

Section 8

EQUIPMENT OUTLIERS

SUMMARY OF OUTLIERS

A total of 104 outliers were written for DAEC SSEL equipment items. Outliers for the Raceway Evaluations are discussed in Section 7.

Short descriptions of each equipment outlier and its resolution are provided in Table 8-1. The outliers are sorted by the following outlier types: "C" for equipment class caveats, "A" for anchorage, and "I" for seismic interactions. Roughly 30% of the outliers are for equipment class caveats, 30% are anchorage outliers, and about 40% are seismic interaction outliers.

Equipment Class Caveat Outliers

There are three types of SSEL equipment, comprising 12 outliers, that are not included in the earthquake experience database, or are not addressed by the GIP [Reference 1]. The first case is the 4 inboard and 4 outboard main steam isolation valves (MSIVs) (CV4412, 13, 15, 16, 18, 19, 20, 21), which are much larger than the size requirements of the GIP screening rules. These valves had been seismically qualified by their vendor, and were found acceptable as-is by the SRT. The second case is that of the 3 "explosive" valves for the traversing in-core probe (TIP) system (1S218A, B, C). These valves are small, rigidly-mounted to stiff pedestals/tables, and were judged inherently rugged and acceptable as-is by the SRT. The last case is that of the 40,000 gallon diesel oil storage tank (1T035) buried in the protected yard outside the turbine building. Although not addressed by the GIP, the SRT judged that the tank is acceptable as-is because it is well constructed (to ASME B&PV Code Section VIII) and attached piping has adequate flexibility for differential motion.

There were 6 outliers written for equipment mounted on vibration isolators. Two control panels (1C091, 92) mounted on the SBDG skids via vibration isolators were identified as relay chatter concerns. (The isolators were determined to have adequate strength, but impact may be transmitted to the panel.) The relay evaluation, however, concluded that these panels did not contain essential relays, and therefore these outliers were resolved as-is. The remaining 4 isolator outliers were written for the two control room HVAC air handlers (1VAC030A, B) in the Control Building 800' mechanical room. Two outliers, one for each unit, questioned the adequacy of the isolators to adequately support the units for seismic loadings. The isolators, which are large, spring-type with lateral stops, were shown by calculation to be acceptable for seismic loads. The other two outliers addressed a concern that some small-bore attached piping that is rigidly supported within about 2' of the unit could be damaged by spring movement through the isolator clearances. These outliers were resolved by modifying the isolators to limit the amount of spring travel to 1/8" or less.

Three additional cases of caveat violations, which comprise 6 outliers, involve equipment design features. The 4 river water pumps in the Intake Structure (1P117A, B, C, and D) have shaft/casing cantilevered lengths that exceed the GIP maximum allowable of 20'. These pumps were accepted as-is by using existing design documentation. Motor control center (MCC) 1B91 in the Intake Structure has cutouts in two side panels that exceeded the GIP allowable dimensions. The MCC shear walls were shown by analysis to have adequate capacity with these cutouts, and the outlier was resolved as-is. Main Control Room panel 1C024 had an internal device (box) mounted on slides that could impact other instruments in the cabinet. This outlier was resolved by restraining the devices with screws.

The remaining 8 caveat outliers were cases of missing or loose mounting screws, missing or broken panel door latches, and detached small conduit from junction boxes. These outliers were resolved by maintenance actions.

Anchorage Outliers

Eight outliers were written for pumps whose anchorages do not meet GIP minimum embedment lengths or edge distances. The two emergency service water pumps (1P099A, B) have anchor edge distance violations, but were shown to be adequate as-is by analysis. The Control Building HVAC chilled water pumps 1VCP030A and B, and RHR service water pumps 1P022A through D have J-bolt anchors that do not meet GIP minimum embedment. These pumps were all shown to have adequate anchorage by analysis. The outliers for pumps 1P117A through D, discussed above for their caveat outliers, also include J-bolt embedment violations. These outliers were also resolved by analysis.

Two outliers were written for cabinets that were not anchored in accordance with standard DAEC installation practices, and were judged to be inadequate for seismic loadings as follows. Main control room panel 1C014 was anchored with bolts through 2" square tabs that were not welded to base channel lower flanges, i.e., attachments were friction clamps. Additionally, the base channels were shimmed with uncaptured washers. This outlier was resolved by providing new anchor bolts. The anchorage for SBDG control panel 1C094 was inadequate because uncaptured shims were used to level the cabinet, and bolt holes were oversized (flamecut and without washers). Also, the GIP requirement that cabinets containing essential relays not have a gap under the base was not met. This outlier was resolved by placing concrete grout under the cabinet base, which was shown by analysis to resolve all anchorage issues.

Three MCCs also had anchorages that were not in accordance with standard DAEC installation practices, and were judged to be inadequate for seismic loadings. MCCs 1B46 in the Pump House and 1B37 on Reactor Building 786' both had connections between the bottom of the breaker compartments and the sill channels that were judged to be inadequate by the SRTs: 1B46 had 2 out of 4 attachment welds burned through, and 1B37 was missing connecting bolts in one section. 1B37 also had uncaptured shims under the sill channels and used bolts through unwelded tabs (friction clamps) instead of bolts through welded tabs. The outlier for 1B46 was resolved by adding external plates that connect the cabinet and channel sills. The anchorage for 1B37 was shown to be adequate as-is by analysis. The third MCC identified as an anchorage outlier was 1B44, located on Reactor Building 757'. Bolts through

LINE NO.	EQUIP TRASH CLASS	MARK NO.	SYSTEM/EQUIPMENT DESCRIPTION	Dwg. No./Rev./Zone	Building	Equipment Flr. Elev.	LOCATION Rm. or Row/Col.	SORT NOTES	Normal	Desired	REQ'D INTERCONNECTIONS	REG.				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
6205	2	16	1044	250VDC BATTERY CHARGER	BECH-E028-10/F6	CB	F12	SR	--	ENER	YES	--	ENER	YES	1842	AI
6301	2	16	1025	120VAC/120 VOLT INSTRUMENT AC POWER SUPPLY	BECH-E029-2-10/E5	CB	F11	SR	04	ENER	YES	--	ENER	YES	1020	AI
6302	2	14	1125	IAC/MANUAL BYPASS SWITCH PANEL	BECH-E029-2-10/D5	CB	F11	SR	--	ENER	YES	--	ENER	YES	1025, 112A	AI
6303	2	04	112A	IAC/REGULATING TRANSFORMER	BECH-E029-2-10/E4	CB	F11	SR	04	ENER	YES	--	ENER	YES	1842	AI
6304	2	14	1120	IAC/INSTRUMENT AC 1121 MAIN AND TIE BREAKER PANEL	BECH-E029-2-10/D5	CB	G13	SR	--	ENER	YES	--	ENER	YES	1125	AI
6305	2	14	11021	120VAC/120W INSTRUMENT AC DISTRIBUTION PANEL	BECH-E029-2-10/C5	CB	G13	SR	--	ENER	YES	--	ENER	YES	1120	AI
6306	1	16	1015	120VAC/120 VOLT INSTRUMENT AC POWER SUPPLY	BECH-E029-2-10/E7	CB	H11	SR	04	ENER	YES	--	ENER	YES	1010	AI
6307	1	14	1115	IAC/MANUAL BYPASS SWITCH PANEL	BECH-E029-2-10/D7	CB	H11	SR	--	ENER	YES	--	ENER	YES	1015, 111A	AI
6308	1	04	111A	IAC/REGULATING TRANSFORMER	BECH-E029-2-10/E6	CB	H11	SR	04	ENER	YES	--	ENER	YES	1032	AI
6309	1	14	11010	IAC/INSTRUMENT AC 1111 MAIN AND TIE BREAKER PANEL	BECH-E029-2-10/D7	CB	G12	SR	--	ENER	YES	--	ENER	YES	1115	AI
6310	1	14	1111	120VAC/120W INSTRUMENT AC DISTRIBUTION PANEL	BECH-E029-2-10/C7	CB	G12	SR	--	ENER	YES	--	ENER	YES	11010	AI
6400	1,2	14	11023	120VAC/120W UNINTERRUPTIBLE AC DISTRIBUTION PANEL	BECH-E29-2-10/C2	CB	H11	SR	--	ENER	YES	--	ENER	YES	11022, 11004, 1045, 11002	AI
6401	1,2	14	11022	120VAC/11002 TO 11023 AUTOMATIC TRANSFER SWITCH	BECH-E29-2-10/D3	CB	H11	SR	04	ENER	YES	--	ENER	YES	1045, 11004, 11002	AI
6402	1,2	04	11004	120VAC/REGULATING TRANSFORMER	BECH-E29-2-10/E2	CB	H12	SR	04	ENER	YES	--	ENER	YES	1032	AI
6403	2	04	11002	IAC/INSTRUMENT AC PANEL 11021 SUPPLY TRANSFORMER	BECH-E29-2-10/E4	CB	G13	SR	--	ENER	YES	--	ENER	YES	1042	AI
6404	1,2	16	1045	120VAC/120 VOLT UNINTERRUPTIBLE AC POWER SUPPLY	BECH-E29-2-10/E3	CB	H11	SR	--	ENER	YES	--	ENER	YES	1040	AI
8001	1	06	11099A	ESW/EMERGENCY SERVICE WATER PUMP A	BECH-M146/44/A7	PH	C3, "A" SIDE	SR	--	OFF	RUNNING	YES	BECH-E111-08>	183214(1832)	AI	
8002	2	06	11099B	ESW/EMERGENCY SERVICE WATER PUMP B	BECH-M146/44/A6	PH	C2, "B" SIDE	SR	--	OFF	RUNNING	YES	BECH-E111-08A>	184207(1842)	AI	

CERTIFICATION:

The information identifying the equipment required to bring the plant to a safe shutdown condition on this Safe Shutdown Equipment List (SSEL) is, to the best of our knowledge and belief, correct and accurate (One or more signatures of Systems or Operations Engineers)

PAUL W. HAYES
 Print or Type Name/Title ENGINEER
 Signature: *Paul W. Hayes* Date: APRIL 24, 1995

KEVIN G. CORDARY
 Print or Type Name/Title ENGINEER
 Signature: *Kevin G. Cordary* Date: APRIL 24, 1995