

Appendix G Screening Evaluation Work Sheets (SEWS)

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Appendix G Screening Evaluation Work Sheets (SEWS)

INTRODUCTION

The purpose of the Screening Evaluation Work Sheets (SEWS) is to provide a convenient summary and checklist of the seismic evaluation criteria described in Section 4, Screening Verification and Walkdown, and in Section 7, Tanks and Heat Exchangers Review. The equipment class caveats contained in Appendix B, the anchorage criteria contained in Appendix C, and the seismic interaction criteria contained in Appendix D are also summarized on the SEWS. ^[1]The short summaries of the criteria provided in the SEWS are for general guidance only. The detail criteria contained in Sections 4 and 7 and Appendices B, C, and D should be used as the basis for evaluating the seismic adequacy of equipment.

These SEWS, or a similar checklist, should be used during the plant walkdown to document the results of the evaluation. The SEWS in this appendix are designed to be compatible with the Screening Verification Data Sheets (SVDS) shown in Exhibit 4-1 of Section 4 so that the summary information from the SEWS can be transferred directly to the SVDS.

This appendix contains SEWS for Equipment Classes #0 through #21. See Section 3.3 for a summary of the equipment included within the scope of USI A-46. The checklist statements are very abbreviated; see Sections 4 and 7 and Appendices B and C for a complete description of each checklist item.

Note: The work sheets cannot be used unless the user has a thorough understanding of this procedure and the reference documents.

Most of the information at the top of each SEWS (Equipment ID Number, Equipment Description, Equipment Location, etc.) can be entered on the SEWS prior to the plant walkdown.

If a database program is used to develop the Safe Shutdown Equipment List (SSEL) as described in Section 3, then the information at the too of each page of the SEWS can be printed directly from the database file containing the SSEL information. Appendix B of the report "Results of PWR Trial Plant Review" (Reference 16) contains examples of SEWS used during a SQUG trial plant review with this information entered at the top of each page of the SEWS.

The SEWS can be used as a checklist by circling the appropriate symbol in response to each statement. The meaning of the symbols is given below:

- Y Yes. This criterion is met. ("Y" is always the favorable response, i.e., all the "Y" symbols should be circled if an item of equipment is seismically adequate.)
- N No. This criterion is not met.
- U Unknown. It cannot be determined whether this criterion is met at this time. (This response can be used while the screening verification is in progress to identify criteria which must be evaluated later.)
- N/A Not Applicable. Some of the criteria may not apply for a particular item of equipment.

Some of the statements on the SEWS ask which of several alternatives is being used in the Screening Verification and Walkdown. Circle the symbol for the selected alternative. The meaning of these symbols is self-explanatory. After circling all the appropriate responses in each section of the SEWS, the final statement in each section can then be answered as either Y, N, or U. Likewise, when all the sections have a final response, the last question on the SEWS can then be answered ("Is Equipment Seismically Adequate?"). The responses to the final question in each section and the last overall question can all be entered directly into the appropriate column in the SVDS (shown in Exhibit 4-1 of Section 4).

The SEWS also provide space to record information about the item of equipment ^[2](e.g., manufacturer, model), to document any comments the Seismic Capability Engineers may wish to make, to document the reason why the intent of any caveats are met without meeting the specific wording of the caveat rule, to sketch the equipment, and to sign off.

Equipment	t ID No	E	quip. Class <u>0 – Other</u>					
Equipment	t Description							
Location:	Bldg.	Floor El.	Room, Row/Col					
Manufactu	rer, Model, Etc. (optional but recor	nmended ^[2])					
Seismic C Do (apacity vs. Dema es capacity exceed Comments if a spe spectrum is invoke	and d demand? ^[3] (Ind ecial exception to ed per Section 4.2	icate at right (*) and in enveloping of seismic demand of the GIP.)	Y	N	U	N/A	
<u>Anchorag</u> Is t	<u>e</u> he anchorage adeo	quate?		Y	Ν	U	N/A	
<u>Interactio</u> Is t	<u>n Effects</u> he equipment free	e of adverse seism	ic interaction effects?	Y	Ν	U	N/A	

^[4]Does the Equipment Meet the GIP Criteria?

Y N U

Equipment ID No. _____ Equip. Class <u>0 – Other</u>

Equipment Description

Comments

Evaluated by: _____ Date: _____

Equipment ID No	_ Equip. Class <u>1 – Motor Control (</u>	Cente	rs					
Equipment Description								
Location: Bldg Floor El	Room, Row/Col							
Manufacturer, Model, Etc. (optional but re	ecommended ^[2])							
Saismic Canacity vs. Domand								
Seisine Capacity vs. Demand								
1. Elevation where equipment receive	es seismic input					_		
2. Elevation of seismic input below a	bout 40' from grade	Y	Ν	U	N/A			
3. Equipment has fundamental freque	ency above about 8 Hz	Y	Ν	U	N/A			
 4. Capacity based on: Existing Documentary Bounding Spectrum 1.5 x Bounding GERS 5. Demand based on: Ground Response 	mentation ctrum g Spectrum nse Spectrum	DC BS AE GE	DC BS ERS					
1.5 x Ground Respondence 1.5 x Ground R Conserv. Desc. Realistic M-Ct	Response Spectrum . In-Str. Resp. Spec. r. In-Str. Resp. Spec.	AC CF RR	BS SS S					
Does capacity exceed demand? ^[3] (Indica a special exception to enveloping of sei per Section 4.2 of the GIP.)	te at right (*) and in Comments if ismic demand spectrum is invoked					Y	NI	J
<u>Caveats – Bounding Spectrum</u> (Identify meeting the specific wording of the cavea section below.)	with an asterisk (*) those caveats w t rule and explain the reason for this	vhich concl	are n usioi	net by 1 in t	y inter he Co	t wit mme	hou nts	t
1. Equipment is included in earthqual	ke experience equipment class	Y	N	U	N/A			
2. 600 V rating or less	· · · ·	Y	Ν	U	N/A			

2. 00	v rating or less	1	14	U	1 1/11
3. A m re	djacent cabinets which are close enough to impact, or sections of ulti-bay cabinets, are bolted together if they contain essential elays	Y	N	U	N/A
4. A	ttached weight (except conduit) less than about 100 lbs per cabinet ssembly	Y	N	U	N/A
5. E	xternally attached items rigidly anchored	Y	Ν	U	N/A
6. G	eneral configuration similar to NEMA Standards	Y	Ν	U	N/A
7. C	utouts in lower half less than 6 in. wide and 12 in. high	Y	Ν	U	N/A
8. A	Il doors secured by latch or fastener	Y	Ν	U	N/A

- 8. All doors secured by latch or fastener 9. Natural frequency relative to 8 Hz limit considered
- 10. Anchorage adequate (See checklist, below, for details.) U N/A Y Ν 11. Relays mounted on equipment evaluated Y N U N/A

12. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A
Is the intent of all the caveats met for Bounding Spectrum?				Y N U N/A

Y

Ν

U N/A

Equipment ID No. _____ Equip. Class <u>1 – Motor Control Centers</u>

Equipment Description

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3.	Floor mounted cabinet	Y	Ν	U	N/A
4.	^[1] Maximum weight per section less than 800 pounds	Y	Ν	U	N/A
5.	Base anchorage utilizing MCC base channels	Y	Ν	U	N/A
6.	Adequate strength and stiffness in load transfer path from anchorage to base frame (only for "function after" GERS)	Y	N	U	N/A
7.	Essential relays have GERS > 4.5g (only for "function during" GERS)	Y	N	U	N/A
8.	Able to reset starters (only for "function after" GERS)	Y	Ν	U	N/A
^[5] 9.	<u>All</u> adjacent cabinets or sections of multi-bay assemblies bolted together	Y	N	U	N/A
Is the i	ntent of all the caveats met for GERS?				Y N U N/A
<u>Ancho</u>	rage				
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	Ν	U	N/A
4.	Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	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	Ν	U	N/A
10.	Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A
11.	^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A
Are an	chorage requirements met?				Y N U

Equipment ID No Equip. Class <u>1 – Motor Control Centers</u>							
Equipment Description							
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by: _____ Date: _____

_

Equipment ID No.		Equip. Class	2 – Low Voltage S	witchg	gear					
Equipment Description										
Location: Bldg.	_ Floor El	Room	n, Row/Col							
Manufacturer, Model, Etc.	(optional but rec	commended ^[2])								
<u>Seismic Capacity vs. Dem</u>	and									
1. Elevation where equ	uipment receives	s seismic input								
2. Elevation of seismic	e input below ab	out 40' from g	ade	Y	Ν	U	N/A	-		
3. Equipment has fundamental frequency above about 8 Hz					Ν	U	N/A			
 Capacity based on: Demand based on: 	Existing Docum Bounding Spect 1.5 x Bounding GERS Ground Respons	entation rum Spectrum		DC BS AE GE	DC BS CRS					
5. Demand based on.	1.5 x Ground Response Conserv. Desc. Realistic M-Ctr.	se spectrum esponse Spectru In-Str. Resp. Sp In-Str. Resp. Sp et right (*) and	um pec. Spec.	AC CR RR	15 35 15 15			V	NT	TT
special exception to env per Section 4.2 of the GI	eloping of seisr P.)	nic demand sp	ectrum is invoked					Y	IN	U

<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)

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

Is

Equipment ID No. _____ Equip. Class <u>2 – Low Voltage Switchgear</u>

Equipment Description

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3.	Floor-mounted enclosure	Y	Ν	U	N/A
4.	Manufactured by major vendor (ITE/Brown Boveri, Westinghouse, or GE)				
5.	^[1] Maximum weight per section less than 1600 pounds	Y	Ν	U	N/A
6.	Base anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A
7.	Relays used for breaker function are <u>not</u> on "Low Ruggedness Relays" list	Y	N	U	N/A
8.	Relay evaluation completed for all relays that are essential to other equipment or cause unacceptable lockout	Y	N	U	N/A
9.	For 2.5 g level GERS, vertical restraint prevents breaker uplift	Y	Ν	U	N/A
10.	For 2.5 g level GERS, outside corners of end units are reinforced, if needed	Y	N	U	N/A
^[5] 11.	<u>All</u> adjacent cabinets or sections of multi-bay assemblies bolted together	Y	N	U	N/A
Is the i	intent of all the caveats met for GERS?				Y N U N/A
Ancho	orage				
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	Ν	U	N/A
4.	Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	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	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	Ν	U	N/A
10.	Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A
11.	^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A
Are an	chorage requirements met?				Y N U

Equipment ID No Equip. Class <u>2 - Low Voltage</u>	Switchg	ear					
Equipment Description							
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by: _____ Date: _____

Equipment ID No	_ Equip. Class <u>3 – Medium Voltage</u>	e Swi	tchge	ear			
Equipment Description							
Location: Bldg Floor El	Room, Row/Col						
Manufacturer, Model, Etc. (optional but re	ecommended ^[2])						
Seismic Capacity vs. Demand							
1. Elevation where equipment receive	es seismic input						
2. Elevation of seismic input below a	bout 40' from grade	Y	N	U	N/A	-	
3. Equipment has fundamental freque	ncy above about 8 Hz	Y	Ν	U	N/A		
 Capacity based on: Existing Docur Bounding Spec 1.5 x Bounding GERS 	nentation trum 5 Spectrum	DC BS AE GE	DC BS ERS				
5. Demand based on: Ground Respon 1.5 x Ground R Conserv. Desc. Realistic M-Ctr	nse Spectrum Lesponse Spectrum In-Str. Resp. Spec. r. In-Str. Resp. Spec.	GF AC CR RR	RS GS RS RS				
Does capacity exceed demand? ^[3] (Indicat a special exception to enveloping of seis per Section 4.2 of the GIP.)	te at right (*) and in Comments if smic demand spectrum is invoked					YI	N U
<u>Caveats – Bounding Spectrum</u> (Identify meeting the specific wording of the caveat	with an asterisk (*) those caveats when the reason for this caveates when the reason for the reason	hich concl	are n usior	net by n in t	y inter he Co	nt wit	hout nts

section below.)

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

Equipment ID No. _____ Equip. Class <u>3 – Medium Voltage Switchgear</u>

Equipment Description

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3.	Floor-mounted enclosure	Y	Ν	U	N/A
4.	The switchgear is not a specially-designed type	Y	Ν	U	N/A
5.	Circuit breakers are truck-mounted type, not jack-up or vertical-lift	Y	Ν	U	N/A
6.	^[1] Maximum weight per section less than 5000 pounds	Y	Ν	U	N/A
7.	Base anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A
8.	Relays used for breaker function are <u>not</u> on "Low Ruggedness Relays" list	Y	Ν	U	N/A
9.	Relay evaluations completed for all relays that are essential to other equipment or cause unacceptable lockout	Y	Ν	U	N/A
10.	For 2.5 g level GERS, vertical restraint prevents breaker uplift	Y	Ν	U	N/A
11.	For 2.5 g level GERS, circuit break arc chutes are restrained horizontally	Y	Ν	U	N/A
12.	For 2.5 g level GERS, a Beaver Type Z relay is <u>not</u> used in Westinghouse MV switchgear for the "Y" anti-pump relay	Y	Ν	U	N/A
13.	Separate evaluation of breaker racking mechanism completed; seismic positioner or sufficient side-to-side restrained used	Y	N	U	N/A
^[5] 14.	<u>All</u> adjacent cabinets or sections of multi-bay assemblies bolted together	Y	N	U	N/A
Is the i	ntent of all the caveats met for GERS?				Y N U N/A
<u>Ancho</u>	rage				
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	Ν	U	N/A
4.	Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	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	N	U	N/A

Screening Evaluation Work Sheet (SEWS) Sheet 3 of 3

Equipment ID No Equip. Class <u>3 – Medium Voltage Switchgear</u>									
Equipment Description									
Anchorage (cont'd)									
 Base has adequate stiffness and eff considered 	ect of prying acti	ion on anchors	Y	N	U	N/A			
9. Strength of equipment base and loa	ad path to CG ade	equate	Y	Ν	U	N/A			
10. Embedded steel, grout pad, or large concrete pad adequacy evaluated			Y	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand			Y	Ν	U	N/A			
Are anchorage requirements met?							Y	N	U
Interaction Effects									
1. Soft targets free from impact by ne	arby equipment of	or structures	Y	Ν	U	N/A			
2. If equipment contains sensitive relation impact by nearby equipment or structure of the sensitive relation of the sensi	ays, equipment fr uctures	ee from all	Y	N	U	N/A			
3. Attached lines have adequate flexil	bility		Y	Ν	U	N/A			
4. Overhead equipment or distribution collapse	n systems are not	likely to	Y	N	U	N/A			
5. Have you looked for and found no	other adverse co	ncerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?							Y	N	U
^[4] Does the Equipment Meet the GIP Cr	<u>iteria?</u>						Y	N	U

Comments

 Evaluated by:

Date:

Equipment ID No	Equip. Class <u>4 – Transformers</u>							
Equipment Description								
Location: Bldg Floor El	Room, Row/Col							
Manufacturer, Model, Etc. (optional but red	commended ^[2])							
Seismic Capacity vs. Demand	s seismic input							
2. Elevation of seismic input below ab	Y	N	U	N/A	-			
3. Equipment has fundamental frequer	ncy above about 8 Hz	Y	Ν	U	N/A			
4. Capacity based on: Existing Docum Bounding Spect 1.5 x Bounding GERS	nentation trum Spectrum	DC BS AE GE	DC BS ERS					
5. Demand based on: Ground Respons 1.5 x Ground Re Conserv. Desc. Realistic M-Ctr.	se Spectrum esponse Spectrum In-Str. Resp. Spec. . In-Str. Resp. Spec.	GF AC CR RR	KS GS KS KS					
Does capacity exceed demand? ^[3] (Indicate a special exception to enveloping of seise per Section 4.2 of the GIP.)	e at right (*) and in Comments if mic demand spectrum is invoked					Y	N	U
<u>Caveats – Bounding Spectrum</u> (Identify meeting the specific wording of the caveat section below.)	with an asterisk (*) those caveats w rule and explain the reason for this	which concl	are n usioi	net by n in t	y inten he Cor	it wi mm	ithc	out s
1. Equipment is included in earthquake	e experience equipment class	Y V	N N	U	N/A			

2.	4.16 kV rating or less	Y	Ν	U	N/A	
3.	For floor-mounted dry- and oil-type unit, transformer coils are positively restrained within cabinet	Y	Ν	U	N/A	
4.	For 750 kV or larger units, coils are top braced or adequacy shown by evaluation	Y	Ν	U	N/A	
5.	For 750 kVA or larger units, 2-inch clearance is provided between energized component and cabinet	Y	Ν	U	N/A	
6.	For 750 kVA or larger units, the slack in the connection between the high-voltage leads and the first anchor accommodates 3-inch relative displacement	Y	Ν	U	N/A	
7.	For wall-mounted units, transformer coils anchored to enclosure near enclosure support surface	Y	Ν	U	N/A	
8.	For floor-mounted units, anchorage does not rely on weak-way bending of cabinet structures under lateral forces	Y	Ν	U	N/A	
9.	Adjacent cabinets which are close enough to impact are bolted together if they contain essential relays					
10.	All doors secured by latch or fastener	Y	Ν	U	N/A	

Equipment ID No Equip. Class <u>4 – Transformers</u>	6			
Equipment Description				
<u>Caveats – Bounding Spectrum (Continued)</u>				
11. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A
12. Relays mounted on equipment evaluated	Y	Ν	U	N/A
13. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A
Is the intent of all the caveats met for Bounding Spectrum?				Y N U N/A
<u>Caveats – GERS</u> ^[7] (Identify with an asterisk (*) those caveats which are n specific wording of the caveat rule and explain the reason for this conclusio below.)	net by in n in the	tent v Com	withomen	out meeting the ts section
1. Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2. Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3. Dry-type unit (not oil-filled)	Y	Ν	U	N/A
4. Wall or floor-mounted NEMA-type enclosure	Y	Ν	U	N/A
5. 120 to 480 VAC rating	Y	Ν	U	N/A
6. 7.5 to 225 kVA rating	Y	Ν	U	N/A
7. 180 to 2000 pound weight	Y	Ν	U	N/A
8. Internal supports provide positive attachment of transformer components	Y	N	U	N/A
 There is a minimum clearance of 3/8-inches between bare conductor and enclosure 	rs Y	N	U	N/A
^[5] 10. <u>All</u> adjacent cabinets or sections of multi-bay assemblies bolted together	Y	N	U	N/A
Is the intent of all the caveats met for GERS?				Y N U N/A
Anchorage				
1. Appropriate equipment characteristics determined (mass, CG, natural freq., damping, center of rotation)	Y	N	U	N/A
2. Type of anchorage covered by GIP	Y	Ν	U	N/A
3. Sizes and locations of anchors determined	Y	Ν	U	N/A
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A
5. Factors affecting anchorage capacity or margin of safety considered embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y 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	N	U	N/A
8. Base has adequate stiffness and effect of prying action on anchors considered	Y	N	U	N/A

Equipment ID No Equip.	Class <u>4 – Transformers</u>							
Equipment Description								
<u>Anchorage (cont'd)</u>								
9. Strength of equipment base and load path to	CG adequate	Y	Ν	U	N/A			
10. Embedded steel, grout pad, or large concret	e pad adequacy evaluated	Y	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand		Y	Ν	U	N/A			
Are anchorage requirements met?						Y	N	U
Interaction Effects								
1. Soft targets free from impact by nearby equ	ipment or structures	Y	Ν	U	N/A			
2. If equipment contains sensitive relays, equi impact by nearby equipment or structures	pment free from all	Y	N	U	N/A			
3. Attached lines have adequate flexibility		Y	Ν	U	N/A			
 Overhead equipment or distribution systems collapse 	s are not likely to	Y	N	U	N/A			
5. Have you looked for and found no other adv	verse concerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?						Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?						Y	N	U

Comments

Evaluated by: _____ Date: _____

Equipment Description									
Location: Bldg.	Floor El.	Room, Ro	ow/Col						
Manufacturer, Model, E	tc. (optional but reco	mmended ^[2])							
Horsepower/Motor Ratio	ng (opt.) RPM	1 (opt.) H	ead (opt.)	Flov	v Rat	e (oj	pt.)		
Seismic Capacity vs. D	emand								
1 Elevation where	equipment receives s	eismic input							
2 Elevation of seis	mic input below about	it 40' from grade		Y	N	U	N/A	-	
3 Equipment has fi	undamental frequency	v above about 8	Hz	v	N	U	N/A		
4 Canacity based o	on. Existing Documer	tation		DC	C	U	1 1/21		
Bounding Spectrum				BS					
	1.5 x Bounding Sp	pectrum		AE	S				
5. Demand based o	n: Ground Response	Spectrum		GR	S				
	1.5 x Ground Resp	oonse Spectrum		AC	βS				
	Conserv. Desc. In	-Str. Resp. Spec.		CR	S				
Does capacity exceed de a special exception to per Section 4.2 of the	emand? ^[3] (Indicate a enveloping of seismi GIP.)	at right (*) and in the demand spectr	Comments if um is invoked		.0			YÌ	NU
<u>Caveats – Bounding Sp</u> meeting the specific wor section below.)	<u>Dectrum</u> (Identify winding of the caveat ru	th an asterisk (* le and explain th	those caveats we reason for this	which a concl	are m usior	net by n in t	y inten he Coi	t wit! nmei	hout nts
1. Equipment is inc	luded in earthquake	experience equip	ment class	Y	Ν	U	N/A		
2. Driver and pump	connected by rigid b	base or skid		Y	Ν	U	N/A		
3. No indication that directions	at shaft does not have	thrust restraint i	n both axial	Y	N	U	N/A		
4. No risk of excess differential displa	sive nozzle loads such	h as gross pipe m	otion or	Y	N	U	N/A		
5. Base vibration is	olators adequate for	seismic loads		Y	Ν	U	N/A		
6. Attached lines (c	ooling, air, electrical) have adequate	lexibility	Y	Ν	U	N/A		
7. Anchorage adequ	uate (See checklist, b	elow, for details.)	Y	Ν	U	N/A		
8. Relays mounted	on equipment evalua	ted		Y	Ν	U	N/A		
9. Have you looked	I for and found no oth	ner adverse conce	erns?	Y	Ν	U	N/A		
Is the intent of all the ca	veats met for Boundi	ng Spectrum?					Y N	I U	N/A
<u>Anchorage</u>									
1. Appropriate equi natural freq., dan	pment characteristics	s determined (ma	ss, CG,	Y	N	U	N/A		
2. Type of anchorag	ge covered by GIP			Y	Ν	U	N/A		
3. Sizes and locatio	ns of anchors determ	ined		Y	Ν	U	N/A		

Equipment ID No. _____ Equip. Class <u>5 – Horizontal Pumps</u>

Equipment ID No. _____ Equip. Class <u>5 – Horizontal Pumps</u> Equipment Description Anchorage (cont'd) 4. Anchorage installation adequate, e.g., weld quality and length, nuts Y Ν U N/A and washers, expansion anchor tightness 5. Factors affecting anchorage capacity or margin of safety considered: Y Ν U N/A embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking 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, Y Ν U N/A capacity reduction for expansion anchors 8. Base has adequate stiffness and effect of prying action on anchors Y Ν U N/A considered 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 Ν U N/A 11. ^[6]Anchorage capacity exceeds demand Y Ν U N/A Are anchorage requirements met? YNU **Interaction Effects** 1. Soft targets free from impact by nearby equipment or structures U N/A Y Ν 2. If equipment contains sensitive relays, equipment free from all Y Ν U N/A impact by nearby equipment or structures 3. Attached lines have adequate flexibility U N/A Y Ν 4. Overhead equipment or distribution systems are not likely to U N/A Y Ν collapse 5. Have you looked for and found no other adverse concerns? Y U N/A Ν Is equipment free of interaction effects? YNU ^[4]Does the Equipment Meet the GIP Criteria? YNU

Comments

Evaluated	by:
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_____ Date: _____

Equipment ID No Equip. Class <u>6 – Vertical Pumps</u>						
Equipment Description						
Location: Bldg Floor El Room, Row/Col						
Manufacturer, Model, Etc. (optional but recommended ^[2])						
Horsepower/Motor Rating (opt.) RPM (opt.) Head (opt.)	Flow	v Rat	te (o	pt.)		-
Seismic Capacity vs. Demand						
1. Elevation where equipment receives seismic input						
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-	
3 Equipment has fundamental frequency above about 8 Hz	Y	N	Ū	N/A		
4 Capacity based on: Existing Documentation	DC)C	U	1011		
Bounding Spectrum	BS	C				
1.5 x Bounding Spectrum	AB	S				
5. Demand based on: Ground Response Spectrum	GR	S				
1.5 x Ground Response Spectrum	AG	iS				
Conserv. Desc. In-Str. Resp. Spec.	CR	S				
Realistic M-Ctr. In-Str. Resp. Spec.	RR	S			X 7 1	
a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					1 1	N U
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats w meeting the specific wording of the caveat rule and explain the reason for this section below.)	/hich a concl	are n usio1	net by n in t	y inten he Cor	t wit	hout nts
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A		
2. Casing and impeller shaft not cantilevered more than 20 feet, with radial bearing at bottom to support shaft	Y	N	U	N/A		
 No risk of excessive nozzle loads such as gross pipe motion or differential displacement 	Y	N	U	N/A		
4. Attached lines (cooling, air, electrical) have adequate flexibility	Y	Ν	U	N/A		
5. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A		
6. Relays mounted on equipment evaluated	Y	Ν	U	N/A		
7. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met for Bounding Spectrum?				ΥÌ	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	Ν	U	N/A		
3. Sizes and locations of anchors determined	Y	Ν	U	N/A		
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A		

Equipment ID No. _____ Equip. Class <u>6 – Vertical Pumps</u> Equipment Description _____ Anchorage (cont'd) 5. Factors affecting anchorage capacity or margin of safety considered: Y N U N/A embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking 6. For bolted anchorages, gap under base less than 1/4-inch Y U N/A Ν 7. Factors affecting essential relays considered: gap under base, Y U N/A Ν capacity reduction for expansion anchors 8. Base has adequate stiffness and effect of prying action on anchors Y Ν U N/A considered 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 Ν U N/A 11. ^[6]Anchorage capacity exceeds demand Y Ν U N/A Are anchorage requirements met? YNU **Interaction Effects** 1. Soft targets free from impact by nearby equipment or structures U N/A Y Ν 2. If equipment contains sensitive relays, equipment free from all Y U N/A Ν impact by nearby equipment or structures 3. Attached lines have adequate flexibility Y Ν U N/A 4. Overhead equipment or distribution systems are not likely to U N/A Y Ν collapse 5. Have you looked for and found no other adverse concerns? U N/A Y Ν Is equipment free of interaction effects? Y N U ^[4]Does the Equipment Meet the GIP Criteria? YNU

Comments

Evaluated by: _____ Date: _____

Equipment ID No Equip. Class <u>7 – Fluid-Operated</u>	Valve	S				
Equipment Description						
Location: Bldg Floor El Room, Row/Col						
Pipe Size and Design Classification: (optional but recommended ^[2])						
Manufacturer, Model, Etc. (optional but recommended ^[2])						
Seismic Capacity vs. Demand						
1. Elevation where equipment receives seismic input						
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A		
 Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum GERS 	DO BS AB GE	C S RS				
 Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum	GR AG CR RR	S S S				
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					Y N	U
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats we meeting the specific wording of the caveat rule and explain the reason for this esection below.)	hich a conclu	are m asion	net by n in t	y intent he Con	with ment	out ts
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A		
2. No cast iron body	Y	Ν	U	N/A		
 No cast iron yoke (for spring-operated pressure relief or piston- operated valves) 	Y	N	U	N/A		
4. Mounted on 1-inch diameter pipe or larger	Y	Ν	U	N/A		
 Centerline of pipe to top of operator within restrictions of Figure B.7-1 or Appendix B, or yoke can take static 3g load (for air- operated diaphragm, lightweight piston-operated, and spring- operated pressure relief valves) 	Y	N	U	N/A		
 Centerline of pipe to top of operator within restrictions of Figure B.7-2 of Appendix B, or yoke can take static 3g load (for piston- operated valve of substantial weight) 	Y	N	U	N/A		
7. Actuator and yoke not braced independently from pipe	Y	Ν	U	N/A		
8. Attached lines (air, electrical) have adequate flexibility	Y	Ν	U	N/A		
9. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A		4 -
Is the intent of all the caveats met for Bounding Spectrum?				Y N	U	N/A

Equipment ID No. _____ Equip. Class <u>7 – Fluid-Operated Valves</u>

Equipment Description

<u>Caveats – GERS</u> (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.) (Note that GERS for this class apply up to attachment point of valve to piping system; valve/pipe interface is <u>not</u> covered.)

1. Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A			
2. Meets all Bounding Spectrum caveats	Y	Ν	U	N/A			
3. Air-operated gate or globe valve with spring-opposed diaphragm- type pneumatic actuator	Y	N	U	N/A			
4. Use amplified response spectrum of piping system at piping/valve interface	Y	N	U	N/A			
5. Valve and operator will not impact surrounding structures and components	Y	N	U	N/A			
6. Mounted on 1- to 3-inch nominal pipe line	Y	Ν	U	N/A			
7. Carbon steel (not cast iron) yoke or bonnet	Y	Ν	U	N/A			
Is the intent of all the caveats met for GERS?				ΥN	I I	JI	N/A
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	U	N/A			
2. Attached lines have adequate flexibility	Y	Ν	U	N/A			
3. Overhead equipment or distribution systems are not likely to collapse	Y	N	U	N/A			
4. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by:	Date:
· · · · · · · · · · · · · · · · · · ·	

Equipment ID No.		_ Equip	. Class <u>8A – Mot</u>	or-Operated	d Va	lves				
Equipment Description										
Location: Bldg.	Floor El		_ Room, Row/Col							
Pipe Size and Design Classif	ication: (optic	onal but	recommended ^[2])_							
Manufacturer, Model, Etc. (c	ptional but re	ecomme	nded ^[2])							
Seismic Capacity vs. Dema	nd									
1. Elevation where equip	pment receive	es seism	ic input							
2. Elevation of seismic i	nput below al	bout 40	from grade		Y	N	U	N/A		
 3. Capacity based on: Ex Ball 3. Capacity based on: Ex Ball 4. Demand based on: G 4. Demand based on: G 5. Capacity exceed deman 6. Capacity exceed deman<td>cisting Docum bunding Spec 5 x Bounding ERS round Respon 5 x Ground R onserv. Desc. ealistic M-Ctr d? ^[3](Indicat eloping of seis</td><td>nentatio trum Spectro nse Spec Lesponse In-Str. r. In-Str. te at rig smic de</td><td>n um e Spectrum Resp. Spec. . Resp. Spec. ht (*) and in Comm mand spectrum is i</td><td>nents if nvoked</td><td>DO BS AB GE GR AG CR RR</td><td>C S RS S S S S</td><td></td><td>У</td><td>ΥN</td><td>U</td>	cisting Docum bunding Spec 5 x Bounding ERS round Respon 5 x Ground R onserv. Desc. ealistic M-Ctr d? ^[3] (Indicat eloping of seis	nentatio trum Spectro nse Spec Lesponse In-Str. r. In-Str. te at rig smic de	n um e Spectrum Resp. Spec. . Resp. Spec. ht (*) and in Comm mand spectrum is i	nents if nvoked	DO BS AB GE GR AG CR RR	C S RS S S S S		У	ΥN	U
<u>Caveats – Bounding Spectr</u> meeting the specific wording section below.)) <u>um</u> (Identify of the caveat	with ar trule an	asterisk (*) those d explain the reaso	caveats wh n for this co	ich a onclu	re m ision	et by i in t	y intent he Com	with ment	out s
 Equipment is included No cast iron body No cast iron voke 	d in earthquak	ke expei	ience equipment cl	ass	Y Y Y	N N N	U U U	N/A N/A N/A		
4. Mounted on 1-inch di	ameter pipe c	or larger			Y	Ν	U	N/A		
5. Centerline of pipe to B.8A-1 of Appendix	top of operato B, or yoke car	or within n take s	n restrictions of Fig tatic 3g load	ure	Y	N	U	N/A		
6. Actuator and yoke no	t braced indep	pendent	ly from pipe		Y	Ν	U	N/A		
7. Attached lines (electric	ical) have ade	equate f	exibility		Y	Ν	U	N/A		
8. Have you looked for	and found no	other ad	lverse concerns?		Y	Ν	U	N/A		
Is the intent of all the caveats	met for Bour	nding S	pectrum?					Y N	U	N/A

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.) (Note that GERS for this class apply to <u>only</u> motor operator and its connection to valve; valve itself and valve/pipe interface are <u>not</u> covered.)</u>

1.	Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A

Equipment ID No. _____ Equip. Class <u>8A – Motor-Operated Valves</u>

Equipment Description

<u>Caveats – GERS (cont'd)</u>				
3. Use amplified response spectrum of piping system and valve at valve/operator interface	Y	N	U	N/A
4. Motor axis is horizontal	Y	Ν	U	N/A
5. Valve and operator will not impact surrounding structures and components	Y	Ν	U	N/A
6. Motor controls remotely located	Y	Ν	U	N/A
7. If valve has side mounted actuator attached to secondary reducer, seismic brackets are used	Y	N	U	N/A
8. Manufactured by Limitorque or Rotork	Y	Ν	U	N/A
 Any loose or missing valve-to-operator bolts are tightened or replaced (tightness check not required) 	Y	Ν	U	N/A
Is the intent of all the caveats met for GERS?				Y N U N/A
Interaction Effects				
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	U	N/A
2. Attached lines have adequate flexibility	Y	Ν	U	N/A
3. Overhead equipment or distribution systems are not likely to collapse	Y	N	U	N/A
4. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A
Is equipment free of interaction effects?				Y N U
^[4] Does the Equipment Meet the GIP Criteria?				Y N U

Comments

Evaluated by: _____ Date: _____

Equipment ID No Equip. Class <u>8B – Solenoid-Op</u>	erated	Valv	es			
Equipment Description						
Location: Bldg Floor El Room, Row/Col						
Pipe Size and Design Classification (optional but recommended ^[2])						
Manufacturer, Model, Etc. (optional but recommended ^[2])						
Seismic Capacity vs. Demand						
1. Elevation where equipment receives seismic input						
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-	
 Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum GERS 	DC BS AB GE	OC S RS				
 Demand based on: Ground Response Spectrum 5 x Ground Response Spectrum Conserv. Desc. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec. 	GR AC CR RR	LS AS LS LS				
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					YN	√ U
<u>Caveats – Bounding Spectrum</u>						
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A		
2. No cast iron body	Y	Ν	U	N/A		
3. No cast iron yoke	Y	Ν	U	N/A		
 Centerline of pipe to top of operator within restrictions of Figure B.8B-1 of Appendix B, or yoke can take static 3g load for SOVs mounted on lines ≥ 1-inch 	Y	Ν	U	N/A		
5. Actuator and yoke not braced independently from pipe	Y	Ν	U	N/A		
6. Attached lines (electrical) have adequate flexibility	Y	Ν	U	N/A		
7. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met for Bounding Spectrum?				YN	۷ U	N/A

<u>Caveats – GERS</u> (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.) (Note that GERS for this class apply up to attachment point of valve to piping system or parent valve (if SOV is a pilot valve); valve/pipe interface or parent valve is <u>not</u> covered.)

1.	Equipment is included in generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A

Equipment ID No. _____ Equip. Class <u>8B – Solenoid-Operated Valves</u>

Equipment Description

Caveats - GERS (cont'd)

3.	Use amplified response spectrum of piping system and valve at valve/operator interface	Y	N	U	N/A			
4.	Valve and operator will not impact surrounding structures and components	Y	N	U	N/A			
5.	Nominal pipe size is 1-inch or less	Y	Ν	U	N/A			
6.	Valve body is forged brass or steel	Y	Ν	U	N/A			
7.	Housing oriented in accordance with manufacturer's recommendations	Y	N	U	N/A			
8.	Height of valve (pipe centerline to top of housing) does not exceed 12 in.	Y	Ν	U	N/A			
9.	If SOV is a pilot on a larger valve, use amplified response spectrum at attachment point of SOV to larger valve	Y	N	U	N/A			
10.	Use 3.5g ZPA GERS for ASCO Type 206-381	Y	Ν	U	N/A			
Is the i	intent of all the caveats met for GERS?				Y N	1 1	JÌ	N/A
<u>Intera</u>	<u>ction Effects</u>							
1.	Soft targets free from impact by nearby equipment or structures	Y	Ν	U	N/A			
2.	Attached lines have adequate flexibility	Y	Ν	U	N/A			
3.	Overhead equipment or distribution systems are not likely to collapse	Y	N	U	N/A			
4.	Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is equi	pment free of interaction effects?					Y	Ν	U
^[4] Does	s the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by:	Date:	

Equipment ID No Equip	. Class <u>9 – Fans</u>						
Equipment Description							
Location: Bldg Floor El	Room, Row/Col						
Manufacturer, Model, Etc. (optional but recomme	nded ^[2])						
Seismic Capacity vs. Demand							
1. Elevation where equipment receives seism	ic input						
2. Elevation of seismic input below about 40°	from grade	Y	Ν	U	N/A		
3. Equipment has fundamental frequency abo	ve about 8 Hz	Y	Ν	U	N/A		
4. Capacity based on: Existing Documentatio Bounding Spectrum	n	DC BS)C				
5. Demand based on: Ground Response Spec 1.5 x Ground Response Conserv. Desc. In-Str. Realistic M-Ctr. In-Str	etrum e Spectrum Resp. Spec. Resp. Spec.	GR AC CR RR	2S 2S 2S 2S 2S				
Does capacity exceed demand? ^[3] (Indicate at rig a special exception to enveloping of seismic des per Section 4.2 of the GIP.)	ht (*) and in Comments if mand spectrum is invoked					Y N	U
<u>Caveats – Bounding Spectrum</u> (Identify with an meeting the specific wording of the caveat rule an section below.)	asterisk (*) those caveats w d explain the reason for this	hich a concl	are n usior	net by n in t	y intent he Con	without	out s
1. Equipment is included in earthquake exper	ience equipment class	Y	Ν	U	N/A		
2. Drive motor and fan mounted on common	base	Y	Ν	U	N/A		
3. For axial fan with long shaft between fan a at fan as well as motor	nd motor, shaft supported	Y	N	U	N/A		
 No possibility of excessive duct distortion misalignment of fan 	causing binding or	Y	N	U	N/A		
5. Base vibration isolators adequate for seism	ic loads	Y	Ν	U	N/A		
6. Attached lines (electrical) have adequate f	exibility	Y	Ν	U	N/A		
7. Anchorage adequate (See checklist, below	, for details.)	Y	Ν	U	N/A		
8. Have you looked for and found no other ad	lverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met for Bounding S	pectrum?				Y N	U	N/A
Anchorage							
1. Appropriate equipment characteristics deternatural frequency damping center of rotation)	ermined (mass, CG,	Y	N	U	N/A		

natural freq., damping, center of rotation)YNUN/A2. Type of anchorage covered by GIPYNUN/A3. Sizes and locations of anchors determinedYNUN/A

Equipment ID No Equip. Class <u>9 – Fans</u>							
Equipment Description							
<u>Anchorage (cont'd)</u>							
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A			
5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	N	U	N/A			
6. For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	U	N/A			
 Base has adequate stiffness and effect of prying action on anchors considered 	Y	N	U	N/A			
8. Strength of equipment base and load path to CG adequate	Y	Ν	U	N/A			
9. Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A			
10. ^[6] Anchorage capacity exceeds demand	Y	Ν	U				
Are anchorage requirements met?					Y	N	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	U	N/A			
2. Distribution lines have adequate flexibility	Y	Ν	U	N/A			
3. Overhead equipment or distribution systems are not likely to collapse	Y	N	U	N/A			
4. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	Ν	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by: _____ Date: _____

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Equipment ID No Equip. Class <u>10 – Air Handlers</u>							
Equipment Description							_
Location: Bldg Floor El Room, Row/Col							
Manufacturer, Model, Etc. (optional but recommended ^[2])							_
<u>Seismic Capacity vs. Demand</u>							
1. Elevation where equipment receives seismic input					_		
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A			
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A			
4. Capacity based on: Existing Documentation	DC)C					
Bounding Spectrum	BS						
1.5 x Bounding Spectrum	AE	BS					
5. Demand based on: Ground Response Spectrum	GR	S					
1.5 x Ground Response Spectrum	AC CD	18					
Realistic M-Ctr In-Str Resp. Spec.	RR	S					
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					YN	N U	l
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats where meeting the specific wording of the caveat rule and explain the reason for this disection below.)	nich a concl	are n usioi	net by n in t	y inten he Cor	t witl nmei	nout nts	
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A			
 Anchorage of heavy internal components is adequate; internal vibration isolators have seismic stops to limit uplift and lateral movement 	Y	N	U	N/A			
3. All doors secured by latch or fastener	Y	Ν	U	N/A			
 No possibility of excessive duct distortion causing binding or misalignment of any internal fan 	Y	N	U	N/A			
5. Base vibration isolators adequate for seismic loads	Y	Ν	U	N/A			
6. Attached lines (water, air, electrical) have adequate flexibility	Y	Ν	U	N/A			
7. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A			
8. Relays mounted on equipment evaluated	Y	Ν	U	N/A			
9. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is the intent of all the caveats met for Bounding Spectrum?				Y N	I 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	Ν	U	N/A			
3. Sizes and locations of anchors determined	Y	Ν	U	N/A			

Equipment ID No. _____ Equip. Class <u>10 – Air Handlers</u> Equipment Description Anchorage (cont'd) 4. Anchorage installation adequate, e.g., weld quality and length, nuts Y Ν U N/A and washers, expansion anchor tightness 5. Factors affecting anchorage capacity or margin of safety considered: Y Ν U N/A embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking 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, Y Ν U N/A capacity reduction for expansion anchors 8. Base has adequate stiffness and effect of prying action on anchors Y Ν U N/A considered 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 Ν U N/A 11. ^[6]Anchorage capacity exceeds demand Y Ν U N/A Are anchorage requirements met? YNU **Interaction Effects** 1. Soft targets free from impact by nearby equipment or structures U N/A Y Ν 2. If equipment contains sensitive relays, equipment free from all Y Ν U N/A impact by nearby equipment or structures 3. Attached lines have adequate flexibility U N/A Y Ν 4. Overhead equipment or distribution systems are not likely to U N/A Y Ν collapse 5. Have you looked for and found no other adverse concerns? U N/A Y Ν Is equipment free of interaction effects? YNU ^[4]Does the Equipment Meet the GIP Criteria? Y N U

Comments

Evaluated by:	Da	ate:
•		

Equipment ID No Equip. Class <u>11 – Chillers</u>							
Equipment Description							
Location: Bldg Floor El Room, Row/Col							
Manufacturer, Model, Etc. (optional but recommended ^[2])							
<u>Seismic Capacity vs. Demand</u>							
1. Elevation where equipment receives seismic input							
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	•		
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A			
 Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum 	DC BS AB	OC S					
 Demand based on: Ground Response Spectrum 5 x Ground Response Spectrum Conserv. Desc. In-Str. Resp. Spec.	GR AC CR RR	S iS S S					
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					YI	N	U
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats w meeting the specific wording of the caveat rule and explain the reason for this section below.)	hich a concl	are m usior	et by in t	y inten he Cor	t wit	hou nts	t
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A			
2. Evaporator and condenser tanks reasonably braced between themselves for lateral forces without relying on weak-way bending of steel plates or structural steel shapes	Y	N	U	N/A			
 Base and/or compressor/motor vibration isolators adequate for seismic loads 	Y	N	U	N/A			
4. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A			
5. Relays mounted on equipment evaluated	Y	Ν	U	N/A			
6. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is the intent of all the caveats met for Bounding Spectrum?				Y N	I 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	Ν	U	N/A			
3. Sizes and locations of anchors determined	Y	Ν	U	N/A			
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A			

Equipment ID No Equip. Class <u>11 – Chillers</u>							
Equipment Description							
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	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	Ν	U	N/A			
10. Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are anchorage requirements met?					Y	Ν	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by:	Date:	
<u> </u>		

Equipment ID No Equip. Class <u>12 – Air Compress</u>	ors				
Equipment Description					
Location: Bldg Floor El Room, Row/Col					
Manufacturer, Model, Etc. (optional but recommended ^[2])					
<u>Seismic Capacity vs. Demand</u>					
1. Elevation where equipment receives seismic input					
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A	
4. Capacity based on: Existing Documentation	DO	C	-		
Bounding Spectrum	BS	-			
1.5 x Bounding Spectrum	AB	S			
5. Demand based on: Ground Response Spectrum	GR	S			
1.5 x Ground Response Spectrum	AG	S			
Conserv. Desc. In-Str. Resp. Spec.	CR	S			
Realistic M-Ctr. In-Str. Resp. Spec.	KK	3		XZ NI	тт
a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)				Y N	U
meeting the specific wording of the caveat rule and explain the reason for this section below.)	conclu	usior	n in t	he Comments	ii.
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A	
2. Base vibration isolators adequate for seismic loads	Y	Ν	U	N/A	
3. Attached lines have adequate flexibility	Y	Ν	U	N/A	
4. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A	
5. Relays mounted on equipment evaluated	Y	Ν	U	N/A	
6. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A	
Is the intent of all the caveats met for Bounding Spectrum?				YNUN	J/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	Ν	U	N/A	
3. Sizes and locations of anchors determined	Y	Ν	U	N/A	
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A	
5. Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	N	U	N/A	
6. For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	U	N/A	

Screening Evaluation Work Sheet (SEWS) Sheet 2 of 2

Equipment ID No I	Equipment ID No Equip. Class <u>12 – Air Compressors</u>								
Equipment Description									
<u>Anchorage (cont'd)</u>									
 Factors affecting essential relays cons capacity reduction for expansion anch 	sidered: gap unions	inder base,	Y	N	U	N/A			
 Base has adequate stiffness and effect considered 	t of prying act	ion on anchors	Y	N	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		dequacy evaluated	Y	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand			Y	Ν	U	N/A			
Are anchorage requirements met?							Y	N	U
Interaction Effects									
1. Soft targets free from impact by nearly	by equipment	or structures	Y	Ν	U	N/A			
2. If equipment contains sensitive relays impact by nearby equipment or struct	s, equipment f ures	ree from all	Y	N	U	N/A			
3. Attached lines have adequate flexibili	ity		Y	Ν	U	N/A			
4. Overhead equipment or distribution s collapse	ystems are no	t likely to	Y	N	U	N/A			
5. Have you looked for and found no oth	her adverse co	oncerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?							Y	N	U
^[4] Does the Equipment Meet the GIP Crite	<u>ria?</u>						Y	N	U

Comments

Evaluated by: _____ Date: _____

Equipment ID No Equip. Class <u>13 – Motor-Genera</u>	tors				
Equipment Description					
Location: Bldg Floor El Room, Row/Col					
Manufacturer, Model, Etc. (optional but recommended ^[2])					
Seismic Canacity vs. Demand					
1 Elevation where equipment receives seismic input					
2 Elevation of seismic input below about 40' from grade	$\overline{\mathbf{v}}$	N	I	N/A	
2. Equipment has fundamental frequency above about 8 Hz	I V	N	U	N/A	
4. Canacity based on: Existing Documentation			U	11/17	
4. Capacity based on. Existing Documentation Bounding Spectrum	BS	<i>N</i>			
1.5 x Bounding Spectrum	AB	S			
5. Demand based on: Ground Response Spectrum	GR	S			
1.5 x Ground Response Spectrum	AC	iS			
Conserv. Desc. In-Str. Resp. Spec.		S S			
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)		.0			YNU
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats we meeting the specific wording of the caveat rule and explain the reason for this section below.)	vhich a concl	are m usior	et by 1 in t	y intent he Com	without
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A	
 Main driver and driven equipment connected by a rigid support or skid 	Y	Ν	U	N/A	
3. Base vibration isolators adequate for seismic loads	Y	Ν	U	N/A	
4. Attached lines have adequate flexibility	Y	Ν	U	N/A	
5. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A	
6. Relays mounted on equipment evaluated	Y	Ν	U	N/A	
7. Have you looked for and found no other adverse concerns?	Y	Ν	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	Ν	U	N/A	
3. Sizes and locations of anchors determined	Y	Ν	U	N/A	
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A	

Screening Evaluation Work Sheet (SEWS) Sheet 2 of 2

Equipment ID No Equip. Class <u>13 – Motor-Generat</u>	tors						
Equipment Description							
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	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	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	Ν	U	N/A			
10. Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are anchorage requirements met?					Y	N	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	Ν	U

Comments

Eval	luated	by:	
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_____ Date: _____

Y N U N/A

Screening Evaluation Work Sheet (SEWS) Sheet 1 of 3

Equipment ID No Equip. Class <u>14 – Distribution Pa</u>	nels					
Equipment Description						
Location: Bldg Floor El Room, Row/Col						
Manufacturer, Model, Etc. (optional but recommended ^[2])						
<u>Seismic Capacity vs. Demand</u>						
1. Elevation where equipment receives seismic input						
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-	
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A		
4. Capacity based on: Existing Documentation	DC)C				
Bounding Spectrum	BS					
1.5 x Bounding Spectrum	AB	S				
GERS	GE	RS				
5. Demand based on: Ground Response Spectrum	GR	S				
1.5 x Ground Response Spectrum	AC	iS				
Conserv. Desc. In-Str. Resp. Spec.	CR	S				
Realistic M-Ctr. In-Str. Kesp. Spec.	KK	5			X 7 X	
Does capacity exceed demand? ^[9] Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					ΥN	ΙU
			. 1	• ,		
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats w meeting the specific wording of the caveat rule and explain the reason for this	hich a	are n	net b	y inten	it with	iout
section below.)	conci	usioi	1 111 (.15
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A		
2. Contains only circuit breakers and switches	Ŷ	N	Ū	N/A		
3. All latches and fasteners in door secured	Y	Ν	U	N/A		
4. Adjacent cabinets which are close enough to impact, or sections of multi-bay cabinets, are bolted together if they contain essential relays	Y	N	U	N/A		
5. Wall- or floor-mounted NEMA-type enclosure	Y	Ν	U	N/A		
6. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A		
7. Relays mounted on equipment evaluated	Y	Ν	U	N/A		
8 Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A		

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

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in the generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3.	Use panelboard GERS unless unit is free-standing and designated as	Y	Ν	U	N/A
	a switchboard by manufacturer				

Equip	ment ID No Equip. Class <u>1</u>	4 – Distribution Panels						
Equip	ment Description							
<u>Cavea</u>	<u>ats – GERS (cont'd)</u>							
4.	<u>W</u> "Quicklag" Type E circuit breakers are <u>not</u> in dist	ribution panel Y	Ν	U	N/A			
^[5] 5.	<u>All</u> adjacent cabinets or sections of multi-bay assemb together	lies bolted Y	N	U	N/A			
Is the	intent of all the caveats met for GERS?				Y	N	U	N/A
Ancho	orage							
1.	Appropriate equipment characteristics determined (m natural freq., damping, center of rotation)	ass, CG, 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	Ν	U	N/A			
4.	Anchorage installation adequate, e.g., weld quality as and washers, expansion anchor tightness	nd length, nuts Y	Ν	U	N/A			
5.	Factors affecting anchorage capacity or margin of sate embedment length, anchor spacing, free-edge distance strength/condition and concrete cracking	èty considered: Y e, concrete	Ν	U	N/A			
6.	For bolted anchorages, gap under base less than 1/4-i	nch Y	Ν	U	N/A			
7.	Factors affecting essential relays considered: gap un capacity reduction for expansion anchors	der base, Y	N	U	N/A			
8.	Base has adequate stiffness and effect of prying action considered	n on anchors Y	N	U	N/A			
9.	Strength of equipment base and load path to CG adea	juate Y	Ν	U	N/A			
10.	Embedded steel, grout pad, or large concrete pad ade	quacy evaluated Y	Ν	U	N/A			
11.	^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are an	nchorage requirements met?					Y	Ν	U
<u>Interac</u>	ction Effects							
1.	. Soft targets free from impact by nearby equipment or	structures Y	Ν	U	N/A			
2.	. If equipment contains sensitive relays, equipment fre impact by nearby equipment or structures	e from all Y	N	U	N/A			
3.	. Attached lines have adequate flexibility	Y	Ν	U	N/A			
4.	Overhead equipment or distribution systems are not l collapse	ikely to Y	Ν	U	N/A			
5.	Have you looked for and found no other adverse con	cerns? Y	Ν	U	N/A			
Is equ	ipment free of interaction effects?					Y	N	U
^[4] Doe	es the Equipment Meet the GIP Criteria?					Y	N	U

Equipment ID No. _____ Equip. Class <u>14 – Distribution Panels</u>

Equipment Description

Comments

Evaluated by: _____ Date: _____

Equipment ID No	Equip. Class <u>15 – Batteries on R</u>	acks					
Equipment Description							
Location: Bldg Floo	or El Room, Row/Col						
Manufacturer, Model, Etc. (option	nal but recommended ^[2])						
Seismic Capacity vs. Demand							
1 Elevation where equipmen	t receives seismic input						
2 Elevation of seismic input	below about 40' from grade	v	N	II	N/A		
 Elevation of seismic input Equipment has fundaments 	al frequency above about 8 Hz	I V	N	U	N/A		
4 Capacity based on: Existin	a nequency above about 8 Hz		\mathbf{D}	U	1 N/A		
Boundi	ing Spectrum	BS					
1.5 x B	Bounding Spectrum	AE	BS				
GERS		GE	RS				
5. Demand based on: Ground	d Response Spectrum	GR	S				
1.5 x C	Fround Response Spectrum	AC	iS S				
Realist	ic M-Ctr In-Str Resp. Spec.	RR	S				
Does capacity exceed demand? ^[3] a special exception to envelopin per Section 4.2 of the GIP.)	^{3]} (Indicate at right (*) and in Comments if ng of seismic demand spectrum is invoked					Y N	U
<u>Caveats – Bounding Spectrum</u> (meeting the specific wording of the section below.)	(Identify with an asterisk (*) those caveats whe caveat rule and explain the reason for this	which a concl	are n usioi	net b n in t	y intent he Cor	t withou nments	t
1. Equipment is included in e	arthquake experience equipment class	Y	Ν	U	N/A		
 Plates of the cells are of le Manchex design 	ad-calcium flat-plate, PlantJ, or of	Y	Ν	U	N/A		
3. Each individual battery we	eighs less than 450 lbs	Y	Ν	U	N/A		
 Close-fitting, crush resistant between cells 	nt spacers fill two-thirds of vertical space	Y	Ν	U	N/A		
5. Cells restrained by end and	d side rails	Y	Ν	U	N/A		
6. Racks have longitudinal cr	ross bracing	Y	Ν	U	N/A		
7. Wood racks evaluated to in	ndustry accepted standards	Y	Ν	U	N/A		
8. Batteries greater than 10 ye effects	ears old specifically evaluated for aging	Y	N	U	N/A		
9. Anchorage adequate (See	checklist, below, for details.)	Y	Ν	U	N/A		
10. Have you looked for and feed	ound no other adverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met	for Bounding Spectrum?				Y N	I U N	/A

Equipment ID No. _____ Equip. Class <u>15 – Batteries on Racks</u>

Equipment Description

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1. Equipment is included in the generic seismic testing equipment class	Y	Ν	U	N/A			
2. Meets all Bounding Spectrum caveats	Y	Ν	U	N/A			
3. Plates of the cells are of lead-calcium flat-plate design (i.e., not Manchex design)	Y	Ν	U	N/A			
4. Batteries supported on two-step racks or single-tier racks; restrained by double side and end rails which are symmetrically located with respect to the cell center-of-gravity	Y	N	U	N/A			
Is the intent of all the caveats met for GERS?				Y	NI	U	N/A
<u>Anchorage</u>							
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	Ν	U	N/A			
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A			
 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			
 Base has adequate stiffness and effect of prying action on anchors considered 	Y	N	U	N/A			
8. Strength of equipment base and load path to CG adequate	Y	Ν	U	N/A			
9. Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A			
10. ^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are anchorage requirements met?					Y	N	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	U	N/A			
2. Attached lines have adequate flexibility	Y	Ν	U	N/A			
3. Overhead equipment or distribution systems are not likely to collapse	Y	Ν	U	N/A			
4. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	Ν	U

Equipment ID No. _____ Equip. Class <u>15 – Batteries on Racks</u>

Equipment Description

Comments

Evaluated by: _____ Date: _____

Equipment ID No Equip. C	lass <u>16 – Battery Chargers & Inverters</u>	
Equipment Description		
Location: Bldg Floor El	Room, Row/Col	
Manufacturer, Model, Etc. (optional but recommended	d ^[2])	
Seismic Capacity vs. Demand		
1. Elevation where equipment receives seismic	nput	
2. Elevation of seismic input below about 40' fr	m grade <u>Y N U</u>	N/A
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 Spectru	m GRS	
1.5 X Ground Response S Conserv. Desc. In-Str. Re	AGS CRS	
Realistic M-Ctr In-Str R	esp Spec RRS	
a special exception to enveloping of seismic dema per Section 4.2 of the GIP.)	*) and in Comments if ad spectrum is invoked	YNU
<u>Caveats – Bounding Spectrum</u> (Identify with an as meeting the specific wording of the caveat rule and e section below.)	terisk (*) those caveats which are met by xplain the reason for this conclusion in the terms of terms of the terms of ter	intent without ne Comments
1. Equipment is included in earthquake experier	ce equipment class Y N U	N/A
2. Solid state type	Y N U	N/A
3. For floor-mounted, transformer positively and near base, or load path is evaluated	hored and mounted Y N U	N/A
4. Base assembly of floor-mounted unit properly lateral forces	braced or stiffened for Y N U	N/A
5. For wall-mounted units, transformer supports adequate load path to the rear cabinet wall	and bracing provide Y N U	N/A
6. All latches and fasteners in doors secured		
7. Anchorage adequate (See checklist, below, for	r 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 adve	rse concerns? Y N U	N/A
Is the intent of all the caveats met for Bounding Spec	trum?	Y N U N/A

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in the generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A

Equipment ID No. _____ Equip. Class <u>16 – Battery Chargers & Inverters</u>

Equipment Description

Cavea	<u>nts – GERS (cont'd)</u>				
3.	Silicon-Controlled Rectifier (SCR) power controls; wall- or floor- mounted NEMA-type enclosure	Y	N	U	N/A
4.	Within range of battery charger ratings:				
	24-250 VDC	Y	Ν	U	N/A
	120-480 VAC	Y	Ν	U	N/A
	25-600 amps	Y	Ν	U	N/A
	150-2850 pounds (floor-mounted)	Y	Ν	U	N/A
	150-600 pounds (wall-mounted)	Y	Ν	U	N/A
5.	Within range of inverter ratings:				
	120 VDC only	Y	Ν	U	N/A
	120-480 VAC	Y	Ν	U	N/A
	0.5-15 kVA	Y	Ν	U	N/A
	300-2000 pounds	Y	Ν	U	N/A
6.	Heavy components are located in lower half of cabinet and are supported from base or rear panel with no panel cutouts adjacent to attachment	Y	N	U	N/A
Is the	intent of all the caveats met for GERS?				Y N U N/A
Ancho	orage				
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	Ν	U	N/A
4.	Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	N	U	N/A
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	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	Ν	U	N/A
10.	Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A
11.	^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A
Are ar	chorage requirements met?			-	Y N U

Equipment ID No Equip. Class <u>16 – Battery Chargers & Inverters</u>									
Equipment Description									
Interaction Effects									
1. Soft targets free from impact by nea	rby equipment	or structures	Y	Ν	U	N/A			
2. If equipment contains sensitive relay impact by nearby equipment or struct	ys, equipment f ctures	ree from all	Y	N	U	N/A			
3. Attached lines have adequate flexibi	ility		Y	Ν	U	N/A			
4. Overhead equipment or distribution collapse	systems are no	ot likely to	Y	N	U	N/A			
5. Have you looked for and found no o	ther adverse co	oncerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?							Y	N	U
^[4] Does the Equipment Meet the GIP Crit	<u>eria?</u>						Y	N	U

Comments

Evaluated by: _____ Date: _____

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Equipment ID No Equip. Class <u>17 – Engine-Gener</u>	ators					
Equipment Description						
Location: Bldg Floor El Room, Row/Col						
Manufacturer, Model, Etc. (optional but recommended ^[2])						
Seismic Capacity vs. Demand						
1. Elevation where equipment receives seismic input						
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-	
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A		
4. Capacity based on: Existing Documentation	DC	DC				
Bounding Spectrum	BS					
1.5 x Bounding Spectrum	AE	BS				
5. Demand based on: Ground Response Spectrum	GR	S				
1.5 x Ground Response Spectrum	AC	3S				
Conserv. Desc. In-Str. Resp. Spec. Realistic M Ctr. In Str. Resp. Spec.		2				
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					Y N	U
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats we meeting the specific wording of the caveat rule and explain the reason for this section below.)	vhich a concl	are m usior	net b n in t	y inten the Cor	t with nment	out ts
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A		
2. Driver and driven equipment connected by a rigid support or common skid	Y	N	U	N/A		
3. Base vibration isolators adequate for seismic loads	Y	Ν	U	N/A		
4. Attached lines (cooling, air, electrical) have adequate flexibility	Y	Ν	U	N/A		
5. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A		
6. Relays mounted on equipment evaluated	Y	Ν	U	N/A		
7. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met for Bounding Spectrum?				Y N	I 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	Ν	U	N/A		
3. Sizes and locations of anchors determined	Y	Ν	U	N/A		
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A		

Screening Evaluation Work Sheet (SEWS) Sheet 2 of 2

Equipment ID No Equip. Class <u>17 – Engine-Genera</u>	tors						
Equipment Description							
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	Ν	U	N/A			
6. For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	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. 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	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are anchorage requirements met?					Y	N	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by:	Date:
•	

Y N U N/A

Screening Evaluation Work Sheet (SEWS) Sheet 1 of 3

Equipment ID No Equip. Class <u>18 – Instruments on Racks</u>					
Equipment Description					
Location: Bldg Floor El Room, Row/Col					
Manufacturer, Model, Etc. (optional but recommended ^[2])					
<u>Seismic Capacity vs. Demand</u>					
1. Elevation where equipment receives seismic input					
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A	
4. Capacity based on: Existing Documentation	DO	DC			
Bounding Spectrum	BS				
1.5 x Bounding Spectrum	AI	BS			
GERS	Gł	ERS			
5. Demand based on: Ground Response Spectrum	GI	RS			
1.5 x Ground Response Spectrum	A	ĴS			
Conserv. Desc. In-Str. Resp. Spec.		(S			
Realistic Mi-Cir. In-Str. Resp. Spec.		13			X7 XT TT
a special exception to enveloping of seismic demand spectrum is invoke	d				YNU
per Section 4.2 of the GIP.)					
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveat meeting the specific wording of the caveat rule and explain the reason for t section below.)	ts which his concl	are m lusior	net by n in t	y inten he Coi	t without nments
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A	
2. No computers or programmable controllers	Y	Ν	U	N/A	
3. Steel frame and sheet metal structurally adequate	Y	Ν	U	N/A	
 Adjacent racks which are close enough to impact or sections of mul bay racks are bolted together if they contain essential relays 	ti- Y	N	U	N/A	

5. Natural frequency relative to 8 Hz limit considered
6. Attached lines have adequate flexibility
7. Anchorage adequate (See checklist, below, for details.)
8. Relays mounted on equipment evaluated
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?

<u>**Caveats – GERS</u>** (Identify with an asterisk (*) those caveats which are met by intent without meeting the specific wording of the caveat rule and explain the reason for this conclusion in the Comments section below.)</u>

1.	Equipment is included in the generic seismic testing equipment class	Y	Ν	U	N/A
2.	Meets all Bounding Spectrum caveats	Y	Ν	U	N/A
3.	Component is a pressure, temperature, level or flow transmitter	Y	Ν	U	N/A

Equipment ID No. _____ Equip. Class <u>18 – Instruments on Racks</u>

Equipment Description

<u>Cavea</u>	<u>its – GERS (cont'd)</u>					
4.	Component is one of the specific makes and models tested, as listed in Appendix B	Y	N	U	N/A	
5.	Necessary function of component not sensitive to seismically induced system perturbations (e.g., sloshing)	Y	N	U	N/A	
6.	No vacuum tubes	Y	Ν	U	N/A	
7.	All external mounting bolts in place	Y	Ν	U	N/A	
8.	Demand based on amplified portion of 3% damped floor response spectrum if estimated natural frequency of rack less than 33 Hz	Y	N	U	N/A	
^[8] 9.	Rack capable of structurally transferring seismic demand loads to anchorage	Y	N	U	N/A	
^[5] 10.	<u>All</u> adjacent racks or sections of multi-bay assemblies bolted together	Y	N	U	N/A	
Is the	intent of all the caveats met for GERS?				Y N U N/A	
Ancho	orage					
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	Ν	U	N/A	
4.	Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A	
5.	Factors affecting anchorage capacity or margin of safety considered: embedment length, anchor spacing, free-edge distance, concrete strength/condition and concrete cracking	Y	N	U	N/A	
6.	For bolted anchorages, gap under base less than 1/4-inch	Y	Ν	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	Ν	U	N/A	
10.	Embedded steel, grout pad, or large concrete pad adequacy evaluated	Y	Ν	U	N/A	
11.	^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A	
Are an	chorage requirements met?				Y N U	

Equipment ID No Equip. Class <u>18 – Instruments on Racks</u>									
Equipment Description									
Interaction Effects									
1. Soft targets free from impact by nea	rby equipment	or structures	Y	Ν	U	N/A			
2. If equipment contains sensitive relay impact by nearby equipment or struct	ys, equipment f ctures	ree from all	Y	N	U	N/A			
3. Attached lines have adequate flexibility	ility		Y	Ν	U	N/A			
4. Overhead equipment or distribution collapse	systems are no	t likely to	Y	N	U	N/A			
Interaction Effects (cont'd)									
5. Have you looked for and found no o	other adverse co	oncerns?	Y	Ν	U	N/A			
Is equipment free of interaction effects?							Y	N	U
^[4] Does the Equipment Meet the GIP Crit	teria?						Y	N	U

Comments

Evaluated by: _____ Date: _____

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Equipment ID No	_ Equip. Class <u>19 – Temperature Sec</u>	ensor	S				
Equipment Description							
Location: Bldg Floor El	Room, Row/Col						
Manufacturer, Model, Etc. (optional but r	recommended ^[2])						
Seismic Capacity vs. Demand							
1. Elevation where equipment receiv	res seismic input					_	
2. Elevation of seismic input below a	about 40' from grade	Y	N	U	N/A		
3. Equipment has fundamental frequ	ency above about 8 Hz	Y	N	U	N/A		
4. Capacity based on: Existing Docu	mentation	DC)C				
1.5 x Boundin	g Spectrum	DS AB	S				
5 Demand based on: Ground Respo	nse Spectrum	GR	S				
1.5 x Ground 1	Response Spectrum	AC	βS				
Conserv. Desc	e. In-Str. Resp. Spec.	CR	S				
Realistic M-C	tr. In-Str. Resp. Spec.	RR	S				
a special exception to enveloping of se per Section 4.2 of the GIP.)	ismic demand spectrum is invoked					ΥN	U
<u>Caveats – Bounding Spectrum</u> (Identify meeting the specific wording of the cavear section below.)	y with an asterisk (*) those caveats what rule and explain the reason for this of	hich a concl	are m usior	net by n in t	y inten he Coi	t with nmen	out ts
1. Equipment is included in earthqua	ke experience equipment class	Y	Ν	U	N/A		
2. No possibility of detrimental diffe mounting of connection head and	rential displacement between mounting of temperature sensor	Y	Ν	U	N/A		
 Associated electronics are all solid Attached lines have adequate flex 	d state (no vacuum tubes) ibility	Y	N	U	N/A		
5. Have you looked for and found no	o other adverse concerns?	Y	Ν	U	N/A		
Is the intent of all the caveats met for Bou	anding Spectrum?				ΥN	N U	N/A
Interaction Effects							
1. Soft targets free from impact by n	earby equipment or structures	Y	Ν	U	N/A		
2. Attached lines have adequate flex	ibility	Y	Ν	U	N/A		
3. Overhead equipment or distribution collapse	on systems are not likely to	Y	N	U	N/A		
4. Have you looked for and found no	o other adverse concerns?	Y	Ν	U	N/A		
Is equipment free of interaction effects?						Y N	U
^[4] Does the Equipment Meet the GIP C	riteria?					Y N	U

Equipment ID No. _____ Equip. Class <u>19 – Temperature Sensors</u>

Equipment Description _____

Comments

Evaluated by: _____ Date: _____

Equipment ID No Equip. Class <u>20 – Instr. & Contro</u>	ol Pan	els 8	z Ca	binets			_
Equipment Description							_
Location: Bldg. Floor El. Room, Row/Col							
Manufacturer, Model, Etc. (optional but recommended ^[2])							•
······································							-
Seismic Capacity vs. Demand							
1. Elevation where equipment receives seismic input	_				_		
2. Elevation of seismic input below about 40' from grade	Y	Ν	U	N/A	-		
3. Equipment has fundamental frequency above about 8 Hz	Y	Ν	U	N/A			
 Capacity based on: Existing Documentation Bounding Spectrum 1.5 x Bounding Spectrum 	DC BS AB	OC S					
5. Demand based on: Ground Response Spectrum 1.5 x Ground Response Spectrum Conserv. Desc. In-Str. Resp. Spec. Realistic M-Ctr. In-Str. Resp. Spec.							
Does capacity exceed demand? ^[3] (Indicate at right (*) and in Comments if a special exception to enveloping of seismic demand spectrum is invoked per Section 4.2 of the GIP.)					ΥN	J U	
<u>Caveats – Bounding Spectrum</u> (Identify with an asterisk (*) those caveats w meeting the specific wording of the caveat rule and explain the reason for this section below.)	hich a concl	are m usior	net by n in t	y inten he Cor	t with nmer	nout nts	
1. Equipment is included in earthquake experience equipment class	Y	Ν	U	N/A			
2. No computers or programmable controllers	Y	Ν	U	N/A			
3. No strip chart recorders		Ν	U	N/A			
4. Steel frame and sheet metal structurally adequate		Ν	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							
7. All doors secured by latch or fastener							
8. Attached lines have adequate flexibility							
9. Anchorage adequate (See checklist, below, for details.)	Y	Ν	U	N/A			
10. Relays mounted on equipment evaluated	Y	Ν	U	N/A			
11. Have you looked for and found no other adverse concerns?	Y	Ν	U	N/A			
Is the intent of all the caveats met for Bounding Spectrum?				ΥN	I U	N/A	١
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			

Equipment ID No Equip. Class <u>20 – Instr. & Contro</u>	ol Pan	els &	z Ca	binets			
Equipment Description							
<u>Anchorage (cont'd)</u>							
3. Sizes and locations of anchors determined	Y	Ν	U	N/A			
4. Anchorage installation adequate, e.g., weld quality and length, nuts and washers, expansion anchor tightness	Y	N	U	N/A			
 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			
 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			
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	Ν	U	N/A			
11. ^[6] Anchorage capacity exceeds demand	Y	Ν	U	N/A			
Are anchorage requirements met?					Y	N	U
Interaction Effects							
1. Soft targets free from impact by nearby equipment or structures	Y	Ν	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	Ν	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?	Y	Ν	U	N/A			
Is equipment free of interaction effects?					Y	N	U
^[4] Does the Equipment Meet the GIP Criteria?					Y	N	U

Comments

Evaluated by:	Date:

Equipment ID No.		Equip. Class	21 – Tanks and Heat Exchangers			
Equipment Description						
Location: Bldg.	Floor El	Roon	n, Row/Col			
Manufacturer, Model, Etc. (optional but recommended ^[2])						
Shall Canadity of Daman	J					

<u>Shell Capacity vs. Demand</u>

Buckling capacity of shell of large, flat-bottom, vertical tank is equal Y = N = U = N/A to or greater than demand:

Anchorage

Capacity of anchor bolts and their embedments is equal to or greater Y = N = U = N/A than demand:

Connection Between Anchor Bolts and Shell

Capacity of connections between the anchor bolts and the tank shell is Y = N = U = N/A equal to or greater than the demand:

Flexibility of Attached Piping

Attached piping has adequate flexibility to accommodate motion of Y N U N/A large, flat-bottom, vertical tank:

Equipment ID No	Equip. Class <u>21 – Tanks and Heat</u>	Exchange	ers	
Equipment Description				
<u>Tank Foundation</u> Ring-type foundation is not used to vertical tank:	support large, flat-bottom,	Y N	U N/A	

^[4]Does the Equipment Meet the GIP Criteria?

Y N U

<u>Comments</u>

Evaluated by: _____ Date: _____

REASONS FOR CHANGES TO GIP, PART II, APPENDIX G

Listed below are the specific reasons for making the changes marked with a vertical line in the margin of this appendix to create GIP-3A from GIP-3, Updated 5/16/97. The endnote numbers listed below correspond to the bracketed numbers (e.g., ^[1]) located in the text of this appendix where the changes are made.

The GIP has been amended in Part II, Appendix G, "Introduction," to add a clarification that the short summaries of the criteria provided in the SEWS are for general guidance only. The detail criteria contained in Sections 4 and 7 and Appendices B, C, and D should be used as the basis for evaluating the seismic adequacy of equipment.

The GIP has also been corrected in Part II, Appendix G, SEWS for Classes 1, 2, and 3 to indicate that the maximum weight of each vertical section (not the average weight) should not exceed the limit provided in the SEWS caveat.

² SSER No. 2, Sec. III.7.2 – The Staff noted that the SEWS do not require documentation of manufacturer, model, etc. For information purposes only, the Staff strongly recommends that such information should be recorded if readily available.

The GIP has been amended in Part II, Appendix G, "Introduction" to address the Staff recommendation by adding "(e.g., manufacturer, model)" to the discussion of the information to be recorded on the SEWS.

Each of the SEWS in Appendix G has also been modified to indicate that although such information as manufacturer, model, etc. is optional, it is recommended that it be recorded.

³ SSER No. 2, Sec. III.7.3 – The NRC position is that since GIP-2 allows the demand level to exceed the capacity level under certain conditions, in response to the question "Does capacity exceed demand?" on the Screening Evaluation Work Sheets (SEWS) for each piece of equipment, the reviewer must also identify whether the exceptions described on page 4-10 of GIP-2 were used in the comparison.

The GIP has been amended in Part II, Section 4.2, "Enveloping of Seismic Demand Spectrum," to address the Staff position by requiring the SEWS to be marked to indicate if one of the special exceptions to having capacity envelop demand at all frequencies is invoked.

Each SEWS in Appendix G has also been modified to include a reminder, next to the question "Does capacity exceed demand?" to indicate if an exception is invoked.

¹ SSER No. 2, Sec. III.7.1 – The Staff position is that the information in the SEWS is a summary of the criteria contained other sections of the GIP (e.g., Appendices B and C). Therefore, if there is any conflict between the information on the SEWS and these other sections of the GIP, these other sections should take precedence. For example, for motor control centers, the weight of 800 pound should be considered maximum instead of average.

⁴ Editorial change in last question on each SEWS to ask whether the item of equipment meets the GIP criteria, rather than whether it is seismically adequate. An item of equipment may be seismically adequate (e.g., by resolving an outlier) however it may not meet the GIP criteria and therefore should be characterized as an outlier, i.e., the answer to the question should be No (N).

⁵ SSER No. 2, Sec. III.2.3 – The Staff position is that sections of multi-bay cabinets should be bolted together, even if they do not contain essential relays, if the GERS capacities are used, since sections of such cabinets were bolted together during testing.

The GIP has been amended in Part II, Appendix B, Sections B.1.2, B.2.2, B.3.2, B.4.2, B.14.2, and B.18.2 and in the SEWS in Appendix G for Equipment Classes 1, 2, 3, 4, 14, and 18 to include a GERS caveat requiring adjacent cabinets to be bolted together.

- ⁶ Editorial change to add a checklist item on each SEWS where anchorage is checked to evaluate the anchorage capacity of an item of equipment compared to the seismic demand imposed on it. This checklist item was inadvertently omitted in previous revisions of the GIP.
- ⁷ Typographical error corrected.
- ⁸ Editorial change in the SEWS for Instrument Racks (Class #18) to make the GERS Caveat #9 correspond to the Appendix B requirement that an evaluation should be done to show that the instrument rack is capable of transferring the seismic demand load (not the GERS capacity) to the anchorage.