DIRECTIONS FOR INSERTING SUPPLEMENT 2, REV. 1, OF THE SEISMIC REEVALUATION REPORT

REMOVE

INSERT

DECI	*	U	24	V	1
DATA	S	H	E	ET	S

Data Sheet 7 Sheet 1 o	of 4	Data	Sheet	7	Sheet	1	of	4
2 0	of 4					2	of	4
3 0	of 4					3	of	4
4 0	of 4					4	of	4
Data Sheet 8 Sheet 1 o	of 3	Data	Sheet	8	Sheet	1	of	3
2 0	of 3					2	of	3
3 0	of 3					3	of	3

Data Sheet 7

Qualification Summary of Equipment

I

Flant	Name: Davis-Besse 1 Type:
1.	Utility: Toledo Edison PWR
2.	NSSS: <u>B & W</u> 3. A/E: <u>Bechtel</u> BWP
Compo	nent Name Emergency Diesel Generator System
1. 2.	Scope: [] NSSS [V] BOP Engine Model 645E4 Model Number: Generator Model A20 Quantity: 2
3.	Vendor: Power Systems (formerly Bruce SM Diesel, Inc.)
4.	If the component is a cabinet or panel, name and model No. of the Jevices included: NA
5.	Physical Description a. Appearance AC generator, exciter and auxiliary equipment
	 b. Dimensions 34'L x 6'W x 10'H (Apprex.) Engine-Generator Foundation 100,000 lbs., Engine 45,000 lbs., c. Weight Generator 30,000 lbs., Auxiliary Equipment 17,600 lbs.
6.	Location: Building <u>Diesel Generator Bldg. (Aux. Bldg. Area 6)</u> Elevation <u>585 Feet</u>
7.	Field Mounting Conditions [V] Bolt (No. <u>16</u> , Size <u>14</u>) (Engine-Generator) [] Weld (Length) []
8.	Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical): See Sheet 4 of 4 A ::
9.	a. Functional Description: Serves as a standby emergency source
	of AC power, to be used when normal power is not available
	b. Is the equipment required for [] Hot Standby [] Cold Shutdown
	. [V] Bothassuming offsite power is no available
10.	Pertinent Reference Design Specifications: 7749-M-180,

Sheet 2 of 4

1

Data Sheet 7

1	Equipm	ment Qualification Method: Test:
		Analysis: VEngine-generator, Accessory Rack, Controls and Combination of Test and Analysis: VInstrumentat
		Test and/or Analysis by Flight Dynamics, Inc. Report No. A-9-80, Rev (name of Company or Laboratory & Report No.) Power Systems Report No. 6032 Wyle Laboratories Report No. 45193-1
1.	1 I	"Revised" Required Response Spectra (attach the graphs): Figures II-27A,B,
	2.	Required Acceleration in Each Direction: (based on 0.20g)
		See Sheet 4 of 4 S/S = F/B = V =
T	If Ou	alification by Test, then Complete: N/A
•••	1.	[] Single Frequency [] Multi-Frequency: [] random [] sine beat []
	2.	[] Single Axis [] Multi-Axis
	3.	No. of Qualification Tests: OBE SSE Other(specify)
	4.	Frequency Range:
	5.	TRS enveloping RRS using Multi-Frequency Test [] Yes (Attach TRS & RRS graphs) [] No
	6.	Input g-level Test at S/S = F/B = V =
	7.	Laboratory Mounting:
		1. [] Bolt (No, Size) [] Weld (Length) []
	8.	Functional operability verified: [] Yes [] No [] Not Applicable
	9.	Test Results including modifications made:
	10.	Other tests performed (such as fragility test, including results):

Rev. 1

Data Sheet 7

VII. If Qualification by Analysis or by the Combination of Test and Analysis, then

Complete:

1. sim tes	Description of Test including Results: Three relays were subjected to a seismic mulation test consisting of biaxial random multifrequency testing in each of two t orientations. The specimens were electrically powered and monitored for
ele to	ctrical function during the test. They demonstrated sufficient integrity withstand the seismic environment without compromise of structures or electrical ctions
2.	Method of Analysis See Sheet 4 of 4
	[] Static Analysis [] Equivalent Static Analysis
	[] Dynamic Analysis: [] Time-History [] Response Spectrum
3.	Model Type: [] 3D [] 2D [] 1D
	<u>4 of 4</u> [] Finite Element [] Beam [] Closed Form solution
4.	[N] Computer Codes: See Sheet 4 of 4
	Frequency Range and No. of modes considered: See Sheet 4 of 4
	[] Hand Calculations
5.	Method of Combining Dynamic Responses: [] Absolute Sum [] SRSS See Sheet 4 of 4 [] Other:
6.	Damping: Basis for the damping used: Table II-1
7.	Support Considerations in the model: See Sheet 4 of 4
8.	Critical Structural Elements:
۵	Governing Load (a) (b) (c) or Response Seismic Total Stress <u>(c) - (b)</u> Identification Location Combination Stress Stress Allowable (a)
.	Accessory Rack on Seismic 18,908 21,009 24,444 0.182 Engine-Generator Base Spectrum psi psi osi
в.	Max. DeflectionLocationEffect Upon Functional OperabilityDiesel EngineAir Exhaust NozzleNo effect, loads are within
	Vendor recommended allowable

Supplement 2

values

-			ALC: N				-
11	3+	3	Sn.	0	0	•	1
2	aı	a	211	5	c	÷.	π.

	L L	Engine	Accessory Rack	Control Cubicles	Internal Panels and Equipment
II.8	Natural Frequencies in each Direction S/S F/B V	41.9 Hz >41.9 Hz >41.9 Hz	14.68 Hz	>33 Hz >33 Hz >33 Hz	Not Determined
V.2 R	equired Acceleration n Each Direction S/S F/B V	0.437g 0.448g 0.469g	Response Spectra per Figures II-27A,B&C	0.437g 0.448g 0.469g	Used 5.0g 5.0g 5.0g
VII.2	Method of Analysis	Static	Dynamic	Test & Analysis	Test & Analysis
VII.3	Model Type	Finite Element	Finite Element	1D	1D
VII.4	Computer Codes	SAP IV	SAP IV	None	None
	Frequency Range and No. of modes considered	N/A	5 Modes, 4th Mode = 34.8 Hz	N/A	N/A
VII.5	Method of Combining Dynamic Responses	N/A	SRSS	N/A	N/A
VII.7	Support Considerations in the model	Rigid	SAPIV Boundary Elements Full Stiffness at base, rack stiffness at pipe conn's.	Field-mounted Supports	Field-mounted Supports

Data Sheet 8

Qualification Summary of Equipment

Ι.	Plan	t Name: Davis-Besse 1 Type:
	1.	Utility: Toledo Edison PWR
	2.	NSSS: 3 & W 3. A/E: Bentel BWR
II.	Comp	onent Name Emergency Diesel Cooling Water Heat Exchanger
	1	Scope: [] NSSS [V] BOP
	2.	Model Number: 2208-Type SU-2 Pass Quantity: 2
	3.	Vendor: Power Systems from Thermxchanger, Inc.
	4.	If the component is a cabinet or panel, name and model No. of the devices included: N/A
	5.	Horizontal, U-Tube, Shell & Tube Physical Description a. Appearance <u>Heat Exchanger</u> .
		b. Dimensions <u>11'-4" Long</u> , <u>22" OD Shell</u>
		c. Weight5420 lb. empty, 6820 lb. operating
	6.	Location: Building Diesel Generator Bldg. (Aux. Bldg. Area 6)
		Elevation 585 Feet
	7.	Sield Mounting Conditions [1] Bolt (No. 4 , Size 3/4")
Shell: Tube Bundle	8.	Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical): Greater than 33 Hz all directions S/S: 15.2 Hz F/B: > 33 Hz V: 15.2 Hz
	9.	a. Functional Description:Cool the engine jacket water of the
		Emergency Diesel Generator (See Data Sheet 7)
		b. Is the equipment required for [] Hot Standby [] Cold Shutdown
	10	[√] Both <u>assuming offsite power is</u> not available Pertipent Reference Design Specifications: 7749-M-180
	20.	7749-C-41A

Supplement 2 Rev. 1 1

1

Sheet 2 of 3

1

1

Data Sheet 8

1.10

III.	Ist	Equipment Available for Inspe	ction in the Plant: $[\mathbf{V}]$ Yes	[] No
IV.	Equ	ipment Qualification Method:	Test:	
			Analysis: 🔨	
			Combination of Test and Analys	is:
		Test and/or Analysis by	URS/John A Blume & Assoc. Repo (name of Company or Laboratory Flight Dynamics, Inc. Report M	ort No. 8039-1 & Report No.) No. A-9-80, Rev.
۷.	Vib	ration Input:	Flight Dynamics, Inc. Report N	lo. A-10-80
	1.	"Revised" Paquired Response	Spectra (attach the graphs): F	igures 11-27A,B,
Shell	2.	Required Acceleration in Ea	ach Direction: (based on 0.20g)	0.4690
Tube Bundl	e:	S/S =0.75g F/	'B = 0.50g (used) V =	1.50g
VI.	If	Qualification by Test, then C	Complete: N/A	
	1.	[] Single Frequency	[] Multi-Frequency:	[] random [] sine beat []
	2.	[] Single Axis	[] Multi-Axis	
	3.	No: of Qualification Tests:	OBESSE	Other (specify)
	4.	Frequency Range:	and the second second second second second	_
	5.	TRS enveloping RRS using Mu graphs)	ulti-Frequency Test [] Yes (Att [] No	ach TRS & RRS
	6.	Input g-level Test at S/S	S = F/B =	V =
	7.	Laboratory Mounting:		
		1 [] Bolt (No, Siz	ze) [] Weld (Length)	[]
	8.	Functional operability ver	ified: [] Yes [] No [] N	ot Applicable
	9.	Test Results including mod	ifications made:	
	10.	Other tests performed (such	h as fragility t∉st, including r	esults):
			Supp Rev.	lement 2 1

1

Data Sheet 8

Comp	lete:
1.	Description of Test including Results: <u>N/A</u>
2.	Method of Analysis
	[] Static Analysis [\] Equivalent Static Analysis
	[] Dynamic Analysis: [] Time-History [] Response Spectrum
3.	Model Type: [1] 3D [] 2D [] 1D
4	[√] Finite Element [√] Beam [] Closed Form solution (Tube bundle) (Tube bundle) [√] Computer Codes: <u>SAP IV, Welding Research Council (WERCO) Release 5.</u> ANSYS
	Frequency Range and No. of modes considered: N/A
	N] Hand Calculations
5.	[√] Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [√] SRSS [] Other: (specify)
5.	[√] Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [√] SRSS [] Other: (specify) Damping: 3% Basis for the damping used: Table II-1
5. 6. 7.	 [√] Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [√] SRSS [] Other:
5. 6. 7. 8.	 N Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [N] SRSS [] Other: (specify) Damping: 3% Basis for the damping used: Table II-1 Support Considerations in the model: Heat exchanger bolted to Diesel-Ger skid Critical Structural Elements:
5. 6. 7. 8.	[√] Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [√] SRSS [] Other:
5. 6. 7. 8.	[√] Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [√] SRSS [] Other: [] Other: [] SRSS [] Damping: 3% Basis for the damping used: Table II-1 Support Considerations in the model: Heat exchanger bolted to Diesel-Ger skid Critical Structural Elements: Governing Load (a) (b) (c) Identification Location Combination Stress Stress Allowable (a) Bending stress in the base plate of the support * 27.56 32.4 *
5. 6. 7. 8.	N Hand Calculations Method of Combining Dynamic Responses: [] Absolute Sum [V] SRSS [] Other: (specify) Damping: 3% Basis for the damping used: Table II-1 Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Considerations in the model: Heat exchanger bolted to Diesel-Ger Support Consideration Support Support Support Total Stress (c) - (b) Or Response Seismic Total Stress (c) - (b) Identification Location Combination Stress Stress Allowable (a) Bending stress in the * 27.56 32.4 * base plate of the support ksi ksi legs * 32.8 35.0 * * Anchor bolts (max. stress * 32.8 35.0 * * intensity) Ksi ksi *

.

Supplement 2 Rev. 1

within allowable values.