	Essential Siphon Vacuum Pump No.3							
Location: Bldg. ESV	Floor El. <u>796'+6"</u> Room	m, Row/Col	N/A					
Manufacturer, Model, 1	Etc. (optional) <u>Seimens 2BE1152</u>							
Horsepower/Motor Rati	ng (opt.) RPM (opt.) Head (op	t.)	Flov	r Ra	te (	opt	)_	
SEISMIC CAPACITY VS D	EMAND							
	e equipment receives seismic input	_						
	eismic input below about 40' from grade		Y N					
	fundamental frequency above about 8 Hz		YN	U	N/A			
4. Capacity based	on: Existing Documentation		DÓC					
	Bounding Spectrum		BS ABS					
	1.5 x Bounding Spectrum GERS		GERS					
5. Demand based on			GRS					
5. Demand Dubed of	1.5 x Ground Response Spectrum		AGRS					
	Conserv. Des. In-Str. Resp. Spec		CRS					
	Realistic M-Ctr. In-Str. Resp. S		RRS					
Does capacity exceed of					Y	N	U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for	<u>ECTRUM</u> (Identify with an asterisk (*) hout meeting the specific wording of the specific structure of the comments sect:	ne caveat i			h	N	U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in	ECTRUM (Identify with an asterisk (*) the hout meeting the specific wording of the r this conclusion in the COMMENTS sect ncluded in earthquake experience	ne caveat n ion below)	rule	and	h		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class	ECTRUM (Identify with an asterisk (*) the hout meeting the specific wording of the r this conclusion in the COMMENTS sect ncluded in earthquake experience s	ne caveat n ion below)	rule X N	and U	h N/A		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump	ECTRUM (Identify with an asterisk (*) thout meeting the specific wording of the this conclusion in the COMMENTS sectancluded in earthquake experience s p connected by rigid base or skid	ne caveat n ion below)	rule	and U	h N/A		U	
CAVEATS - BOUNDING SP e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump 3. No indication for	ECTRUM (Identify with an asterisk (*) the hout meeting the specific wording of the r this conclusion in the COMMENTS sect ncluded in earthquake experience s	ne caveat n ion below)	rule X N	and U U	h N/A N/A		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump 3. No indication of restraint in bo	ECTRUM (Identify with an asterisk (*) thout meeting the specific wording of the restrict this conclusion in the COMMENTS sectors a sector of the sector of t	ne caveat n ion below)	rule KN KN	and U U	h N/A N/A		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump 3. No indication of restraint in bo 4. No risk of exce pipe motion or	ECTRUM (Identify with an asterisk (*) thout meeting the specific wording of the restriction of the comments set included in earthquake experience s p connected by rigid base or skid that shaft does not have thrust oth axial directions essive nozzle loads such as gross differential displacement	ne caveat n ion below)	rule YN YN YN YN	and U U U U	h N/A N/A N/A N/A		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump 3. No indication of restraint in bo 4. No risk of exce pipe motion or 5. Base vibration	ECTRUM (Identify with an asterisk (*) thout meeting the specific wording of the relation of the comments set of the commented by rigid base or skid that shaft does not have thrust oth axial directions essive nozzle loads such as gross differential displacement isolators adequate for seismic loads	ne caveat n ion below) N N N N N N N N N N N N N N N N N N N	rule YN YN YN YN	and U U U U	h N/A N/A N/A		U	
CAVEATS - BOUNDING SPI e met by intent with plain the reason for 1. Equipment is in equipment class 2. Driver and pump 3. No indication of restraint in bo 4. No risk of exce pipe motion or 5. Base vibration	ECTRUM (Identify with an asterisk (*) thout meeting the specific wording of the relation of the comments set of the comments of the commented by rigid base or skid that shaft does not have thrust oth axial directions essive nozzle loads such as gross differential displacement isolators adequate for seismic loads (cooling, air, electrical) have	ne caveat n ion below)	rule YN YN YN YN	and U U U U	h N/A N/A N/A N/A		U	
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Revisi	on	2,	Corrected,	6/28/	'91
Sheet	2	of			

Equip. ID No. <u>3ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

Equipment Description Essential Siphon Vacuum Pump No.3

## ANCHORAGE (Cont'd)

		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		
		For bolted anchorages, gap under base less than 1/4-inch	Y	N	U	N/A		
		Factors affecting essential relays considered: gap under base, capacity reduction for expansion anchors	Y	N	U	N/A		
		Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A		
		Strength of equipment base and load path to CG adequate	Y	N	U	N/A		
1		Embedded steel, grout pad or large concrete				<b>NT / 7</b>		
Are		pad adequacy evaluated horage requirements met?	Y	N	U	N/A Y		U
INT	TERAC	TION EFFECTS		•				
		Soft targets free from impact by nearby						
		equipment or structures	Y	N	U	N/A		
		If equipment contains sensitive relays, equipment free from all impact by nearby equipment or						
		structures	-	N	U			
		Attached lines have adequate flexibility Overhead equipment or distribution systems are	Y	N	U	N/A		
		not likely to collapse	_		U			
		Have you looked for and found no other adverse concerns?	Y	N	U	N/A		
Is	equi	pment free of interaction effects?				Y	Ν	U
IS	EQUI	PMENT 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.



Equip. ID No. <u>3ESVPU0003</u> Equip. Class <u>05 - Horizontal Pumps</u>

ipment Description Essential Siphon Vacuum Pump No.3

Evaluated by:

7

R.P.Childs

Date: 06/15/98

L.B.Elrod

Date: 06/15/98

