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NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-9-0062	SPECIFICATION 7220-M-488 (Q)	BECHTEL CONST	K.O. RAFFERTY	13 OCT 80	
M-01-9-0063	SCI EQUIPMENT (P.O. E-11, E-14, E-51B) HAD VARIOUS VENDOR TERMINATION DEFICIENCIES.	BPCo Engg	R Yee	10/9/80	
M-01-9-0-064	Main Steam Isolation Valve Relay Cabinets - Deficiencies found during overinspection	BPCo Engr	W. Noth	10/15/80	

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NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-0-031	WPS & PQR (QCP-1/PL-CS)	BP Proj Eng Zack Co	JLZimmerma	4/3/80	9/5/80
M-01-4-0-032	WPS & PQR (QCP-1/PI-CS)	Proj Eng ~~Zack~~	JLZimmer	4/3/80	
M-01-4-0-033	SLUICE GATE OPERATOR ANCHOR Bolt Torque	Indeterminate	D.K Martin	4/8/80	
M01-5-0-034	EXPANSION ANCHOR BOLT INSTALL & TESTING IN D-G. BLDG. @ 664-0	BECHTEL QC AND CONST.	G.T. BLACK	4/8/80	
M-03-4-0-035	PUMP CASING IPSIA & B DOCUMENTATION	B&W LYNCHBURG	K.O. RAMSEY	MAY 1980	7/11/80
M-01-4-0-036	RESPONSE NOT EXPANSION ANCHOR TESTING FOR IE BULLETIN No. 79-02	BECHTEL QC AND ENGINEERING	G.T BLACK	MAY 1, 1980	
M-03-4-0-037	Defects Heat Exchanger P.C. Pump IP51-B	B & W Lynchburg	H.L. ALLEN	May 9, 1980	7/15/80 HA
M-01-9-0-038	Qualification of some Compaction Equipment Not Valid	Bechtel Project Engineering	D.E. Horn	5/15/80	
M-01-5-0-039	STAIRWELL NOT Seismically Supported	Bechtel Proj & CONST.	DE Hendrix	5/20/80	
M-01-04-0-040	Defections of Pipe	BPCo. Constr./Q.C.	L.K. Howell	5-22-80	
M-01-4-0-041	WR-1 Welder Qual's Main Steam Restraints	BPCo Const. BPCo QC	JLZimmerman	5-22-80	
M-01-3-0-042	Post Tensioning tendon - Ground storage	BPCo Const. & QC	W Cecil	5/23/80	
M-01-9-0-043	Conc. Air Content in FSAR VS 5 Rec C-230	Bechtel P.E.	DE Horn	5/27/80	
M-03-4-0-044	Field Construction Procedure (FPC-157 Rev 8) Violation	B&W QC	HL. Allen	6/5/80	7/28/80
M-01-4-0-045	Lead filled Radiation Shielding Box defect	BPCo QC BPConst.	JLZimmerman	6/12/80	8/22/80
M-01-8-0-046	QC Not recording daily concrete surface Temperatures during curing	Bechtel QC	MJ Hamra DE Horn	6/17/80	

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M-01-04-0-016	Pipe anchors(Hanger) QCIR no activity sign off	Bechtel QC Bechtel Const	JL Zimmerman	3/5/80	
M-01-04-0-017	Pipe anchor(Hanger) QCIR improper	Bechtel QC	JL Zimmerman	3/5/80	5/16/80
M-01-04-0-018	Pipe Anchor (hanger) QCIR improper	Bechtel QC	JL Zimmerman	3/5/80	5/14/80
M-01-04-0-019	Pipe Anchor(hanger) QCIR improper	Bechtel QC Bechtel Const	JL Zimmerman	3/5/80	5/15/80
M-01-04-0-020	Pipe Anchor(hanger) QCIR improper	Const Bechtel QC	JL Zimmerman	3-5-80	5/14/80
M-01-4-0-021	Conduit Supports in D/G Bldg - missed inspection	Const Bechtel QC	W Nott	3-10-80	5/28/80
M-01-4-0-022	Sluice Gate Installation	Bechtel QC Bechtel Const	D.K Martin	3/11/80	
~~M-01-4-0-023~~	~~Grower Tank Bottom Penetration~~ DKM 3/12/80 T-60	Grower Tank	DK Martin	3/11/80	
M-01-04-0-023	WELDER QUAL. ASME/AWS	Bechtel CONST	JL Zimmerman	3/13/80	
M-01-04-0-024	Potentiometer Due Date For Calibration expired	(Calib. Lab) Bechtel	M.E. DeWitt	3/14/80	21-May-80
M-01-9-0-025	Color coding missing on OSOV, Inspection been completed by QC (DKM 3-19-80)	Bech Const/QC	D.L. Hendrix	3-17-80	
M-01-7-0-026	Maintenance inspections not initiated on Sol. Valves	Bechtel QC	W. Nott	3-17-80	9-22-80
M-01-4-0-027	Buskio Fire Damper Inspection Records	ZACK	M Cogill	3-20-80	
M-01-6-0-028	SLUICE GATE STEM & STEM NUT DISCREPANCIES	BECHTEL QA	H Reynolds	3-21-80	
M-01-4-0-029	Heat Number on Diesel Fuel Line 2 HBC-4-2	Bechtel Const Bechtel QC	D.K. Martin	3-26-80	5/13/80
M-01-4-0-030	WRS # PQR - (QCP-1) P5-CS [redacted] ZACK Co	Bechtel PMS Eng	ZIMMERMAN	3-31-80	

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M-01-5-0-047	Pull Box Installation not per drawing	Bechtel Engineering	W. Nott	6-18-80	
M-01-9-0-048	Conduit Clamps not tensioned	Bechtel Constr & QC	W. Keating	6-18-80	
M-01-4-0-049	Reactor Jump Misc Struct Steel Vendor Welds unacceptable	Wiltsco. Bechtel SQR	J Zimmerma	6-18-80	
M-01-9-0-050	J-Boxes Not Identified as Safety Related	Bechtel Engineering	W. Nott	6-27-80	
M-01-9-0-051	Identification of Divided Cable Tray	Bechtel Engg & Construction	W. Nott	7-17-80	
M-01-04-0052	Impact Test of Shear Lugs	BPCO. Engr.	L.K. Howell	7-21-80	
M-01-5-0-053	Cable Tray Overinspection Discrepancies	Bechtel Construction	W. Nott	7-18-80	
M-01-9-0-054	Modification of Cable Tray by Bechtel	Bechtel Engineering & Construction	W. Nott	7-25-80	
Not Issued M-01-9-0-055	~~Verification of Mfg Certs on insulated cable~~ NOT ISSUED	~~Consolidated Controls Corp. - Vendor~~	~~D Zaffard~~	~~7-31-80~~	
M-01-9-0-055	Discrepance between Dwg E-36 & E-644 (Q)	Bechtel Engineering	K Rading	8-20-80	
M-01-9-0-056	I & C Storage Requirements Not met By Field	BPCo Const/QC	W. Nott	Sept 8, 80	
M-01-9-0-057	UNCALIBRATED PENETRAMETERS	BECHTEL QC	K.O. RAFFERTY	10 SEP 80	
M-01-9-0-058	Not drill permit for exp anchors in Secondary Shield wall. FCN violates Spec C-305 - No PE approval	BECHTEL Constr	R.E. SEVO	9/10/80	
M-01-9-0-059	D/G 1G11 Damage to F-10	Bech Const.	D Zaffard	9-30-80	
M-01-9-0-060	MCC 1B53 - Unqualified welder ASME vs AWS	BPCo Const	JL Zimmerman	10-8-80	
M-03-4-0-061	LEVEL SENSING NOZZLE UNIT 2 STEAM GEN "B"	B&W Const	JL Zimmerman	10/9/80	

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NCR IDENTIFICATION 1980	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-0 001	OVERINSPECTION DEFICIENCIES - STUD WELDING DG BLDG BAY 4	Bechtel QC	JL Zimmerman	8 JAN 80	8/19/80
M-01-4-0-002	INSTRUMENTATION SEPARATION CRITERIA	Bechtel Design	M.F. Powell	11-Jan-80	
M-01-4-0-003	PIPING CLEARANCE RQMTS.	BPCo. Q.C.	L.L. Howell	1-14-80	2-21-80
M-03-4-0-004	CRITERIA FOR PROCEDURE 132 HAS BEEN VIOLATED	B&W Const.	JH Allen	1/16/80	2/5/80
M-01-4-0-005	(1) QC NOT INSPECTING PER C-130 DWG. FOR PIPE (CLASS I), (2) CONC. PLACED CONTRARY TO C-130 DWG.	Bechtel Const. Bechtel QC	D.E. HORN DON MARTIN	1/18/80	
M-01-5-0-006	IMPROPER INSTALLATION AND TESTING OF EXPANSION ANCHORS IN D.G. BLDG	BECHTEL QC AND CONSTRUCTION	G.T. BLACK JR	1/18/80	4/25/80
* M-03-4-0-007	* THIS NCR WAS NOT ISSUED ~~IMPROPER STORAGE OF PAINT & FLAMMABLES~~	~~CONSTRUCTION & MAINTENANCE QC~~	~~D. WOTT~~	~~4/23/80~~	
M-01-6-0-007	CABLE SPLICING IN RACEWAYS	BECHTEL PROJECT ENGINEERING	ED JONES	1/28/80	
M-01-4-0-008	UNIDENTIFIED DISCREPANCY OR CONDITION BY PMO	MIDLAND PMO	J.C. CORLEY	1/29/80	3-28-80
~~M-01-4-0-009~~	~~ELECTRICAL CIRCUIT SCHEDULE E-37 INCORRECT~~	~~BECHTEL ENGINEERING~~	~~D. WOTT~~	~~1/30/80~~	VOID. NCR NOT ISSUED IDAN
M-01-6-0-010	BATTERY CHARGER TRANSFORMER BUSS BAR	Bechtel Const.	M. Schaffer	2/6/80	
M-01-9-0-011	LINER PLATE REPAIR TOLERANCE CHECKS	BECH QC	DR KEATING	2-19-80	
M-01-9-0-012	OLD REVISION OF DRAWINGS FOUND IN WORK LOCATIONS	Bechtel DOCUMENT CONTROL	ED JONES	2/28/80	4/15/80
M-01-9-0-013	IMPLEMENTATION OF GRAVER RT PROCEDURE IN VIOLATION OF ESAR	GRAVER TANK	R OSTROWSKI	3-1-80	
M-01-04-0-014	INSPECTING WITH NON-CURRENT DRAWINGS	BPCo. Q.C.	L.L. Howell	3-4-80	3-20-80
M-01-04-0-015	IMPROPER WELDING PROCEDURE USED	Bechtel QC	JL Zimmerman	3-4-80	5/14/80

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M-01-9-9-134	Overinspection deficiencies on 2Y31 & 2Y32	Bechtel Constr.	W. Nott	11/26/79	4/9/80
M-01-9-9-135	Overinspection deficiencies on MOV's OMO 1809, OMO 1826-3, OMO 1826-4	Bechtel Constr.	W. Nott	11/26/79	
M-01-4-9-136	CHALKY RESIDUE ON COATING SURFACE BEING REPAIRED	J. L. MANTA	G.T. BLACK	12/4/79	
M01-4-9-137	LOSS OF ADHESION BETWEEN PRIMER AND TOPCOAT ON REAR SNUBBER BRACKETS	BECHTEL	G.T. BLACK	12/6/79	
M01-9-9-138	Overinspection deficiencies on OF-75A,B,C,D,E	Bechtel	W. Nott	12/10/79	4/15/80
M01-8-9-139	Inspection Records not certified to latest plan rev.	Bechtel Q.C.	W. Nott	12/14/79	5/9/80
M-01-4-9-140	WELDING INSPECTOR CERTIFICATIONS	ZACK Co	JR Zimmerman	12/17/79	1/8/80
M01-9-9-141	IMPROPER USE OF FCN's AND FCR's	Bechtel Const.	Ed Jones	12/17/79	1/29/80
M-01-5-9-142	UNDERSIZE SOCKET WELDS	BECHTEL CONST & QC	AL ALLEN	12-19-79	7/2/80 HA
M-01-4-9-143	Quality Control Inspection Record	Bectel QC	D.K. MARTIN	12/27/79	1/29/80

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M-01-4-9-118	QCIR improperly signed OFF by QC	Bechtel QC	JL Zimmerman	19 Oct 79	1-22-80
M-01-9-9-119	Inspection records not certified to latest Plan Rev.	Bechtel QC	W. Mott	10/23/79	5/9/80
M-01-9-9-120	IMPROPER INSTALLATION OF GREASE CANS ON POST TENSIONING	BECHTEL CONSTR. QC, AND ENGINEERING	G. T. BLACK	10/24/79	3-10-80
M-01-4-9-121	Hydro - High Point Vents	BPCo. Constr/QC	L. L. Howell	10/25/79	1-7-80
M-01-4-9-122	Anchor Bolts in Bay 2G12 ELEV 669' D/G Bldg	BPCo Const/QC	DEMARTIN	10/29/79	
M01-4-9-123	IMPROPER USE OF DROP-IN ANCHORS AND LACK OF INSPECTION ON Z TIE ANCHOR	BECHTEL CONST. QC, ENGINEERING	GTB	10-25-79	4/24/80
M01-4-9-124	INSPECTION RECORD FOR TERMINATION 1AA0001 G-2 DOES NOT REFLECT ACTUAL TERMINATION OR DRAWING E-900	Bechtel QC	Ed Jones	10/25/79	12/6/79
M01-9-9-125	HVAC (ZACK) Flex Connection Certifications	Zack Co QC	M.F. DeWitt	10-30-79	
M-01-9-9-126	HOLD TAG VIOLATION	BECHTEL CONST	K.O. RAFFERTY	30 Oct & NOV 79	6 FEB 80
M-01-4-9-127	Electrode Oven Temperature Control	Bechtel Const	JL Zimmerma	30 Oct 79	11 DEC 79
M-01-4-9-128	Dewatering Wells with no documentation of inspection and no approved procedure for grouting finish	Bechtel Piping Q.C.	D.C. Hor...	11-2-79	1/24/80
M01-4-9-129	CABLE TERMINATED TO AN IMPROPER TERMINATION POINT	Bechtel QC AND CONSTRUCTION	Ed Jones	11/1/79	3/21/80
M-01-9-9-130	RCP not identified by ISI	B&W NFSD	R.E. Whitaker	11/5/79	
M01-4-9-131	LOSS OF ADHESION BET. COATS ON INSTRUMENT SUPPORTS, RB/2	BECHTEL CONST.	GTB	11/5/79	
M01-4-9-132	LOSS OF ADHESION BET. COATS ON PRIMARY SHIELD WALL	J.L. MANTA	GTB	11/8/79	
M01-9-9-133	RADIOGRAPHY ON B.I.T. VENTURI TUBES	Bechtel Nondestructive	R. Osterhaus	11-15-79	9/10/80

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M-01-9-9-102	TERMINAL BLOCK MARKING AND COLOR NOT THE SAME AS COLOR OF TERMINATED CABLES	BECHTEL CONSTRUCTION	E. L. JONES	9/22/79	5/20/80
M-01-4-9-103	INSPECTION RECORDS DO NOT REFLECT ACTUAL VIAS USED FOR CABLE INSTALLATIONS	Bechtel Quality Control	E. L. JONES	9/22/79	3/24/80
M-01-04-9-104	IR's For Zack Co. Equipment Do NOT exist	Zack Co	M F Reilly	9-27-79	
M-01-9-9-105	Incorrect termination and routing of 1AA05001B in 1A05	Bechtel Eng. Bechtel Constr.	D Nath	10-1-79 WDN 9-21-79	
M-01-4-9-106	WELDING IR'S ON ZACK INSTALLED EQUIP. NON EXISTANT	ZACK CO.	JL ZIMMERMAN	10-2-79	3-11-80
M-01-04-9-107	QCIRs Prepared Inadequately	Bech QC	L. L Howell	10/5/79 Re-issued 10-22-79	3-6-80
M-01-9-9-108	RADIOGRAPHIC EXAMINATION OF COOLANT PIPING	B&W Lynchburg	K.O. Rattray	10.9.79	29 OCT 79
M-01-9-9-109	RADIOGRAPHIC EXAMINATION OF COOLANT PIPING	B&W Lynchburg	R. Ostrowski	10.9.79	10/26/79
M-01-4-9-110	UNPLUGGED ROD OVEN	BECHTEL CONST	K. O. RATTRAY	9 OCT 79	20 NOV 79
M-01-4-9-111	UNPLUGGED ROD OVEN	BECHTEL CONST-	K.O. Rattray	10 OCT 79	20 NOV 79
M-01-4-9-112	PLUG WELDING WITHOUT PROCEDURE (Steel Gate Area)	Bechtel Const	JL ZIMMERMAN	11 OCT 79	10/24/79
M-01-9-9-113	QC CERTIFICATIONS	Bechtel QC	JL Corley	10/17/79	1/29/80
M-01-4-9-114	Open Line 1½" 1HBC-4-8	BECHTEL CONSTRUCTION	D. K. MARTIN	10/18/79	2/25/80
~~M-01-4-9-115~~	~~IMPROPER Closing OF Bechtel VALVE~~	Bechtel QC	E. L. JONES	10/19/79	NOT ISSUED
M-01-9-9-116	BPRO D.	BPRO Design	MFD	10-18-79	18-MARCH-80
M-01-9-9-117	WELDER QUALIFICATION RECORDS	BECHTEL CONST/ QC	K.O. RATTRAY	18 OCT 79	1 MAR 80

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M-01-4-9-086	ZACK Co - WELDING HVAC, QCP-27	ZACK Co	JL Zimmerman	8/21/79	
M-01-4-9-087	ZACK Co WELDING HVAC - QCP-74	ZACK Co	JL Zimmerman	8/22/79	
M-01-9-9-088	FAILURE TO PROTECT CABLE & VIOLATION OF BOARD RADIUS	Bechtel Construction	E.L. Jones	8/22/79	5/1/80
M-01-4-9-089	Bechtel - Welding Electrical Equip w/o Qualified procedure	Bechtel Const/QC	JL Zimmerman	8/23/79	11/6/79
M-01-9-9-090	HOUSEKEEPING IN CABLE TRAYS	Bechtel Constr.	D. Nott	8/27/79	5/28/80
M-01-9-9-091	Inspection Records not certified to latest Plan Rev	Bechtel QC	D Nott	8/28/79	5/9/80
M-01-9-9-092	TERMINAL BLOCK MARKING AND COLOR NOT THE SAME AS COLOR OF TERMINATED CABLES	Bechtel Construction	E.L. Jones	8/29/79	3/3/80
M-01-9-9-093	Bechtel QCIR P2.10 activity 3.5 does not reference Welding	Bechtel QC	D.K. Martin	9/4/79	11/27/79
M-03-4-9-094	UNCONTROLLED FILLER METAL	B+W CC	K.O. Rafferty	6 SEP 79	10-1-79
M-01-9-9-095	Cable 1AA05001A violates separation criteria	Bechtel	D Nott	9/7/79	1-3-80
M-01-9-9-096	CABLE 2AA0505 A TERM. & INSPECTED TO IMPROPER DWG	Bechtel Const./QC	E.L. Jones	9/10/79	12/11/79
M-01-9-9-097	Inspection Records not certified to latest Plan Rev	Bechtel Q.C.	D Nott	9/11/79	5/9/80
M-01-04-9-098	CRACKS in S.S. PIPE	Bechtel QC.	L.K. Fussell	9-12-79	
M-01-5-9-099	UNCAPPED PIPES	BECHTEL CONST	DREATIN	9-14-79	2-19-80
~~M-01-9-9-100~~	~~Rodent damage to Control Wiring HVAC~~ Voided 9-21-79	~~Bechtel Const~~	~~D Nott~~	~~9-20-79~~	CARR being written by CPCo Insp.
M-01-09-9-101	INSTRUMENTATION QCI's (I-1.10) Reference data Incorrect	Bechtel QC	M Pettit	9-21-79	15-NOV-79

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M-01-4-9-070	Lock washers on Instrument manifold mounts	BPCo Construction	M.E. Dewitt	18-July-79	16/NOV/79
M-01-04-9-071	Undersized Socket Welds	[illegible]	[illegible]	7-19-79	
M-01-04-9-072	Unqualified Welders on Spent Fuel Gate Supports	BPCo QC Bechtel Const	Zimmerman	7-19-79	2/14/80
M-03-3-9-073	Pressurizer [illegible] ISSUED to B&W [illegible]	B&W Const.	Allen	7/23/79	3/31/80
M-01-4-9-074	Zack Co. Anchor bolt Installation & Testing	Zack Co	[illegible]	7/24/79	
M-01-9-9-075	FSAR/SPECIFICATION CONFLICT	BECHTEL PROJ ENGRG	ZIMMERMAN	7/25/79	
M-01-9-9-076	INADEQUATE REVIEW OF RADIOGRAPH	BECHTEL Q.C.	R. OSTROWSKI	7-27-79	11-13-79
~~M-01-[illegible]-077~~	VOID - NOT ISSUED ~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~7-[illegible]-79~~	
M-03-[illegible]-078	[illegible]	B&W [illegible]	[illegible]		9-12-79
M-01-4-9-079	Zack Q/C I/R Procedure #19 Implementation	Zack Q/C	M.E. Dewitt	31-July-79	2-May-80
M-03-3-9-080	Tolerance Requirements Stud Installation RCP 2P51-A	B&W Const.	K.A. Allen	8/1/79	8-21-79
M-[illegible]-081	Level A [illegible]	B&W QC	[illegible]	[illegible]	12/12/79
M-03-[illegible]-082	Steel chips in Decay Heat pump (C9081)	BPCo. Const.	K.A. Allen	8/[illegible]/79	10/17/79
M-01-4-9-083	ZACK WELDING [illegible]	ZACK	J.L. ZIMMERMAN	8/14/79	
M-[illegible]-5-9-084	E-34 does not agree with actual cable routing	Bechtel Engineering	[illegible]	8/20/79	6/3/80
M-01-9-9-085	HOUSEKEEPING FAILURE - JUNK IN CABLE TRAYS	BECHTEL CONSTRUCTION	E.L. JONES	8/21/79	5/28/80

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M-03-5-9-054	B&W FCP-58	[illegible]	[illegible]	5-29-79	2/28/80
M-01-5-9-055	[illegible] F-1 & F-10 [illegible]	[illegible]	[illegible]	5-29-79	9/25/79
M-01-9-9-056	4/0 JUMPER [illegible]	[illegible]	[illegible]	[illegible]	
M-01-4-9-057	HVAC HANGERS/SUPPORTS (~~ZACK Co~~)	ZACK Co	JL Zimmerman	23 May 79	
M-01-9-9-058	RADIOGRAPHY OF GRINDABLE WELDS	BECHTEL PROCUREMENT	R Cotkoski	5-25-79	
M-01-9-9-059	REDUNDANT CONDUITS ON SAME SUPPORT	Bechtel CONSTRUCTION	E.L. Jones	5/25/79	8/6/79
M-01-4-9-060	HCC IN SERVICE WATER Bldg. QCIR Documentation	Bechtel QC	JL Zimmerma	6/1/79 5/31/79	7-10-79
M-01-9-9-061	CABLE INSTALLATIONS NOT BEING PROPERLY REFLECTED IN DRAWING E-37	Bechtel ENGINEERING	E.L. Jones	6/5/79	1/17/80
M-01-9-9-062	Valve Rigging to plant piping	Bechtel Construction	D.K. Mart	6/12/79	8/9/79
M-01-4-9-063	ELECTRICAL SUPPORTS	Bechtel Const	JL Zimmerma	6/21/79	7/1/80
M-01-9-9064	INSERVICE INSPECTION / EC RUMP STUDS	Bechtel [illegible]	R Cotkoski	6/25/79	8-2-79
M-01-~~04~~-9-065	Swagelok Fitting Installation	BPCo Const.	Mike Hill	7-6-79	1-23-80
M-1-14-9-66	[illegible]	[illegible]	[illegible]	7-11-79	12-4-79
M-01-9-9-067	Uncapped Valve + Pipe	Bechtel Const.	D.K. Martin	7/17/79	2/28/80
M-01-5-9-068	Termination of Elect. Cables	Bechtel Const	W. Noth	7/17/79	6/20/80
M-01-2-9-9067	TESTING OF YELLOW SAND & CORRESPONDING P.O.	BECHTEL QC	K. Kobzimack D Kelly	7-19-79	8-16-79

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

PROJECT Midland

QA2-0

NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-9-038	TERMINATIONS	Bechtel QC And Construction	EL Jones	4/9/79	6/25/79
M-01-2-9-039	Material Test Reports - Instrument Tube Fittings	BPCo Q/C	[illegible]	4-11-79	7/18/79
M-01-5-9-040	Incore Tank Hydro Test	CB&I	DR Keating	4-12-79	9-17-79
M-01-4-9-041	Fused Disconnect Switches (NAMEplates)	Gould Inc.	D.A. Nott	4-13-79	9/13/79
M-01-4-9-042	Instrument Fitting QVD Packages	BPCO - Q/C	[illegible]	4-16-79	10/25/79
M-01-4-9-043	Pipe Support Installation Tolerances and QC Inspection	Bechtel Engineering and Q.C	W.J. Jackson Jr.	4-18-79	
M-01-4-9-044	Using Five Star Grout on R/B Spray Pump Base with Lift Thickness > 6"	Bechtel Construction and QC	G.T. Blank Jr.	4-23-79	7/18/79
M-01-4-9-045	storage, Handling, disbursement of Weld filler material Temperature Verification of Electrode holding Ovens	Bechtel QC	JL Zimmerman	4-27-79	4-27-79
M-01-9-9-046	VALVE MARKING AND DATA	Procurement Engineering	DR Keating	4-26-79	2-19-80
M-01-6-9-047	High Current Test Set out of calibration	Pre-Op Testing	MJ Schaffer	4-26-79	5-16-79
M-01-4-9-048	CABLE TRAY SEPARATION Problem	Bechtel corporate	MJ Schaffer	5-2-79	
M-01-4-9-049	Bechtel MAINTENANCE NON-CONFORMANCE	Bechtel QC	D.A. Nott	5-7-79	6-6-79
M-01-4-9-050	UNIT #2 Dome Spray Ring Hangers/Anchors	Bechtel QC	JL Zimmerman	5-14-79	
M-01-9-9-051	~~Type I Grout (700 bags) removed from Hold Area Conc. Pumped (violation of FSAR)~~	Bechtel Construction	~~DE Horn~~ MJ Schaffer	6-6-79 ~~5-21-79~~	5-16-79
M-01-4-9-052	Problems on Structural Steel IR	Bechtel Construct Bechtel QC	D.E. Horn	5-21-79	
M-01-8-9-053	Pipe Hangers	Project Engineering	(WFD) K.L. Fowler	5-21-79	

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NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-9-020	Cable 1BB5603G Improper Routing	Bechtel Const & QC	ELJones	2-21-79	1 MAY 79
M-01-9-9 022	QUALITY VERIFICATION DOCUMENTATION	Bechtel	D.K. Martin	4/6/79	6/12/79
M-01-4-9-023	Zack Field Drawing Control	Zack	MFDeWitt	3-02-79	27 ~~March 79~~
M-01-4-9-024	Incorrect Routing of Cable 2AB2311D	Bechtel Const	DANott	2-22-79	6/25/79
M-01-4-9-025	Violation of QC Hold Tag Procedure	Bechtel Const & QC	ELJones	2-22-79	4 April 1979
M-01-4-9-026	Cable Protection from Sharp Edges	Bechtel Const & QC	ELJones	2-26-79	4 April 1979
027	NOT ISSUED				———
028	NOT ISSUED				———
M-01-4-9-029	Installed Backing Plates - Main Steam Pipe Restraint	Bechtel Const	JLZimmerman	2-28-79	10-23-79
M-01-4-9-030	Measurement of Volt/Amp - FPW-6.000	Bechtel Const	JLZimmerman	3-01-79	5/31/79
M-03-4-9-032	Improper Welding Amperage	B&W CC	KORafferty	3-02-79	7 MAY 79
M-01-4-9-033	In-Process Inspection	Bechtel QC	LRHowell	3-05-79	5-3-79
M-01-4-9-034	Uncontrolled Filler Material	Bechtel Const	KORafferty	3-12-79	4-5-79
M-01-4-9-035	Unauthorized Use of Conduit Support Request	Bechtel Const	JLZimmerman	3-19-79	6/26/79
M-01-4-9-036	Incorrect Welds on Equipment Momorails Monorail #5, 6, 7 and 9 - Auxiliary Building	Bechtel Const & QC	JLZimmerman	3-22-79	12/4/79
M-01-5-9-037	Final Hydro. Inspection by CB&I Incore Instrument Tank Unit-2 (2T-87)	CB&I QC	[illegible]	3/30/79	9/17/79

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PROJECT Midland 1 & 2

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NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-9-001	Zack Equipment Maintenance Records	Zack QC & Const	MFDeWitt	1-05-79	22-[illegible]-79
M-01-3-9-002	Storage Batteries not Protected from Construction Activity	Bechtel Const	DANott	1-05-79	4/16/79
M-01-9-9-003	Improper Closure of QAR SD-45 and 64	Bechtel QA	WFDickson	1-11-79	
M-01-9-9-004	Improper Weld Voltage and Amperage Checks	Bechtel Const	DRKeating	1-16-79	5-[illegible]-79.
M-01-4-9-006	Difference of Interpretation of Film 21-0 108 R2 613-1	Bechtel QC	KORafferty	1-19-79	
M-01-8-9-007	Drawing E-36	Bechtel Engineering	ELJones	1-23-79	6/26/79
M-01-8-9-008	Cable Support Brackets	Bechtel FE	WHBenkert	2-02-79	5/16/79
M-01-4-9-009	Cable Protection from Sharp Edges	Bechtel Const & QC	ELJones	2-02-79	4 April 1979
M-03-8-9-010	Unit #1 RV Unknown Weld Wire	B&W NPGD, Mt Vernon	RJSciamanda	2-09-79	
M-01-4-9-011	FPW-6.000 Volt/Amp Test Reports	Bechtel Const	JLZimmerman	2-05-79	11 April 1979
M-01-5-9-012	Moisture Contents Outside the ± 2.0% of Optimum Moisture Content	Bechtel PE, FE, & QC	DEHorn	2-06-79	
M-01-2-9-013	No Acceptance Tests of Type I Cement REM Used to Waive Requirements	Bechtel PE	DEHorn	2-06-79	3/13/80
M-01-4-9-016	Radiography of Welds, Improper Penetrameter	Bechtel QC	ROstrowski	2-19-79	
M-01-4-9-017	Cable 1A5508D Improperly Routed	Bechtel Const	DANott	2-19-79	7/26/79
M-01-4-9-018	Cable Protection from Sharp Edges	Bechtel Const & QC	ELJones	2-20-79	4 April 1979
M-01-4-9-019	Foreign Substance on Concrete Surface of RPV Sole Plate Grouting	Bechtel Const & QC	CTBJack	2-20-79	7/18/79

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NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
M-01-4-8-088	Manta QA Documentation and Implementation	Bechtel Const & JLManta QA	GTBlack	10-25-78	RQW 7-14-80
M-01-5-8-089	Bechtel Construction LinerPlate Coating R/B 2	Bechtel Const	GTBlack	10-27-78	4-30-80
M-01-9-8-091	No QC Inspection of Embeds	Bechtel QC	DRKeating	10-31-78	5-25-79
M-01-9-8-096	Unspecified Welds on Personnel Locks	Bechtel Const & QC	DRKeating	11-09-78	
M-03-4-8-097	Uncalibrated Thermocouple	B&W CC Const & QC	KORafferty	11-21-78	19 JUN 79
M-01-4-8-099	MOV Contacts not Being Sprayed with Preservative	Bechtel FE	WHBenkert	11-22-78	8-20-79
M-01-4-8-101	Bechtel UT Thickness Gauge not Controlled per M&TE Proc	Bechtel QC	JMDecker	11-27-78	5-29-79
M-01-5-8-102	Cable Tray Welding has Damaged Galvanized Plate	Bechtel Const & QC	ELJones	12-01-78	
M-01-2-8-104	Improper Technique for Shots on Butt Weld End Prep on Valves	Anchor-Darling/ Bechtel Procur	ROstrowski	12-04-78	
M-01-1-8-106	Station Batteries	Bechtel Const	KJSciamanda	12-04-78	2/1/80
M-01-4-8-107	Electrical Penetrations Improperly Connected on Vendor Side	Bechtel Procurement	DANott	12-13-78	6/8/79
M-01-4-8-108	Peeling/Loss of Adhesion Between Coatings on Liner Plate, R/B 2; and Lack of Disposition	Bechtel Const & JLManta QA	GTBlack	12-13-78	7/21/80
M-01-1-8-109	Limit Switch Installation on A/D Valves not in Conformance with Drawing Requirements	Anchor-Darling	WFDickson	12-18-78	5-22-79
M-01-4-8-110	Rebar Breaking Below Minimum Ultimate Tensile Strength of 90,000 psi	Bechtel QC	MJDamaso	12-15-78	3/10/80
M-01-4-8-111	Permanent Plant Equipment not Covered or Protected	Bechtel Const	DKMartin	12-20-78	
M-03-4-8-113	Unqualified Welder	B&W CC	KORafferty	12-28-78	20 APR 79

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PROJECT Midland 1 & 2

NCR IDENTIFICATION	SUBJECT	RESPONSIBLE ORGANIZATION	ORIGINATOR	DATE OPENED	DATE CLOSED
QF-193	G-321-D Form, Block #23 not Signed and Dated	Bechtel QA	WHBenkert	10-17-77	6/20/79
QF-199	Failing Moisture/Density Tests not Cleared with Passing Tests	Bechtel QA	DEHorn	11-04-77	
M-01-9-7-004	Carbon Steel and Galvanized Plugs in SS Pipe	Bechtel Const	DKMartin	1-10-78	3-29-79
M-01-4-8-006	Space Heaters in Motor Operated Valves	Bechtel Const	DNPomeroy	1-17-78	4/5/79
M-01-5-8-020	Turnover Hardware Discrepancies	Bechtel Const & QC	DRKeating	3-28-78	
M-01-5-8-023	Missing Turnover Documentation	Bechtel Const & QC	DRKeating	3-28-78	11-13-79
M-01-3-8-049	F-10 not Prepared	Bechtel Const & QC	WHBenkert	5-31-78	11/20/79
M-01-9-8-055 M-01-9-8-055A	600 Volt Control Cable	Bechtel PE	PWJacobsen	6-28-78 10-03-78	
M-01-9-8-056 M-01-9-8-056A	600 Volt Power Cable	Bechtel PE	PWJacobsen	6-26-78 10-03-78	
M-01-9-8-057 M-01-9-8-057A	5 kV and 8 kV Power Cable	Bechtel PE	PWJacobsen	6-29-78 10-03-78	
M-01-4-8-069	Pipe Minimum Wall Violation	Bechtel Const & QC	LRHowell	8-24-78	6-7-79
M-01-4-8-070	Safeguard Room Equipment F-10/20 Maintenance Requirements	Bechtel QC	ELJones	8-28-78	11-10-78
M-01-2-8-072	Zack Receipt Inspection	Zack QC	WFDickson	9-06-78	
M-01-2-8-082	460 V MCC Space Heaters Inoperative and QC in Violation of Procedure	Bechtel FE & QC	WHBenkert	10-16-78	8/17/79
M-01-4-8-083	Zack Subcontract use of Improper Zinc Rich Coating Material	Bechtel Const	MFDeWitt	10-25-78	9/20/79
M-01-4-8-085	Use of Aggregate Requiring Retest: Cone Aggregate Used that was Nonconforming	Bechtel PE, Const & QC	DEHorn	10-20-78	11/9/79

ATTACHMENT B

NONCONFORMANCE REPORT LOG

PROJECT _____

NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY		DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
			ASSIGNED DATE	ACTUAL DATE							
M-01-9-9-035 (PRK)	Unauthorized Use of Conduit Support Reacts	3-19-79	4-2-79			Field Eng.	Construction & Eng	Transferred to NCR Log Rev. 3 9/25/79			
	See NCR Log Rev. 3										

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NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY ASSIGNED DATE	WRITTEN REPLY ACTUAL DATE	DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
M-03-4-9-021	UNPLUGGED PDO WRAPPER	21 FEB 79	7 MAR 79	2[illegible]	N/A	B&W CC 7 MAR 79	N/A	N/A	N/A	17 MAR 79	19 MAR 79
M-01-9-9-022	SPOOL QVD Package does not comply with Piping Class Dwg M-481	1/16/79						Transferred to NCR Log Rev 3			3/23/79
M-01-4-9 023	Check Field Drawing Controll	22/FEB/79	1/MARCH 79								
M-01-4-9 024	INCORRECT ROUTING OF CABLE JAB2311D	2/22/79	3/8/79			Bechtel Constr	Bechtel Q.C.				
M-01-4-9 025	VIOLATION OF QC HOLD TAG PROCEDURE	2/22/79	3/8/79			Bechtel CONSTR.	Bechtel QC				
M-01-4-9-026	CABLE PROTECTION FROM SHARP EDGES	2/26/79	3/13/79			BECHTEL CONSTR.	Bechtel QC				
~~M-01-4-9 027~~	~~INCORRECT ROUTING OF CONDUIT INSTALLATION~~	2/27/79	3/14/79			~~Bechtel CONSTR.~~	~~Bechtel QC~~	NOT ISSUED			
~~M-01-4-9 028~~	~~INCORRECT INSTALLATION OF CABLE TRAYS~~	2/27/79	3/14/79			~~Bechtel CONSTR.~~	~~Bechtel QC~~	NOT ISSUED			
M-01-4-9 029	INSTALLED BACKING PLATES - Main Steam PIPE RESTRAINT	2/28/79	3/13/79			Bechtel CONSTR	Bechtel QC Const				
M-01-4-9 030	Measurement of Valtran - FIW-6.000	3/1/79	3/15/79			Bechtel Const					
M-03-4-9-031	[illegible]	1 MAR 79	15 MAR 79	5 MAR 79	15 MAR 79	B&W 15 MAR 79	N/A	N/A	19 MAR 79	19 MAR 79	19 MAR 79
M-03-4-9-032	IMPROPER WELDING PARAMETER	[illegible]	[illegible]			B&W [illegible]	Transferred to NCR Log Rev 3				3/23/79
M-01-4-4-083	In-Process Inspection	3/5/79	3/21/79			Bechtel Constr. 3-20-79					
M-01-4-9-034	UNCONTROLLED FILLER MATERIAL	12 MAR 79	26 MAR 79			Bechtel Const.					

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NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY		DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
			ASSIGNED DATE	ACTUAL DATE							
M-01-8-9-001	DRAWING E-36	1/23/79	2/6/79			N/A	Bechtel Engineering Transferred to NCR Log	N/A		Rev 3	3/23/79
M-01-9-006	CABLE SUPPORT BRACKETS	2/1/79	2/11/79			Bechtel F.E & QC	N/A	N/A			
M-01-4-9-004	Cable Protection From Sharp Edges	2/2/79	2/16/79			Bechtel Construction ~~And QC~~	Bechtel QC	NA			
M-03-8-9-010	Unit #1 RV unknown weld wire	~~2/7/79~~ 2/19/79	Prior to primary system hydro test								
M-01-4 9-011	FRV 6,000 Volt/AMP Test reports	2/5/79	2/19/79			Bechtel Construction		NA			
M-01-5-9 -012	Moisture Contents outside the ±2.0% of Optimum Moisture Content	2/6/79	2/24/79								
M-01-2-9-013	Non acceptance test of ~~QA~~ Type I Cement RCM used to waive requirements	2/6/79	2/21/79								
M-03-4-9-014	B&W CC NCR 453 improperly revised	2/7/79	2/28/79	2/14/79	NA	B&W CC 2/28/79	~~Bechtel QA~~ NA	NA	NA	3/21/79	3/21/79
M-01-4-9-015	HVAC Feed Pumps	2/14/79	3/1/79	2-27-79	2-27-79	QC - Insp. Proc. - Design 3-1-79	NA	NA	3-14-79	NA	3-14-79
M-01-4-9-016	RADIOGraphy of welds IMPROPER PUNCH.	2/19/79	3-5-79	?		Bechtel QC.	Transferred to NCR Log			Rev 3	3/23/79
M-01-4-9-017	CABLE 1A550BD IMPROPERLY Routed	2/19/79	3-5-79			Bechtel F.E. & Constr.	Bechtel QC				
M-01-4-9-018	Cable Protection From Sharp Edges	2/20/79	3/6/79			Bechtel CONSTR.	Bechtel QC				
M01-4-9-019	Foreign Substance on Cleaned Surface of RPV Side Plate Grooves	2-21-79			2-20-79	Bechtel Constr. ~~And QC~~	Bechtel QC				
M-01-4-9-020	Cable 1BB5603G Improper Routing	2/21/79	3/7/79			Bechtel Constr.	Bechtel QC				

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NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY ASSIGNED DATE	WRITTEN REPLY ACTUAL DATE	DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
III-01-8-8-106	Written by RJ Sciaman Station Batteries	1a 12/4/78	1/6/79			Bechtel Engr	Bechtel Transferred to NCR Log Rev 3				3/23/79
M-01-4-8-107	Electrical Penetration improperly secured on pedestal	12/12/78	1/6/79			Bechtel Engr	Bechtel Engr				
M 01-4-8-108	PEELING/LOSS OF ADHESION BETWEEN COATINGS ON LINER PLATE, RB/2; AND LACK OF DEPOSITION	12/13/78	1/9/79								
M-01-1-8-109	Limit Switch Installation on H/D valves not in conformance w/design req's	12/15/78	1-5-79								
M-01-4-8-110	Rebar bending below minimum ultimate tensile strength of 90,000 psi	12/15/78	1/2/79	1-12-79							
M-01-4-8-111	Permanent Plant Equipment not covered or protected. DR	12/19/78	1/5/79								
III-03-3-8-112	Ends of pipe damaged on 10" Line and Valve.	12/19/78	1-19-79	1/31/79	1/12/79	Bechtel Const.	NA	NA	2/13/79	2/14/79	2/14/78
M-03-4-8-113	UNQUALIFIED WELDER	28 DEC 78	11 JAN 79	1/8/79		B&W CC [illegible]	Transferred to NCR Log Rev 3				3/23/79
M-01-4-9-001	ZACK Equipment Maintenance Records	4-Jan 79	16-Jan 79								
M-01-3-9-002	STORAGE BATTERIES NOT PROTECTED FROM CONSTRUCTION ACTIVITY	5-JAN. 79	19-JAN. 79			Bechtel Constr.	Bechtel Constr.				
M-01-9-9-003	Improper Closure of QAR-SD-45 and 64	1/11/79	1/26/79								
M-01-9-9-004	IMPROPER WELD VOLTAGE & AMPERAGE CHECKS	1-16-79	1-30-79								
M-03-4-9-005	FAILURE TO QUALIFY WELDERS TO LIMITED ACCESS.	16 JAN 79	30 JAN 79	31 JAN 79	31 JAN 79	B&W CC 31 JAN 79	N/A	N/A	19 MAR 79	19 MAR 79	19 MAR 79
M-01-4-9-006	DIFFERENCE OF INTERPRETATION OF FILM 21-0 108 RT 413-1	19 JAN 79	2 FEB 79	FEB 79	NOT PLANNED	N/A	N/A Transferred to NCR Log Rev 3	N/A		N/A	3/23/79

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NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY ASSIGNED DATE	WRITTEN REPLY ACTUAL DATE	DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
M-01-4-8-092	VAGUE INSTRUCTIONS IN PARA 5.0 FPG-3.000	11/3/78	20 NOV 78	4 DEC 78	N/A	Bechtel QC	Bechtel Construction	NA	12 JAN 79	12 JAN 79	12 JAN 79
M-01-4-8-093	[illegible]	11/1/78	11/[illegible]/78	1/15/79	12/30/78	Bechtel Q.C. 12/30/78	N/A	N/A	2/7/79	2/7/79	2/7/79
M-01-9-8-094	DOC. CONTROL	11-7-78	11-21-78	12-27-78	12-27-78	Bechtel Construction	—	—	1-11-79	1-11-79	1-11-79
M-01-9-8-095	STUD BEND TEST NOT PERFORMED	11-8-78	11-22-78	12-22-78	NA [illegible]	NA	NA	NA	12-22-78	NA	12-27-78
M-01-9-8-096	UNSPECIFIED WELDS ON PERSONNEL LOCK	11-9-78	11-23-78	12-21-78	NA [illegible]	NA	Transferred to NCR Log Rev 3				3/23/79
M-03-4-8-097	UNCALIBRATED THERMOCOUPLE	21 NOV 78	15 DEC 78	26 DEC 78	[illegible]	B&W 19 MAR 79	Transferred to NCR Log Rev 3				3/23/79
M-01-4-8-098	Instructions for installation of [illegible] and Conduit	22 NOV 78	8 DEC 78	1 JAN 79	1/15/79	Bechtel QA	Bechtel Constr.	N/A	1/15/79	1/16/79	1/16/79
M-01-4-8-099	[illegible]	22 NOV 78	8 DEC 78	[illegible]	12/31/78	Bechtel QC	Transferred to NCR Log Rev 3				3/23/79
M-01-4-8-100	HVAC ID's (Physical) missing from Ducts	30 NOV 78	Issued Closed	N/A	N/A	Issued Closed Use As Is	ZACK 30-NOV-78	ZACK 30-NOV-78	30/NOV/78	30/NOV/78	30/NOV/78
M-01-4-8-101	Bechtel UT thickness gauge not controlled per M&TE pro	27 NOV Org.	15 Dec. 78	12-11-78		Bechtel QC	Transferred to NCR Log Rev 3				3/23/79
M-01-5-8-102	CABLETRAY WOLDING HAS DAMAGED GALVANIZED PLATE	1/DEC/78	15 Dec 78			Bechtel QC	Transferred to NCR Log Rev 3				3/23/79
M-03-3-8-103	Rust on Cladding Reactor Press. Vessel	1/Dec/78	18 Dec 78	14 DEC 78	NA	NA	N/A	N/A	1/14/79	NA	1/16/79
M-01-2-8-104	Improper technique for shots on BUTT WELD AND [illegible] ON VALVES	12-4-78	12-18-78				Transferred to NCR Log Rev 3				3/23/79
M-01-4-8-105	E-7018 ISSUED IN UNHEATED CONTAINERS	12 DEC 78	27 DEC 78	15 JAN 79	N/A Cancelled	Bechtel Const L.R.H. [illegible]	N/A	N/A	15 JAN 79 [illegible]	15 JAN 79 [illegible]	15 JAN 79 [illegible]

ATTACHMENT B

PROJECT MIDLAND

NONCONFORMANCE REPORT LOG

NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY ASSIGNED DATE	WRITTEN REPLY ACTUAL DATE	DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
M01-2-8-081	Improper Dispositioning of NCR 1410	10/9/78	10/23/78	11/7/78	N/A VOID	Bechtel QC. 11/20/78 TRAINING SESSION	N/A	N/A	N/A VOID	N/A 12/1/78	12/1/78
M01-2-8-082	460V MCC SPACE HEATERS INOPERATIVE AND QC. IN VIOLATION OF PROCEDURE	10/16/78	11/6/78	11/7/78 11/22/78	1/3/79	BECHTEL QC	Bechtel QC		1/22/79	1/22/79	1/22/79
M01-7-8-083	Zac Sabco brand use of Improper Zinc Rich Coating material	10/24/78 ~~10/18/78~~	11-8-78	22-Nov-78 (NP See?)			Transferred to NCR Log Rev 3 3/23/79				
M-01-3-8-084	WELD ROD CONTROL	10/20/78	10-27-78	11-6-78	11-21-78	BECHTEL CONST. 1-4-79	Transferred to NCR Log Rev 3 3/23/79 —	—	1-11-79	1-11-79	1-11-79
M-01-4-8-085	Aggregate requiring ... Conc. Agg. used that ... nonconforming	10/10/78	11/3/78	11/16/78		Bechtel PE	Bechtel Const.	Bechtel QC			
M-01-4-8-086	Anchor bolts and Recesses at sluice gates. A Bolts installed w/o QC inspection Recesses w/o FCR	10/23/78	11/10/78	11-15-78 12-28-78	NA	Bechtel Const.	Transferred to NCR Log Rev 3 3/23/79 Bechtel QC	NA	12/29/78	12/29/78	12/29/78
M-01-9-8-55A	600 Volt Control cable	10/3/78	11/3/78 → 12-4-78	11-3-78	NA See Bechtel NCR 1574	Bechtel PE 12/14/78	—	—	10/4/78		
M-01-9-8-56A	600 Volt Power Cable	10/3/78	11/3/78 12-4-78	11-3-78	NA See Bechtel NCR 1574	Bechtel PE 12/4/78	—	—	10/4/78		
M-01-9-8-57A	5KV + 8KV Power cable	10/3/78	11/3/78 12-4-78	11-3-78	NA See Bechtel NCR 1574	Bechtel PE 12/4/78	—	—	10/4/78		
M-01-4-8-087	M.U. Pump Flange	10/24/78	11/10/78	12/27/78	11/19/78	NA	NA	NA	1/2/79	NA	1/2/79
M-01-4-8-088	MANTA Q.A. DOCUMENTATION AND IMPLEMENTATION	10/25/78	11/10/78	2/9/79			Transferred to NCR Log Rev 3 3/23/79				
M01-4-8-089	BECHTEL CONST - LINER PLATE COATING RB/R	10/26/78	11/10/78				Transferred to NCR Log Rev 3 3/23/79				
M-01-4-8-090	PCIR Not Processed	10/27/78	11/15/78	11/27/78	12/15/78	Bechtel QC	NA	NA	1/9/79	1/9/79	1/9/79
M-01-9-8-091	NO QC INSPECTION OF EMBEDS	10/31/78	11-15-78	11-21-78			Transferred to NCR Log Rev 3 3/23/79				

PROJECT Midland Nuclear Plant

NONCONFORMANCE REPORT LOG

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M-01-4-8-065	RB FUEL HANDLING	7/27/78	8/2/78	9/19/78	8/2/78	Bechtel Engr. 8/25/78	—	—	9/19/78	—	12/3/78
M-01-4-8-068	ELJ CRD Primary Breakers F-10/20 MAINT. REQ.	8/21/78	9/15/78	10/25/78	Stable Environment Condition	*Bechtel ENGR. 9-15-78	N/A	N/A	12/21/78	12/21/78	12/21/78
M-01-1-1-3-069	LPH PIPE MINIMUM WALL VIOLATION	11/21/78	9/20/78	11/16/78	See remarks		Transferred to NCR Log Rev 3 3/23/79				
M-01-1-1-3-071	LLJ SAFEGUARD ROOM EQUIP. F-10/20 MAINT. REQ.	8/28/78	9/15/78	11/9/78	11/9/78	8/16 MMB/QC 8/10/78	Bechtel QC 9/10/78	N/A	11/10/78	N/A	11/16/78
M-01-1-4-8-067	EXCESS "BACKING" GAS FLOW IN TIG WELD	31 AUG 78	15 SEP 78	12 SEP 78	15 SEP 78	BECTEL QC + BECTEL CMTS 15 SEP 78	N/A	N/A	10 NOV 78	10 NOV 78	10 NOV 78
M-01-2-1-2-072	ZACK Receipt Insp.	9-5-78	9/20/78 11/15/78			MMB/QC 4th STRUCT WP 11/14/78	Transferred to NCR Log Rev 3 3/23/79				
M-01-5-8-073	OMITTED REBAR IN RB REFUELING CANAL WALL	9-11-78	N/A	N/A	9-11-78	N/A	N/A	N/A	9-11-78	N/A	9-11-78
M-01-4-8-074	FIELD WELD NUMBER MARKING	9/12/78	9/27/78	11/6/78	9/15/78 10/16/78 11/14/78	Bechtel Construction	N/A	N/A	11/14/78	N/A	11/14/78
M-01-4-8-075	REOPENING OF QF-128	9/14/78	N/A								
M-01-4-8-076	UNAUTHORIZED REPAIR CONT # 2	15 SEP 78	2 OCT 78	29 SEP 78	N/A	CONST 2 OCT 78	N/A	N/A	2 OCT 78	2 OCT 78	2 OCT 78
M-01-4-8-077	Improper HVAC HANGAR Insulation	21/Sept/78	10-18-78	11-13-78	29 Oct 78	BPCo - G/A BPCo - Parker	BPCo - Parker	N/A	21/NOV/78	21/NOV/78	21/NOV/78
M-01-4-8-078	HVAC SEAMAGE	22/Sept/78	10-13-78	11-[illegible]-78	11-[illegible]-78	BPCo - G/A ZACK	BPCo - Parker	BPCo G/A 11-[illegible]-78	13/[illegible]/78	13/[illegible]/78	13/[illegible]/78
M-01-4-8-079	B Heat no. on primary pipe doesn't match data package.	9/27/78	10/27/78	10/30/78	10/31/78	NA	NA	NA	10/31/78	NA	10/31/78
M-01-4-8-080	WORK ON SEISMIC CABLES NOT IN ACCORD WITH ENVIRO DISPOSITION	10-6-78	10-27-78	11-21-78	[illegible]	NA	NA	NA	1-19-79	N/A	1-[illegible]-79

ATTACHMENT B

PROJECT Midland Nuclear Plant

NONCONFORMANCE REPORT LOG

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NCR SERIAL NO.	SUBJECT	DATE OF NCR/REV.	WRITTEN REPLY ASSIGNED DATE	WRITTEN REPLY ACTUAL DATE	DATE PART C/A IS PLANNED	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	ORG RESP FOR PROCESS C/A & DUE DATE	DATE PART C/A ACCEPTED BY QA	DATE PROCESS C/A ACCEPTED BY QA	DATE NCR CLOSED BY QA
M- 03-4-8-039	CHECK ON BACK-SCATTER IN RADIOGRAPHY	5-7-78	5-22-78	8-7-78	5-9-78	B&W QC 5-9-78	B&W QC	B&W QC	8-7-78	8-7-78	8/7/78
M- 01-4-8-046	Grouted Anchor Bolt Holes with voids	5-19-78 5-27-78	5-27-78	5-23-78 6-2-78	6-2-78	Bechtel Const. 6-5-78	Bechtel QC 6-5-78	NA	8-15-78	8-15-78	8/15/78
M- 03-3-8-047	B&W downgrade storage requirement	NA 5-30-78	5-30-78	7-25-78 7/5/78 [illegible]	Pending	Bechtel Expediting	NA	NA	NA	NA	1/30/79
M- 01-3-8-049 H	F-10 not yet prepared 5-31-78	[illegible]	5-31-78	5-31-78	Pending closure [illegible]	Bechtel QA	NA Transferred	NA to NCR	Log Rev 3	NA	3/23/79
M- 01-5-8-051	FONDFILL TURNOVER DOCUMENTATION	6-13-78	6-27-78	8-24-78	6-27-78	BECHTEL QC 9-8-78	—	—	12-21-78	12-21-78	12-21-78
M- 01-9-8-055	See M-01-	9-8-	055	A	—		Transferred	to NCR	Log Rev 3		3/23/79
M- 01-9-8-056	See M-01	9-8-	056	A —			Transferred	to NCR	Log Rev 3		3/23/79
M- 01-9-8-057	See M-01	9-8-	057	A —			Transferred	to NCR	Log Rev 3		3/23/79
M- 01-4-8-058	Restraints Fabr. In Error	6/29/78	7/11/78	7/19/78	7/11/78	Bechtel Engr. 7-23-78	—	—	1/15/79	1/15/79	1/15/79
M- 01-4-8-061	Not Issued	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
M- 01-4-8-062	Restraints Support Plates	7/14/78	7/27/78	8/1/78	7/21/78	Bechtel Engr. 7-27-78	—	—	8/17/78	8/17/78	8/17/78
M- 01-4-8-063	PAINT ON WELDS TO BE HYDROTESTED	7/19/78	8/3/78	8-7-78	See Correspond.	N/A	N/A	N/A	2/19/79	N/A	2/19/79
M- 01-4-8-064	Q.C. Instructions	7/21/78	8/4/78	9/26/78 10/20/78	8/4/78	Bechtel Q.C. 10/6/78	—	—	1/16/79	1/16/79	1/16/79
M- 01-3-8-065	Class A Storage	7/21/78 11/1/78	8/4/78 11/27/78	10/30/78	8/4/78	QC Bechtel 8/4/78 Inspection	Bechtel QC 11/27/78 Process	—	11/1/78	11/27/78	11/27/78
M- 01-9-8-066	DECAY HEAT PUMP ROTATING ASSEMBLY REVERSED	7-26-78	[illegible]	[illegible]	Prior to [illegible]	NA	NA	NA	8-16-78	NA	8-16-78

NONCONFORMANCE REPORT LOG

PROJECT Midland Nuclear Plant

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M-01-9-7-004	CARBON STEEL AND GALVANIZED PLUGS IN S.S. PIPE	1-10-78	2-10-78	2-16-78 2-27-78 5-3-78 6-27-78	12-31-78 (PRICED ON PMJ LETTER)	BECHTEL CONSTRUC 12-31-78	Transferred to NCR Log Rev 3	—	/	/ 3/	23/79
M-01-9-7-006	MISSING TEMP GAUGES ON Q CHILLER	1-13-78	1-27-78	2-7-78	UNKNOWN BECH TO PURCHASE GAUGES	BECH CONST. DUE DATE NA	—	—	11-20-78	11-20-78	11-20-78
M-01-4-8-006	SPACE HEATERS IN MOTOR OPERATED VALVES	1/19/78	1/31/78	3/29/78		BECHTEL QA DATE NOT ESTABLISHED	N/A Transferred to NCR Log Rev 3			3/	23/79
M-01-5-8-008	FLANGE BOLTING	2-7-78	2-22-78	3-3-78	SEE CORRESP.	BECHTEL CONST & QC SEE CORRESP.	—	—	2-16-79	2-16-79	2-16-79
M-01-3-8-013	RIGGING FROM PIPE	2-23-78	3-8-78	3-10-78 3-24-78	SEE CORRESP	BECHTEL CONST. W/O 1/1/79	—	—	1-27-79	1-27-79	1-27-79
M-01-5-8-020	TURNOVER HARDWARE DISCREPANCIES	3-28-78 / 3-31-78	4-11-78	4-13-78	SEE CORRESP	BECHTEL CONST & QC 5-29-78	Transferred to NCR Log Rev 3			3/	23/79
M-01-5-8-021	TURNOVER DOCUMENTATION DISCREPANCIES	3-28-78 REV. 3-31-78	4-11-78	4-11-78	SEE CORRESP	BECHTEL CONST & QC	—	—	3-13-79	3-13-79	3-13-79
M-01-5-8-022	BECHTEL TURNOVER NCRS NOT TAKEN AS EXCEPTIONS OR DISPOSIT.	3-28-78	4-11-78	4-11-78	4-3-78	BECHTEL QC 5-29-78	—	—	8/11/78	8/16/78	8/16/78
M-01-5-8-023	MISSING TURNOVER DOCUMENTATION	3-28-78 / 3-31-78	4-11-78	4-11-78	SEE CORRESP	BECHTEL CONST & QC 5-29-78	Transferred to NCR Log Rev 3			3/	23/79
M-01-5-8-024	VALVE STEM ORIENTATION NOT AS REQUIRED	3-28-78	4-11-78	4-5-78	4-5-78	BECH CONST & QC 5-29-78	—	—	8/18/78	8/18/78	8/18/78
M-01-5-8-028	Problems in documentation involving SWPS #1 & #2, Aux. Bldg, RB #1	4-11-78 4-14-78 9-7-78	4-25-78	6-2-78	5-29-78	[illegible] 5-29-78	B[illegible] QC 5-29-78	N/A	8-7-78	8-7-78	9-9-78
M-01-4-8-030	Disassembly of Check Valve	4-14-78 6-9-78	4-2[illegible]-78 5-16-78	5-2-78 [illegible] 6-[illegible]-78	5-2-78	Bechtel Construction 4/28/78	Bechtel QC 4/28/78	N/A	5/4/78	10/23/78	10/23/78
M-01-4-8-032	[illegible]	8/[illegible]/78	[illegible]	[illegible]	[illegible]	Bechtel QC [illegible]	—	—	9/7/78	9/1/78	9/1/78
M-01-9-8-038	C.S. CHAINS ON S.S. PIPE	5/1/78	5-22-78	5-31-78	8/7/78	BECH CONST.	—	—	11/17/78	11/17/78	11/17/78

Consumers Power Company

NONCONFORMANCE REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

NCR SERIAL NO. & ITEM NO.	DATE OF NCR ORIG/REV	FILE NO	QA REP RESP FOR FOLLOW UP	PART CORRECTIVE ACTION: ORG RESP FOR C/A	PART CORRECTIVE ACTION: C/A COMMITMENT DATE	PART CORRECTIVE ACTION: C/A NEED EVENT	PART CORRECTIVE ACTION: C/A VERIF DATE	PROCESS CORRECTIVE ACTION: C/A REQUIRED? YES/NO	PROCESS CORRECTIVE ACTION: ORG RESP FOR C/A	PROCESS CORRECTIVE ACTION: C/A DEFINITION COMMITMENT DATE	PROCESS CORRECTIVE ACTION: C/A IMPLEMENT COMMITMENT DATE	PROCESS CORRECTIVE ACTION: C/A VERIF DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A REQUIRED? YES/NO	INSPECTION PROCESS CORRECTIVE ACTION: ORG RESP FOR C/A	INSPECTION PROCESS CORRECTIVE ACTION: C/A DEFINITION COMMITMENT DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A IMPLEMENT COMMITMENT DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A VERIF DATE
03-4-8-059	6-30-78	16.4.4	KOR	NA	NA / NA	NA	NA / NA	Yes	BVW QC	N/A / N/A	N/A / 27 JUL	N/A / 27 JUL	Yes	BVW QC	N/A / N/A	N/A / 27 JUL	N/A / 27 JUL
01-5-8-060	Initiated Closed 6-30-78	16.3.4 16.3.6	RGW	Bechtel Const.	6-30-78 / 6-30-78	6-30-78	6-30-78 / 6-30-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-061	7-12-78	16.3.4	KMD	NOT ISSUED				NA	NA				NA	NA			
01-4-8-062	7-14-78	16.3.1 16.3.2 16.3.6	KRH	Bechtel Project Engr. QC		SEE	M-01-4-8-062	LOG FOR CONTINUATION									
01-4-8-063	7/19/78	16.3.4	DKM	Bechtel Const.		SEE	M-01-4-8-063	LOG FOR CONTINUATION									
01-4-8-064	7-20-78	16.3.6	KRH	Bechtel QC		SEE	M-01-4-8-064	LOG FOR CONTINUATION									
01-3-8-065	7-21-78	16.3.6	WFD	Bechtel Q.C	8-4-78	NA SEE	M-01-3-8	yes	Field Engr.	8-4-78	to continuation		yes - WMS	Field Engr.	8/4/78		
01-9-8-066	7/24/78	16.3.4	HHA	B&W		SEE	M-01-9-8-066	FOR CONTINUATION									
01-4-8-067	7/27/78	16.3.4	KRH	Bechtel Engr.		SEE	M-01-4-8-067	LOG FOR CONTINUATION									
M-01-4-8-068	8/21/78	16.3.6	ELJ	Bechtel QC		SEE	M-01-4-8-068	ON NEW FORM									
M-01-4-8-069	8/24/78	16.3.4 16.3.6	KRH	Bechtel QC Const.		SEE	M-01-4-8-069	LOG FOR CONTINUATION (NEW FORM)									
M-01-4-8-070	8/28/78	16.3.4	ELJ	Bechtel QC	NA / N/A	SEE	10/10/78 M-01-4-8-070	MMB/QC	ON NEW FORM								
M-01-4-8-071	31 AUG 78	16.3.6 16.3.4	KOR	BECHTEL QC BECHTEL CONST.		SEE	M-01-4-8-71	ON NEW FORM									

IN BLOCKS [/] ENTER SCHEDULED DATE ABOVE DIAGONAL & ACTUAL DATE BELOW DIAGONAL

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01-4-8-046	5-19-78	16.3.4 16.3.6	SAF	NA	NA	NA	NA	Yes	Bechtel Const.				Yes	Bechtel QC			
03-3-8-047	5-26-78	16.4.1	PRK	B&W Lynch.	6-15-78			Yes	Lynch	6-15-78			No	NA	NA	NA	NA
01-2-8-048	5-30-78	16.4.1	WFD	B&W Proj. Mgmt.	6-21-78 N/A	N/A	N/A 6-23-78	No	NA	NA NA	NA NA	NA NA	Yes	B&W	6/22/78 N/A	6/22/78 N/A	6/22/78 N/A
01-3-8-049	5-31-78	16.3.6 16.4.4	WHB	Bechtel Const. & QC				Yes	Bechtel Const. & QC				No				
01-4-8-050	6-7-78	16.3.4 16.7	GTB	NA	NA NA	NA	NA NA	Yes	Bechtel Const.	6-21-78 6-27-78	6-27-78 6-27-78	6/27/78 6-27-78	Yes	J.L. Manta Comp.	6-21-78 6-27-78	6-27-78 6-27-78	10-27-78 10-27-78
01-5-8-051	6-13-78	16.3.2 16.3.6	DRK	Bechtel QC & Procurement	TRANSFERRED TO M-01-5-8-051 LOG												
03-4-8-052	6-12-78	16.4.4	KOR	B&W QC	NA N/A	NA	N/A 20 JUL 78	Yes	B&W QC	NA N/A	NA N/A	N/A 20 JUL 78	Yes	B&W QC	N/A N/A	N/A N/A	N/A 20 JUL 78
03-9-8-053	6-13-78	16.4.4	KOR	B&W QC	N/A N/A	NA	N/A N/A	Yes	B&W QC	N/A N/A	6-19-78 N/A	6-26-78 N/A	No	NA	NA NA	NA NA	NA NA
01-4-8-054	6-23-78	16.3.4	ELG	Bechtel QA	N/A N/A	NA	N/A N/A	Yes	Bechtel Const	8/15/78 8/4/78	N/A N/A	NA 8/8/78	No	N/A	N/A N/A	N/A N/A	N/A N/A
closed see SCA 01-9-8-055	6-28-78	Mid 3.7	AWG	Bechtel	1-1-78	TRANSFERRED TO M-01-9-8-055		Yes	Bechtel	9-1-78	M-01-9-8-055		SSA Yes	Bechtel			
" SCA 01-9-8-056	6-26-78	Mid. 3.7	AWG	Bechtel	1-1-78	TRANSFERRED TO M-01-9-8-056		Yes	Bechtel	9-1-78	M-01-9-8-056		Yes	A Bechtel			
" SCA 01-9-8-057	6-29-78	Mid. 3.7	AWG	Bechtel		TRANSFERRED TO M-01-9-8-057		Yes	Bechtel				Yes	A Bechtel			
01-4-8-058	6-29-78	16.3.1	LRH	Bechtel Proj Engr.	M-01-4-8-058	SEE		Yes	Bechtel Proj Engr.								

IN BLOCKS ⟋ ENTER SCHEDULED DATE ABOVE DIAGONAL & ACTUAL DATE BELOW DIAGONAL

Consumers Power Company

NONCONFORMANCE REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

NCR SERIAL NO. & ITEM NO.	DATE OF NCR ORIG/REV	FILE NO	QA REP RESP FOR FOLLOW UP	PART CORRECTIVE ACTION: ORG RESP FOR C/A	PART CORRECTIVE ACTION: C/A COMMITMENT DATE	PART CORRECTIVE ACTION: C/A NEED EVENT	PART CORRECTIVE ACTION: C/A VERIF DATE	PROCESS CORRECTIVE ACTION: C/A REQUIRED? YES/NO	PROCESS CORRECTIVE ACTION: ORG RESP FOR C/A	PROCESS CORRECTIVE ACTION: C/A DEFINITION COMMITMENT DATE	PROCESS CORRECTIVE ACTION: C/A IMPLEMENT COMMITMENT DATE	PROCESS CORRECTIVE ACTION: C/A VERIF DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A REQUIRED? YES/NO	INSPECTION PROCESS CORRECTIVE ACTION: ORG RESP FOR C/A	INSPECTION PROCESS CORRECTIVE ACTION: C/A DEFINITION COMMITMENT DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A IMPLEMENT COMMITMENT DATE	INSPECTION PROCESS CORRECTIVE ACTION: C/A VERIF DATE
03-4-8-033	4-25-78	16.4.4	RO	B&W QC	4-26-78 / 4-26-78	NA	5-3-78 / 5-17-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
1-4-8-034	4-26-78	16.3.4 16.3.6	DEH	Bechtel Const.	5-11-78 /	NA	NA / 5-30-78	Yes	Bechtel Const.	6-[illegible] / 6-12-78	6-12-78 / [illegible]	[illegible] / 6-15-78	Yes	Bechtel QC	[illegible] / [illegible]	[illegible] / [illegible]	NA / 6-15-78
1-5-8-035	Issued Closed 4-26-78 5-3-78	16.3.4 16.3.6	GTB	Bechtel QC & Const.	4-25-78 / 4-25-78	NA	4-25-78 / 4-25-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-5-8-036	Issued Closed 4-28-78	16.3.4 16.3.6	GTB	Bechtel QC & Const.	4-28-78 / 4-28-78	NA	4-28-78 / 4-26-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-037	5-3-78	16.3.16	SAF	NA	NA / NA	NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel QC	[illegible] / [illegible]	[illegible] / [illegible]	[illegible] / 6-5-78
01-9-8-038	5-4-78	16.3.4	DKM	Bechtel QC	/	/	/	Yes	Bechtel Const.	See For [illegible]	M-01-9-8-[illegible]	SB Log	No	NA	NA / NA	NA / NA	NA / NA
03-4-8-039	5-7-78	16.4.4	RO	B&W QC	← TRANSFERRED TO M-01-4-8-039 →			Yes	B&W QC	/	/	/	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-040	5-10-78	16.3.4	LRH	Bechtel Const.	[illegible] / 6-12-78	NA	NA / 6-12-78	Yes	Bechtel Const.	NA / 6-2-78	NA / 6-2-78	NA / 5-14-78	No	NA	NA / NA	NA / NA	NA / NA
01-9-8-041	5-9-78	16.3.4	DKM	Bechtel Const.	[illegible] / [illegible]	NA	NA / 7-31-78	Yes	Bechtel Const.	5-29-78 / 6-2-78	7-7-78 / 7-31-78	NA / 7-31-78	Yes	Bechtel QC	[illegible] / [illegible]	[illegible] / [illegible]	NA / 7-31-78
01-4-8-042	5-12-78	16.3.4 16.3.6	LRH	Bechtel Const.	5-26-78 / 6-2-78	NA	NA / 6-27-78	Yes	Bechtel Const.	5-26-78 / 6-2-78	6-9-78 / 6-16-78	NA / 6-27-78	Yes	Bechtel QC	5-26-78 / 6-2-78	6-5-78 / 6-[illegible]-78	NA / [illegible]
01-9-8-043	5-15-78	16.3.4	DKM	Bechtel Const.	5-30-78 / 6-2-78	NA	NA / 8-2-78	Yes	Bechtel Const.	5-30-78 / 6-2-78	NA / 8-2-78	NA / 8-2-78	NO	NA	NA / NA	NA / NA	NA / [illegible]
01-1-8-044	5-16-78	16.3.3	SAF	NA	NA / NA	NA	NA / NA	Yes	Bechtel QA	5-30-78 / NA	NA / TIA	NA / 6-22-78	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-045	5-22-78	16.3.6	DEH	Bechtel and/or if applicable	6-19-78 / [illegible]	NA	NA / [illegible]	Yes	U.S. Testing	6-[illegible]-78 / 7-21-78	[illegible] / 6-[illegible]-78	[illegible] / 7-26-78	Yes	Bechtel QC	[illegible] / [illegible]	[illegible] / [illegible]	NA / 7-26-78

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01-5-8-020	3-28-78	16.3.4 16.3.6	DRK	Bechtel Const., QC & Proj. Engr.	SEE	M-01-5-8-020	LOG	FOR	CONTINUATION				Bechtel QC	SEE NCR FOR SCHEDULE DATES		NA 5-31-78
01-5-8-021	3-28-78	16.3.4 16.3.6	DRK	Bechtel Const., QC & Proj. Engr.	SEE	M-01-5-8-021	LOG	FOR	CONTINUATION								
01-5-8-022	3-28-78	16.3.4 16.3.6	DRK	Bechtel Const., QC & Proj. Engr.	SEE	M-01-5-8-022	LOG	FOR	CONTINUATION								
01-5-8-023	3-28-78	16.3.4 16.3.6	DRK	Bechtel Const., QC & Proj. Engr.	SEE	M-01-5-8-023	LOG	FOR	CONTINUATION								
01-5-8-024	3-28-78	16.3.4 16.3.6	DRK	Bechtel Const., QC & Proj. Engr.	SEE	M-01-5-8-024	LOG	FOR	CONTINUATION								
01-4-8-025	4-6-78	16.3.4 16.3.6	HLA DEH	Bechtel Const.	4-20-78 4-20-78	NA	NA 4-20-78	Yes	Bechtel Const.	NA 4-20-78	NA 4-13-78	NA 4-20-78	Yes	Bechtel QC	SEE NCR FOR SCHEDULE DATES	NA 5-31-78
01-4-8-026	4-6-78	16.3.6	SAF	NA	NA NA	NA	NA NA	Yes	Bechtel QC	4-21-78 4-4-78	4-21-78 4-31-78	4-25-78 4-25-78	No	NA	NA NA	NA NA	NA NA
01-5-8-027	Issued 4-10-78 Closed 4-10-78	16.3.4 16.3.6	RGW	Bechtel Const. & QC	4-10-78 4-10-78	NA	4-10-78 4-10-78	NO	NA	NA NA	NA NA	NA NA	NO	NA	NA NA	NA NA	NA NA
01-5-8-028	4-11-78	16.3.4 16.3.6	DEH	Bechtel Const. & QC	TRANSFERRED			TO		M-01-5-8-028							
01-5-8-029	4-12-78	16.3.4 16.3.6	GTB	Bechtel Const.	4-6-78 4-6-78	NA	4-6-78 4-6-78	Yes	Bechtel Const.	4-21-78 4-21-78	4-21-78 4-21-78	5-8-78 5-8-78	Yes	Bechtel QC	5-3-78 5-3-78	5-3-78 5-3-78	5-8-78 5-8-78
01-4-8-030	4-14-78	16.3.4 16.3.6	WFD	Bechtel QC & Engr.	4-28-78	TRANSFERRED	5-4-78	Yes	Bechtel Const	4-28-78 5-31-78	01-4-8-030		Yes	Bechtel QC	4-28-78	5-24-78	6-9-78
01-5-8-031	4-14-78	16.3.4 16.3.6	HLA	Bechtel Const.	4-13-78 4-20-78	NA	NA 4-20-78	No	NA	NA NA	NA NA	NA NA	No	NA	NA NA	NA NA	NA NA
01-4-8-032	4-20-78	16.3.4 16.3.6	LRH	Bechtel Const.	SEE 01-4-8-032			M-01-4-8-032 Yes LOG CONTINUATION					Yes	Bechtel QC			

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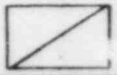
01-2-8-007	1-30-78	16.3.6	WFD	Bechtel QC	NA / N/A	NA	NA / 3-7-78	No	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel QC	3-13-78 / NA	2/22/78 / N/A	NA / 3-6-78
01-5-8-008	2-7-78	16.3.6	DRK	Bechtel QC	←	Hior to Rehydro		Yes	Proj Engr.	SEE 008 CONT	M-01-5-8 FOR CONTINUATION		Yes	Bechtel QC	→		
01-4-8-009	2-10-78	16.3.6	DLH	Bechtel QC	2-24-78 / 2-13-78	NA	2-24-78 / 3-13-78	No	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel QC	2-24-78 / 2-1-78	2-1-78 / 2-1-78	NA / 3-13-78
01-4-8-010	2-8-78	16.3.4 16.3.6	SAF	Bechtel Const.	2-10-78 / 2-10-78	NA	NA / 3-17-78	Yes	Bechtel Const.	2-22-78 / 2-10-78	2-22-78 / 2-10-78	2-22-78 / 3-17-78	Yes	Bechtel QC	2-22-78 / 2-1-78	2-22-78 / 2-1-78	NA / 3-17-78
01-3-8-011	2-13-78	16.3.4	HLA	Bechtel Storage	2-27-78 / 4-20-78	NA	4-20-78 / 4-20-78	Yes	Bechtel Storage	NA / 4-20-78	NA / 4-20-78	4-20-78 / 4-20-78	No	NA	NA / NA	NA / NA	NA / NA
01-1-8-012	2-22-78	16.3.3	SAF	Bechtel Site Engr.	NA / 4-13-78	NA	NA / 4-25-78	78 Yes	Bechtel QA	3-8-78 / 4-11-78	4-11-78 / 4-14-78	NA / 4-28-78	NO	NA	NA / NA	NA / NA	NA / NA
01-3-8-013	2-23-78	16.3.4	HLA	Bechtel Const.	SEE FOR	M-01-3-8-13 CONTINUATION		Yes	OG Bechtel Const.				No	NA	→		
01-5-8-014	Issued Closed 2-20-78	16.3.4 16.3.6	RGW	Bechtel Const. & QC	2-20-78 / 2-20-78	NA	2-20-78 / 2-20-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-015	3-7-78	16.3.4 16.3.6	DKM	Bechtel Const.	NA / 3-7-78	NA	NA / 4-25-78	Yes	Bechtel Const.	3-22-78 / 4-5-78	NA / 4-5-78	NA / 4-25-78	Yes Currently NO	NA	NA / NA	NA / NA	NA / NA
NOT ISSUED VOID - 016																	
01-4-8-017	3-17-78	16.3.6	SAF	Bechtel Field Engr.	4-17-78 / 4-21-78	NA	N/A / 7-27-78	Yes	Bechtel QC	3-31-78 / 4-12-78	7-12-78 / 7-12-78	7-21-78 / 7-21-78	Yes	Bechtel QC	3-31-78 / 7-18-78	7-12-78 / 7-12-78	NA / 9-21-78
01-4-8-018	3-17-78	16.3.6	SAF	Bechtel Field Engr.	4-17-78 / 4-10-78	N/A	NA / 4-18-78	Yes	Bechtel Proj. Engr.	3-31-78 / 5-22-78	3-31-78 / 5-22-78	N/A / 6-21-78	Yes	Bechtel Proj. Engr.	3-31-78 / 5-22-78	3-31-78 / 5-22-78	NA / 6-21-78
01-1-8-019	3-27-78	16.3.3	WFD	Bechtel QC	4-7-78 / NA	NA	NA / 4-20-78	No	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel (Equipment)	4-7-78 / N/A	4-19-78 / N/A	N/A / 5-4-78

IN BLOCKS  ENTER SCHEDULED DATE ABOVE DIAGONAL & ACTUAL DATE BELOW DIAGONAL

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01-4-7-001	12-20-77	16.3.5	DNP	Bechtel QA	NA / NA	NA	N/A / 2-1-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-7-002	12-21-77	16.3.4	DAF	Bechtel Const.	12-22-77 / 1-20-78	12-20-77 / 1-20-78	NA / 2-2-78	No	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-7-003	1-10-78	16.3.4	DKM	Bechtel Const.	NA / NA	NA	NA / 3-23-78	Yes	Bechtel Const.	1-25-78 / 2-10-78	1-25-78 / 2-10-78	NA / 3-23-78	Yes	BECHTEL QC	1-17-78 / NA	NA / 2-10-78	NA / 3-23-78
01-4-7-004	1-10-78	16.3.4	DKM	Bechtel Const.	NA / NA	NA			Bechtel Const.	SEE M-01-4-7-001 FOR LOG CONTINUATION			SEE M-01-4-7-001 FOR LOG CONTINUATION				
01-4-7-005	1-10-78	16.3.4	KO	Bechtel Const.	N/A / N/A	N/A	NA / 1-24-78	Yes	Bechtel Const.	N/A / N/A	N/A / 2-10-78	N/A / 1-24-78	No	NA	NA / NA	NA / NA	NA / NA
01-4-7-006	1-13-78	16.3.4	HLA	Bechtel Const.	SEE LOG CONT	M-01-4-7 FOR LOG NUMBERATION		NO	NA	NA / NA	NA / NA	NA / NA	NO	NA	NA / NA	NA / NA	NA / NA
01-4-7-007	1-13-78	16.3.4	HLA	Bechtel Const.	1-27-78 / 5-31-78	NA	5-31-78 / 5-31-78	YES	BECHTEL CONST.	NA / NA	5-31-78 /	5-31-78 /	NO	NA	NA / NA	NA / NA	NA / NA
01-4-5-001	1-6-78	16.3.6	DEH	Bechtel QC	2-24-78 / 2-1-78	NA	NA / 3-13-78	NO	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel QC	1-26-78 / 1-9-78	1-9-78 / 1-9-78	NA / 2-4-78
01-2-8-002	1-11-78	16.3.6	WFD	Bechtel QC	NA / NA	NA	NA / NA	NO	NA	NA / NA	NA / NA	NA / NA	Yes	Bechtel QC	1-26-78 / NA	N/A / 3-31-78	N/A / 2-21-78
01-4-8-003	1-20-78	16.3.4	DKM	Bechtel Const.	2-24-78 / NA	NA	NA / 7-21-78	Yes	Bechtel QA	2-2-78 / NA	NA / NA	NA / 7-21-78	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-004	1-20-78	16.3.4	DKM	Bechtel Const.	NA / 1-20-78	NA	NA / 1-20-78	NO	NA	NA / NA	NA / NA	NA / NA	No	NA	NA / NA	NA / NA	NA / NA
01-4-8-005	1-18-78	16.3.6	DEH	U.S. Testing	2-24-78 / 2-1-78	NA	NA / 3-13-78	NO	NA	NA / NA	NA / NA	NA / NA	NO	NA	NA / NA	NA / NA	NA / NA
01-4-8-006	1-17-78	16.3.4	DNP	Bechtel Const.	1-31-78 /	SEE M-01-4-8-006 FOR LOG CONTINUATION		NO	NA	NA / NA	NA / NA	NA / NA	VERIFY NO	LOG NA	NA / NA	NA / NA	NA / NA

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Plant Trojan

NONCONFORMANCE SUMMARY LOG

Unit 1 & 2

RPT No	File No	Issued To	Issued Date	Close Date	Criterion Involved	Brief Description
QF-206	16.3.4	Bechtel QA	8 Dec '77	~~Spec 204~~ 10 Jan '78	Spec 204	Carbon Steel Chain Binder on stainless "Q" Pipe
QF-207	16.3.4	Bechtel QA	12-13-77	3/31/78	WFMC-1	Weld Rod Control
QF-208	16.3.4 + 16.3.8	Bechtel QA	12-14-77	Issued closed 12-14-77	Spec 231 Sect 11.5	Vertical concrete drop in excess of 6'
QF-209	16.3.4 & 16.3.4	Bechtel QA	12-15-77	12-28-77	Spec 231 Sect 5.4	Time limitation for form removal exceeded.
~~QF-210~~	~~16.3.4 + 16.3.6~~	~~Bechtel QA~~			Spec 231 Sect 14.1	~~Wet curing of Concrete~~ Backup board day.
QF-210	See 01-9-7-003					
QF-211	See 01-9-7-004					
QF-212	See 01-9-7-006					
QF-213	See 01-9-7-005					
QF-214	See 01-9-7-007					

Plant Midland

NONCONFORMANCE SUMMARY LOG

Unit 1 & 2

RPT No	File No	Issued To	Issued Date	Close Date	Criterion Involved	Brief Description
QF-181	16.3.6	Bechtel QA Supv.	9-1-77	12-28-77	C-206 Rev. 10 Sec. 6.1.2 & page 6A	Fly ash & cement test frm. nonconforming.
QF-182	16.3.4	BECHTEL QA	9-6-77	10-31-77	RELIANCE QC MAN	RELIANCE DWG NOT APPROVED AS REQUIRED
QF-183	16.3.4	BECHTEL QA	9-6-77	10-6-77	RELIANCE QC MAN	IMPROPER ALIGNMENT CHANGES
QF 184	16.3	Bechtel QA	9-16-77	9-16-77		Improper rebar embedment
QF-185	16.3	Bechtel QA	9-16-77	10-12-77		missing rebar - bar removed but not replaced
QF-186	16.3.4	BECH QA	9-21-77	11-04-77	F-10-1000 FORM	IMPROPER LINER PLATE STORAGE IN STAGING AREA
QF-187	16.3.6	BECH QA	9-22-77	12-13-77	BSP G-3.2	IMPROPERLY DISPOSITIONED (CANCELLED) NCR
QF-188	16.3.6	BECH. Q.A.	9-23-77	11-03-77	DWG C-281 REV 10 & ACI 7.5.4	NON CONTACT SPLICE OF 2-#11 BARS 6". #11 (HORIZ.) NOT SPLICE INTO THE ADJACENT POUR
QF-189	16.3.4 & 16.3.6	Bechtel QA	9-26-77	10-11-77	C-231 sec 11.6 PQCI/IR C-1.30 sec. 2.4c	Concrete ~~placement~~ such that concrete would move more than 5' from discharge
QF-190	16.3.4	BECHTEL QA	9-29-77	6/5/78	SPEC M204	VALVES SUPPORTED BY YOKES
QF-191	16.3.4	BECHTEL QA	9-29-77	3-07-78	NONE	DAMAGE TO VALVES
QF-192	16.3.4	BECH QA	10-11-77	3/23/78	SPEC M-204	Uncapped pipe spools
QF-193	16.3.1	BECH PAC	10-13-77	6/20/79	G-321-D	BLOCK #73 not signed and dated
QF-194	16.3.6	Bech. QA	10/18/77	11/08/77	PSP G 3.2	Bechtel NCR closed with no closing statement.
QF-195	16.3.4 & 16.3.6	Bechtel QA	11-1-77	2/2/78	C-211 Rev 3 Sec. 5.6.3 ASTM C-136 Sec 4.2	structural Enkfill Gradation Tests not run for procedure
QF-196	16.3	Bechtel QA	11-1-77	12/5/77		Rebar removed but not replaced
QF-197	16.3.6	BECH QA	11-1-77	4/17/78	F-10-51	NO INSPECTION PERFORMED ON STORAGE OF WELD NECK FLANGES
QF198	16.3.4	Bechtel QA	NOV-2-77	11/21/77	FIC-2.400	Cadwald Storage improper Per Specs.
QF-199	16.3.4 & 16.3.6	Bechtel QA	11-4-77		Spec C-210 12.6.1 Spec. C-210 12.7.1 Spec. C-210 12.7.2	Failing Moisture / Density Tests not issued with passing tests.
QF-200	16.3	Bech. QA	11/4/77	11/22/77		Missing Rebar
QF-201	16.3.6	BECH QC	11-11-77	7/31/78		Undersize hanger fillet welds
QF-202	16.3.4	Bechtel QA	11-21-77	3/3/78	FPG 8.000	improper implementation of procedure
QF-203	16.3.4 & 16.3.6	Bechtel QA	11-22-77	2/2/78	PQCI R-1.00 C-210 Sec. 5	Drawing C-130 Failing Material Accepted Tests #4
QF-204	16.3.4 & 16.3.6	Bechtel QA	11-29-77	1-20-78	Spec. C-230 Rev. SC-1.05	10 3/4" core. agg. Lacked natural passing No. 200 sieve, but accepted by V.S.T. Bechtel QC
QF-205	16.3.4	BECHTEL QA	12/2/77	12-22-77	Drawing C-102E	Missing Rebar and Mislocated Rebar.

NONCONFORMANCE SUMMARY LOG

Plant Midland

Unit 1 & 2

RPT No	File No	Issued To	Issued Date	Close Date	Criterion Involved	Brief Description
QF-161	16.1	QUAL. ASSURANCE SUPT. CP	4-13-77	4-13-77		Miss rebar during final inspection and after sign-off.
QF-162	16.1	Q.A. ENGR. (LEAD)	4-15-77	4-15-77		MISSING COLUMN TIES DURING FINAL INSPECTION
QF-163	16.1	LEAD BECHTEL Q.A. ENGR.	4-26-77	4/29/77		2-SHORT SPLICES AND 1 CUT BAR WITH NO SPLICE BAR PROVIDED.
QF-164	16.3	Lead Bechtel QA Engr	5-2-77	5/3/77		Not enough replacement steel at opening. 2 rolled out of position.
QF-165	16.3.4	Lead Bechtel QA Engr	5-17-77	6/21/77		Unresolved Discrepancies of Storage Surveillance FS-77-6 & FS-77-9
QF166	16.3.6	Lead Bechtel QA Engr	5-27-77	8/1/77	Spec. C-208 Rev. 7 Sec. 7.2.1	Concrete pour CC (683.25)a' Max. water exceeded
QF-167	16.3.4	BECH LEAD QAE	6-7-77	8-25-77	F-1-390 STORAGE	PIPE STORAGE NOT IN ACCORD WITH PROCEDURES
QF168	16.3.6	Bechtel Lead QAE	13 Jun 77	8-15-77	Spec. C-304 Rev. 1, Sec 9.1 FQCI C-2.10	Butts in Anx Building initial erroneous hot rotation
QF169	16.3	Bechtel QA	6-20-77	6-20-77		MISSING REBAR
QF-170	16.3.6	BECHTEL QA	7-5-77	8-26-77	SPEC M-204	PIPE RECEIVING INSPECTION DISCREPANCY
QF-171	16.3.4	BECHTEL QA	7-5-77	8-30-77	SPEC M-204	PIPE STORAGE DISCREPANCY
QF-172	16.3.4 & 16.3.6	Bechtel QA	7-8-77	10-11-77	Spec. C-210 Rev 4 Sec 13.6 & 13.7	Failing moisture density Tests
QF-173	16.3.4 & 16.3.6	Bechtel QA	7-15-77	10-13-77	Spec. C-210 Rev. 2 Sec. 12.4.3	Tests not run per ASTM D 422 for soil & sand
QF-174	16.3.4 & 16.3.6	Bechtel QA	7-15-77	10-11-77	Spec. C-210 Rev. 2 Sec. 12.5.2, Table 12-1	Soil not meeting at least 20% passing No. 200 placed in Unit 1.
QF 175	16.1	Bechtel QA Supt	7/26/77	7/25/77	m	Missing Rebar
QF 176	16.1	BECHTEL QA Sup	8-12-77	8-12-77		MISSING REBAR
QF 177	16.3	Bechtel QA Sup	8-22-77	2-16-78		BOLTS NOT MARKED FOR IE tray supports
QF 178	16.3	Bechtel QA SUP.	8-26-77	11-04-77		NO CONFIGURATION OF CABLE TRAY SUPPORTS
QF 177	16.3	Bechtel QA Sup	8-26-77	2-15-78		CLARIFY SF/PSP G-6.1 Reissued AS TO Design alternates on P/S 1/
QF 100	16.3	Bechtel QA SUP	8-26-77	2-16-78		Documented weld problem on DR noted of NCR

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QF 138	16.3	Bechtel Proj Supt	12-22-76	12-22-76		Improper bundled splice #11 rebar 5-17, 634-6
QF 139	16.3.6	Bechtel PFQCE	12-28-76	6-9-77	UST. QA Man. Proc. QCP-4 Sec. II - 1.6.	Thermometer nonconforming during calibration & thermometer was not tagged or corrective action taken!
QF-140	16.3.6	Bechtel PFQCE	12-23-76	3-18-77	PSAR Sec. 5.1.1.3.1	Concrete cylinder breaking out of spec.
QF-141	16.3.6	Bechtel PFQCE	1-10-77	3-17-77	Appendix B to PSP G-6 Rev. 2	IR's for C-1.30 Concrete Placement Records not being signed by activity leads.
QF-142	16.3.6	Bechtel PFQCE	1-12-77	7/15/77	UST QA Man. Proc. QCP-4	Tensile Machine Grippers & Accessory 5 Kips Calibration over due
QF-143	16.3.4 16.3.6	Bechtel Supt & PFQCE	1/19/77	1/19/77		Improper location of diagonal rebar
QF-144	16.3.4	Bechtel Supt	1-21-77	2-8-77	F-1-242	Pipe hanger storage not in accord with procedures
QF-145	16.3.4	Bechtel Supt	1-25-77	8/16/77	NUPER 80 Appendix B	Coating not done in accord with procedures.
QF-146	16.3.6	Bechtel PFQCE	1-28-77	6-14-77	PSP G-3.2	Improper use of DSCR report
QF-148	16.3.4	Bech Supt.	2-2-77	4-20-77	See M-204	Pipe end covers missing or not intact
QF-147	16.3.4 & 16.3.6	Bechtel Supt Bechtel PFQCE	2-2-77	6-10-77	Spec. C-211 Rev. 2 PQCI C-102	Structural backfill not Received with certs of testing
QF-149	See Above					
QF 149	16.3.4	Bechtel Supt	2-3-77	2/11/77	F-1-350 Rev 0	protective covering not adequate shown on electrical components
QF-150	16.3.6	Bechtel PFQCE	2-11-77	3-11-77	PSP G6.1, Rev 2 Section 8.7	"Record Copy" of IR not being used during Structural Backfill placement
QF-151	16.3.6	Bechtel PFQCE	2-15-77	4-21-77	Spec. C-208 Rev. 5 Section 7.3.1	Incoming fine aggregate & fraction tests missing.
QF-152	16.3.6	Bechtel PFQCE	2-19-77	8-12-77	Spec. C-[illegible] Rev. 5	Tests not run per procedure
QF 153	16.3	Bechtel QA	3-10-77	3/10/77		Embedment #6 slab bars - 646'-0 slab 6
QF 154	16.3	Bechtel QA	3-15-77	3-15-77		Improper rebar installation & missing rebar
QF 155	16.3.6	Bechtel QA	3-27-77	4-28-77	Spec C-208 Rev 7 Spec C-230 Rev 7 QCI C-1.30 Rev 6 USI QA Man Rev 5 ASTM C94-72	Slump values missing on Tickets 10978 and 10986 - Concrete Pour CC(6E3.25)c' 10/24/76
QF-156	16.3	Bechtel QA	3/23/77	5/31/77		Primary Pipe hit by a Truck
QF-157	16.3.4	Bechtel QA	29 Mar 77	5-2-77	Bechtel F-1 Forms	Discrepancies in Prolonged Storage of Post Tensioning Materials, Structural Steel, rebar & embeds. Fab Surveillance
QF-158	16.3	Bechtel QA	30 Mar 77	30 Mar 77	Dwg C-295	Cut #11 VERTICAL with no splice bars provided.
QF 159	16.3	Bechtel QA	4-11-77	4/12/77		Dwg C-222 Dowels into wall South of G line
QF-160	16.3	Bechtel QA	4-11-77	6/14/77		QR-1 identifying improper washers on bolts issued late.

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QF-113	16.3.1	Bechtel Proj. Engr.	8/31/76	9/28/76		Discrepancy between vendor & design drawings.
QF-114	16.3.4 & 16.3.6	Bechtel Const & QC	9/1/76	11/16/76		Rebar placed & approved with insufficient detail on dwg.
QF-115	16.3.4 & 16.3.6	Bechtel Const. & QC	9/3/76	11/4/76		Rebar in wall 4.55 not in accordance with dwg.
QF-116	16.3.1	Bechtel Proj. Engr.	9/16/76	12/22/76		Discrepancy between vendor & design drawings
QF-117	16.3.4 & 16.3.6	BF Goe Bechtel Proj Supt	9/27/76	11/16/76		#6 dia missing in equip. hatch area
QF-118	16.3.6	Bechtel QC	9-21-76	1/4/77	Spec C-208	No moistures for aggregates on tests reports. Visually examination of flat and elongated particles not documented. Frequencies on incoming aggregate out of spec.
QF-119	16.3.6	Bechtel QC	9-21-76	11-4-76	Spec C-208	Stripping of concrete cylinders out of specs.
QF-120	16.3.4 & 16.3.6	Bechtel Const & QC	9-21-76	11-9-76	Spec C-210	Lift thicknesses out of specs.
QF121	16.3.1	Proj. Engr.	9-24-76	12/13/76		Missing rebar - design discrepancy
QF122	16.3.6	Bechtel QC	9-27-76	11-29-76	Spec. C-208	Curing Tank Temp. too high
QF123	16.3.4	Bechtel Const	9-27-76	4-19-77	FPR.G-14 SF/PSP#4	Rev.1 Conflicts of signatures Rev.1 on FSK's.
QF124	16.3.6	PFQCE	9-28-76	11-9-76	PSPG-7.1	CORRECTION OF RECORDS NOT IN ACCORD WITH PSP.
QF125	16.3.4	BECHTEL PROJ SUPT	9-29-76	11-11-76	BASWELL QA MANUAL	HOLD TAGS NOT APPLIED AS REQUIRED.
QF-126	16.3.6	PFQCE	10-1-76	1-7-77	PSPG-3.2	IMPROPER USE OF "REMARKS" AND REPORT
QF-127	16.3.6	Bechtel QC	10-7-76	1/4/77	Spec. C-208	Mean Test 32 failed to test ice wat
QF-128	16.3.4	BECHTEL PROJ SUPT	10-11-76	4-26-77	BASWELL QA MANUAL	TRAINING NOT CONDUCTED AS REQUIRED.
QF-129	16.3.9	BECHTEL PROJ SUPT	10-12-76	12-16-76	SPEC M-204	S.S. IN CONTACT WITH ZINC
QF-130	16.3.6	Bechtel QC	10-18-76	3-3-77	Spec C-210 FIP C-210-4	Lift thicknesses out of Specs & out of Field Insp. Plan Requirem
QF-131	16.3.4	BECHTEL PROJ SUPT	10-19-76	4-20-77	AWS D1.1-72 DWG 25A5995	WELDING NOT IN ACCORD WITH WELD SYMBOL
QF-132	16.3.6	Bechtel QC	10-20-76	11-22-76	Spec. C-208	Failure of rebar Mon Test was not notify Bechtel of the failure
QF-133	16.3.1	Bechtel Eng.	10-20-76	11-22-76	10CFR50 Appendix B	Conflict in drawings showing Q wall & Drawing C-45 used for Q wall placements Not a Q -
QF-134	16.1 & 16.2	CA Proj Supt & QA Mgr	10/26/76	11-29-76		REBAR LEFT OUT OF PLACEMENT EL (683 2)3".
~~QF-135~~ QF-135	~~16.3.4~~ 16.3.4 & 16.3.6	~~BECHTEL PROJ SUPT~~ Bechtel Const & QC.	11-24-76	6-6-77	Spec. C-208 C-230 Letter - C-208-56 March 19, 1975	Slump & temperature test frequencies exceeded.
QF-136	16.3.6	Bechtel QC	11-30-76	1/4/77	Spec. C-208 Rev. 7, ASTM C-31-69	2 cylinders were partially exposed to the air in the curing tank
QF-137	16.3.1	BECHTEL ENG.	12-8-76	7/26/77	PSPG-2.1	6-DEFICIENCIES ON DOCUMENT CONTROL NON-IMPLEMENTATION OF PROCEDURE

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QF-86	16.3.4	Bechtel Proj Supt	3-23-76	7-12-76	~~WFMC~~ WFMC-1	Not drawing low hydrogen rod from a warmer.
QF-87	16.3.4	Bechtel Proj. Supt.	3-23-76	4-27-76	Criterion XVIII Appx B 10CFR50	Liner plate cut-outs not processed as committed to
QF-88	16.3.4	Bechtel Proj. Supt.	3-23-76	6-7-76	FPG-3 & F-1 form	Tendon sheathing open
QF-89	16.3.4	Bechtel Proj. Supt.	4/6/76	6/21/76	FIM G-3	Improper hold tag
QF-90	16.3.6	Bechtel PFQCE	4/7/76	9-23-76	C-208 Rev. 6 Sec. 5.3	No Calibration Stickers on slump cones or tamping rods
QF-91	16.3.6	Bechtel PFQCE	4-15-76	5-27-76	MIP C-400 A)	Sharp edged shallow gouges accepted by QC
QF-92	16.3	M&QS	4-21-76	12-13-76	NEPQ-RT NDE I, II	Documentation of NDE personnel certs did not meet procedure
QF-93	16.3.4 & 16.3.6	Bechtel PFQCE & SUPT.	4-23-76	9-1-76	G-321-D Form	G-321-D Form not being used with mill certs, certification of batch pl.
QF-94	16.3.4	Bechtel Proj Supt.	4/30/76	9-28-76	FIW-2	Uncontrolled weld rod by non-Q subcontractor
QF-95	16.3.6	Bechtel PFQCE	4/30/76	6/10/76		Changing inspection form
QF-96	16.3.6	"	5/3/76	6-11-76		Incorrect completion of FIP's
QF-97	16.3.6	Bechtel PFQCE	5/4/76	8-26-76	RT-XG-2	Radiographs accepted without proper ID.
QF-98	16.3.4	Bechtel Proj Supt.	5/4/76	4-26-77	Basic QA Manual	P.O. number not on coating containers
QF-99	16.3.4	Bechtel Proj Supt.	5-4-76	6-10-76	Basic QA Manual	Required coating spray equipment not used.
QF-100	16.3.6	Bechtel PFQCE	5/4/76	6-18-76	XV	Nonconforming condition not identified
QF-101	16.3.6	Bechtel PFQCE	5/6/76	6-6-77	II F Im-6.8	Failure to commit to ANSI N45.2.6 commitments
QF-102	16.3.6	Bechtel PFQCE	5-17-76	6-10-76	FIP C-110.04	Unsatisfactory inspection of liner plate surface
QF-103	16.3.6	Bechtel PFQCE	5-25-76	7-12-76	App B VI	MP used to prepare FIP out of date
QF-104	"	"	5-25-76	6-22-76	SF/PSP	1 out of 4 FIP preparation written request were found as records
QF-105	"	"	5-25-76	6-14-76		
QF-106	"	"	5-26-76	7-17-76		FIP not properly signed for review prior to implementation revolutions, not record on batch ticket no documentation by Q
QF-107	16.3.4	Bechtel Proj Supt	6-1-76	7-12-76	WFMC-1 Rev 1	Using LH rod from stub bucket
QF-108	16.3.4	Bech Proj Supt	6-21-76	7-22-76	Criteria V & XIII App B	Storage maint. of liner plate not released procedure Appl.
QF-109	16.3.6	Bechtel PFQCE	7/12/76	8/10/76	M.A. Proj. Proc. M-8	Rebar turn over for inspection was too early.
QF-110	16.3	Bechtel Project Supt & PFQCE	7/26/76	8/31/76	Missing Rebar	Overlay rebar inspection S-2 Slab 632'-6, Aux Bldg
QF-111	16.3	Bechtel PFQCE	8/4/76	9/1/76	Improper rebar installation	Overlay rebar inspection S2 Slab-632'-6 Aux Bldg
QF-112	16.3.6	Bechtel PFQCE	8/4/76	8-24-76	-	Incorrect documentation on test repair (rain test'd)

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RPT No	File No	Issued To	Issued Date	Close Date	Criterion Involved	Brief Description
QF-63	16.7	EG&G	9-15-75	12-4-75	10CFR-50 APP B	require training documentation
QF-64	16.3.6	PFQCE	9-16-75	10-21-75	Spec C-231 Sec. 14.1	Curing required 7 days, only cured 6 days.
QF-65	16.3.6 + 16.3.4	PFQCE & SUPT	9-30-75	11/3/75	G-3 sect 4.4.2	removal of QC hold tag after disposition
QF-66	16.3.1	Bechtel Proj. Eng.	10-10-75	12-12-75	PSAR & Spec. C211 Rev 2	Response to DRL Question 5.1.11 in PSAR conflicts with Spec. C-211 Rev. 2 [illegible]
QF-67	16.3.4 & 16.3.6	Bechtel Proj. Super & BPFQCE.	10-13-75	1-20-76	PSAR section 5.1.3.3.1a & Spec. C208 Rev 5 sec. 6.1.1	Fineness of cement determined by ASTM C 204 - Air Permeability Apparatus instead of ASTM C 115 - by the Turbidimeter
QF-68	16.3.4 & 16.3.6	Bechtel Proj. Super. & PFQCE.	10-17-75	11-21-75	Spec. C-210 sec. 13.7	Wrong information for BMP. 168 used which gave passing result of 96%, when actually test failed 92%.
QF-69 68	16.3.4 + 16.3.6	Bechtel Proj Supt & PFQCE	12/4/75 12-12-75	~~8~~-1976 1-20-76	F-1-37 + 38 + 39 section 5.2	late rotation of Decay Heat Removal Pump motors and Meggering late
QF-70	16.3.4 & 16.3.6	Bechtel Const & QC	12-10-75	1/19/76	F-1-207 & 208 Sect 4.2	Nitrogen addition not logged.
QF-71	16.3.1	Bechtel Proj. Eng.	12-10-75	2-6-76	PSAR sec. 5.1.1.3.1 & ACI 301	PSAR - ACI 301 requires curing temp. 50°F to 70°F during cold weather. Spec. C-231 Rev. 8 only requires no less than 50°F.
QF-72	16.3.4	Bechtel Construction	12-10-75	12-30-75	FPG-3 Rev. 3	Rebar on the ground not on dunnage.
~~QF-73~~	~~16.3.4~~	BECHTEL PROJ SUPT.	VOID		WFMC-1 REV 1	DAMAGED OR DISCARDED FILLER MATERIAL NOT REMOVED FROM AREA AS REQUIRED
QF-73	16.3.6	BECHTEL ~~PROJ~~ PFQCE	2-3-76	2-17-76	SPEC C-111 Rev 9	RADIUS CIRCLES NOT MADE ON REQUIRED AZIMUTHS FOR LINER PLATE
QF-74	16.3.6	BECHTEL PFQCE	2-3-76	3-25-76	10 CFR 50 APP B, X	NO DOCUMENTATION OF REVIEW OF RECEIVING INSPECTION REPORTS [illegible] ACCEPTANCE OF [illegible]
QF-75	16.3.6	BECHTEL PFQCE	2-3-76	11-2-76	10CFR50 APP B, X	INSUFFICIENT BACK-UP DATA FOR BLANKET SIGN-OFF ON L. P. [illegible]
QF-76	16.3.6	Bechtel PFQCE	2-9-76	3-1-76	FIM G-6 Rev. 6 Sec. 2.5	No ~~Field~~ Inspection Plan C-2[illegible] being used for Usir Tests
QF-77	16.3.4	Bechtel Construction	2-20-76	4-1-76	F-1-112	Core flood tank manway open.
QF 78	16.3.4	BECH PROJ SUPT	2-23-76	7-12-76	WFMC-1 REV 1	VIOLATIONS OF WELD ROD CONTROL.
QF-79	16.3.4	Bechtel Proj. Super	3-1-76	5-12-76	Champ. QA Manual Sec. III	No proper documentation of yearly reviews for 1974 or 1975.
QF80	16.3.4	Bechtel Proj. Super	3-1-76	4-2-76	Champ. QA Manual Sec. X	No frequent visits to Drummond Island
QF-81	16.3.4	BECHTEL PROJ SUPT.	3-3-76	7-12-76	WFMC-1 REV 1	IMPROPER USE OF WELD ROD WARMERS
QF-82	16.3.4	BECHTEL PROJECT SUPT	3-3-76	6-23-76	WFMC-1 REV 1, WD-1	WRONG REV OF WR-6 FORM IN USE.
QF-83	16.3.6	Bechtel PFQCE	3-12-76	5-4-76	Spec. C-208 Rev. 6, ASTM C31-69 sec. 7.3.2 7.3	6 cylinders were partially exposed to the air in the curing tank.
QF-84	16.3.4	BECHTEL PROJ SUPT.	3-23-76	8-5-76	F-1 STORAGE FORMS	DISCREPANT PIPE STORAGE
QF-85	16.3.4	BECHTEL PROJ SUPT.	3-23-76	8-5-76	M-204 [illegible]	DISCREPANT PIPE STORAGE

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QF-48	16.3.6	Bechtel PFQCE	5-9-75	6-9-75	Spec. C-208 F/M C12-1 form	Slump frequency exceeded & lack of air meter & thermometer identification.
QF-49	16.3.4 & 16.3.6	Bechtel PFQCE & Project Superintendent	5-22-75	6-18-75	Spec. C-208 LETTER - C-208-56 March 17, 1975	No air content or slump tests taken at truck discharge for 4 yds³ of concrete.
QF-50	16.3.6	Bechtel PFQCE	6-12-75	7-29-75	Spec. C-230 Spec. C-208 ASTM C618-72	No air-entrainment variation tests run on fly ash for approx. 20" water tests. No tests for any dry ash received
QF-51	16.3.6	BECHTEL PFQCE	6-28-75	9-11-75	SPEC. C-111 (AP/QA C)	UNDER PLATE RADIOGRAPHIC FILM DOES NOT MEET REQUIRED FILM DENSITY
QF-52	16.3.6	Bechtel PFQCE	8-7-75	8-14-75	Spec. C210 F/M form QC-21	U.S. Testing stated MD202 Tested passing, but it actually failed, -2.9% below O.M.C. QC also accepted it.
QF-53	16.3.6	Bechtel PFQCE	8-12-75	11-26-75	Spec. C230 ASTM C94-72	For Batches of concrete that was less than 30% of the full capacity of the cement scale (1800# cement), the quantity of cement used shall be not less than the required amount nor more than 4% in excess. Contrary to this, 3 tickets were found that do not meet this requirement.
QF-54	16.3.4	Bechtel Project Superintendent	8-12-75	9-26-75	Proj. Special Provisions Notice SF/PSPN Rev. 1 Sec. 5.1a	Removing and replacing superseded prints on the office sticks was not done in a timely manner.
QF-55	16.3.4	BECHTEL PROJECT SUPT.	9-4-75	10-6-75	FPE-1 RACEWAY INSTALLATION PROCEDURE	REQUISITION AND TRANSMITTAL FORMS IN PROCEDURE NOT BEING USED NEW FORMS ISSUED AND BEING USED NOT IN FPE-1
QF-56	16.3.4	BECHTEL PFQ SUPT	9-10-75	9-29-75	FPE-3 AND FPE-6	~~STORAGE DISCREPANCIES~~ VIOLATION OF STORAGE PROCEDURES.
QF-57	16.7	EG&G	9-15-75	10-30-75	EG&G QA MANUAL	no issue date on cal procedures
QF-58	"	"	9-15-75	12-4-75	"	circuit card in service with no calibration data
QF-59	"	"	9-15-75	12-4-75	"	no site logs or operations status sheets
QF-60	"	"	9-15-75	3-26-76	"	QA records and cal. records found incomplete
QF-61	"	"	9-15-75	10-30-75	EG&G cal procedure	forms in Exec. procedure found incorrect.
QF-62	"	"	9-15-75	12-4-75	"	instruments (oscilloscope) found out of calibration and dials wrong from Brad

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QF-23	16.3.4	BECHTEL AGN. SUPT	8-21-74	3-21-75	WELD STD GMS-FM	PENETRATION LINER PLATE NOT CHECKED AS REQUIRED
QF-24	16.3.6	BECHTEL PFQCE	8-21-74	2-5-75	NOT PROCED MT-PT-1,2	ROLLOUT DRAWING OF FLAW UNDER MISSING REQUIRED DATA.
QF-25	16.3.6	Bechtel PFQCE	8-26-74	12-3-74	Spec. C 230	Lack of temperatures taking on concrete placement
QF-26	16.3.6	Bechtel PFQCE	10/5/74	11/21/74	FIM G-3	Improper disposition on Bechtel NCR's
QF-27	16.3.4	BECHTEL PROJ SUPT	10-11-74	11-21-74	Spec C-231	Rebar bent improperly in Aux. Building
QF-28	16.3.4	BECHTEL PROJ SUPT	10-11-74	10-31-74	SPEC C-110	IMPROPER STORAGE OF COATING MATERIALS
QF-29	16.3.6	Bechtel PFQCE	10-14-74	2-12-75	Spec. C-211	Lack of Tests on Structural Backfill Material
QF-30	16.3.4	BECHTEL PROJ SUPT	11-13-74	12-5-74	WFMC-1	WELD ROD STUBS AND DISCARDED ROD IN C.B.1
QF-31	16.3.6	BECHTEL PFQCE	11-14-74	11-27-74	SPEC C-111	LEAK CHASE PRESSURE TEST NOT CONDUCTED IN ACCORD WITH SPEC
QF-32	16.3.4	BECHTEL PROJ SUPT.	11-26-74	12-13-74	WFMC-1	UNCALLED PORTABLE ROD WARMER
QF-33	16.3.4	BECHTEL PROJ SUPT.	11-26-74	1-17-75	FPG-3	LINER PLATE STORED IMPROPERLY
QF-34	16.3.3	BECHTEL LEGAG	11/27/74	12/6/74	QA DOC PROC 4, 203	FILM SIGNED OFF IN LOCK PLAN NOT CALLED IN DAILY LOG
QF-35	16.3	Bechtel Proj. Supt. & PFQCE	12/2/74	12/17/74	DSP # 6 & SPPC-3	Cad weld Storage
QF-36	16.3	Bechtel Proj. Supt. & PFQCE	12/5/74	2/10/75	Spec C-231	Rebar Spacing
QF-37	16.3.6	Bechtel PFQCE	12-11-74	1-21-75	Spec C-209	Conc. Test Cylinders not being made & cured in accordance with Spec.
QF-38	16.3.6	Bechtel PFQCE	12-11-74	1-9-75	Spec. C-208	Sand Tests missing and/or not run in accordance with Spec.
QF-39	16.3.6	Bechtel PFQCE	12-12-74	1-8-75	Spec. C-208	Coarse Agg. Tests Reports missing and errors in same
QF-40	16.3.4	BECHTEL PROJ SUPT.	12-19-74	1-17-75	10 CFR 50 APP B CRIT. III	HEAT AND SLAB NUMBERS NOT STAMPED IN LINER PLATE SCRAP
QF-41	16.3.6	Bechtel PFQCE	2-24-75	3-31-75	FIM G-6	Lack of sign offs for inspection plans
QF-42	16.3.4	BECHTEL PROJ SUPT	3-18-75	3-31-75	FPG-3	UNCOVERED Q-LIST STAINLESS
QF-43	16.3.4	BECHTEL PROJ SUPT	3-18-75	4-4-75	FPG-6	UNCOVERED AND ON GROUND NON-Q - STAINLESS
QF-44	16.3.4	BECHTEL PROJ SUPT	3-18-75	3-31-75	FPG-3	NUCLEAR SERVICE CARBON STEEL PIPE ON GROUND
QF-45	16.3.4	Bechtel Proj. Supt	3-26-75	4-18-75	FPG-3	Rebar in contact with ground
QF-46	16.3.4	Bechtel Proj. Supt	3-26-75	4-11-75	FPG-3	Misc. Steel in contact with ground
QF-47	16.3.4	BECHTEL PROJ. SUPT.	4-16-75	4-18-75	FPG-3	LINER PLATE STORED IMPROPERLY
~~QF-48~~	~~16.3.4~~	~~Bechtel Proj. Supt.~~			FPG-3	~~Welding Unqualified~~

12/4/73

Attachment 8-3

SHEET 2 OF ___

Plant Midland

Unit 1 & 2

NONCONFORMANCE SUMMARY LOG

RPT NO	FILE NO	ISSUED TO	ISSUED DATE	CLOSE DATE	BRIEF DESCRIPTION
QF-1	16.6	Bechtel QAE	11/9/73	12/6/73	Cadweld Splices
QF-2	16.6	Bechtel Proj. Supt	12/7/73	2-7-74	Pipe did not fit 7220-C-111 at site and used anyway it was approved
QF-3	16.6	Bechtel QC	1/6/74	2-20-74	Improper tagging of NCR's
QF-4	16.6	BECHTEL PROJ. SUPT.	1-16-74	2-19-74	WELDING ON LINER PLATE NOT DONE IN ACCORDANCE WITH REFERENCED PROCEDURE.
QF-5	16.6	BECHTEL PROJ. SUPT.	1-25-74	2-20-74	DISCREPANCY ON LEAK CHASE PRESSURE DECAY TEST PRESSURE
QF-6	16.7	QC SUPV.	1-23-74	3/27/74	CADWELD VOID COMPUTATION ERROR
QF-7	16.6	BECHTEL PROJ. SUPT.	2-6-74	3-5-74	UNCONTROLLED WELD ROD
QF-8	16.6	Bechtel PFQCE	2-19-74	3-20-74	Problems with the Champion Q A Manu
QF-9	16.6	Bechtel PFQCE	3-5-74	3-20-74	Problems with Bechtel QC cement receivin file for cement received on 6-27-73 Item 1-3
QF-10	16.3	BECHTEL PROJ ENGR	3-28-74	4-29-74	WORK ON LINER PLATE NOT BEING DONE IN ACCORD WITH THE PSAR
QF-11	16.7	BECHTEL PFQCE	4/1/74	9/27/74	DOCUMENT CONTROL DEFICIENCY
QF-12	16.7	BECHTEL PFQCE	4/1/74	5/10/74	50.55(e) REPORTABILITY
QF-13	16.3.4	Bechtel Construction	5/16/74	6/10/74	Stainless pipe repeatedly uncovered
QF-14	16.3.4	Bechtel Construction	7/1/74	9/25/74	Material Stored Improperly
QF-15	16.3.6	Bechtel PFQCE	7-19-74	8-9-74	Vibrator Operators being used with no documentation of their qualificat
QF-16	16.3.6	BECHTEL PFQCE	7-19-74	9-10-74	SHALLOW GOUGES IN C-111-58 NOT REPAIRED PRIOR TO BLASTING & COATIN
QF-17	16.3	Bechtel PFQCE, PFE QAE	7-19-74	7-31-74	Nonconforming material installed with no basis for installation documented.
QF-18	16.3.4	BECHTEL PROJ SUPT.	8-21-74	1-10-75	LOW HYDROGEN ROD PLACED IN COLD PORTABLE ROD OVENS.
QF-19	16.3.6	BECHTEL PFQCE	8-21-74	10-30-74	UNCERTIFIED WELD FILLER MATERIAL NOT HELD IN SEGREGATED STORAGE
QF-20	16.3.4	BECHTEL PROJ SUPT.	8-21-74	10-15-74	"FOR INFORMATION ONLY" DOCUMENT USED FOR QUALITY RELATED ACTIVITY.
QF-21	16.3	MFQCS	8-21-74	9-9-75	ASME III QC MANUAL NOT IN ACCORDAN WITH ASME CODE.
QF-22	16.3.6	BECHTEL PFQCE	8-21-74	9-19-74	EYE EXAM RESULTS MISSING FROM WELDER PERSONNEL FILES.

Plant MIDLAND

NONCONFORMANCE SUMMARY LOG

Unit 1 & 2

RPT No	File No	Issued To	Issued Date	Close Date	Criterion Involved	Brief Description
QF-23	16.3.4	BECHTEL PROJ. SUPT	8-21-74	3-21-75	WELD STD. GMS-FM	PROTECTION LINER PLATE NOT CHECKED AS REQUIRED
QF-24	16.3.6	BECHTEL PFQCE	8-21-74	2-5-75	NOT PROVIDED AT. AT-1,2	ROLLOUT DENIAL OF FLOOR UNDER MISSING REQUIRED DATA.
QF-25	16.3.6	Bechtel PFQCE	8-26-74	12-3-74	Spec. C 230	Lack of temperatures taking on concrete placement.
QF-26	16.3.6	Bechtel PFQCE	10-1-74	11/21/74	FIM G-3	Improper disposition of Bechtel NCR's
QF-27	16.3.4	BECHTEL PROJ SUPT	10-11-74	11-21-74	Spec C-231	Rebar bent improperly in Aux. Building
QF-28	16.3.4	BECHTEL PROJ SUPT	10-11-74	10-31-74	SPEC C-110	IMPROPER STORAGE OF COATING MATERIALS
QF-29	16.3.6	Bechtel PFQCE	10-14-74	2-12-75	SPEC. C-211	Lack of Tests on Structural Backfill Material
QF-30	16.3.4	BECHTEL PROJ SUPT	11-13-74	12-5-74	WFMC-1	WELD ROD STUBS AND DISCARDED ROD IN C.B.1
QF-31	16.3.6	BECHTEL PFQCE	11-14-74	11-27-74	SPEC C-111	LEAK CHASE PRESSURE TEST NOT CONDUCTED IN ACCORD WITH SPEC
QF-32	16.3.4	BECHTEL PROJ SUPT.	11-26-74	12-13-74	WFMC-1	UNPLUGGED PORTABLE RAD WARNER
QF-33	16.3.4	BECHTEL PROJ SUPT.	11-26-74	1-17-75	FPG-3	LINER PLATE STORED IMPROPERLY
QF-34	16.3.3	BECHTEL LEGAR	11/27/74	12/6/74	QA DEPT. PROC. 4, REV 2	FILM SIGNED OFF IN LOCKER PLAN NOT CONTROLLED IN DAILY LOG
QF-35	16.3	Bechtel Proj. Supt. & PFQCE	12/2/74	12/17/74	PSP # 6 & SPPC-3	Cad weld Storage
QF-36	16.3	Bechtel Proj Supt. & PFQCE	12/5/74	2/10/75	Spec C-231	Rebar Spacing
QF-37	16.3.6	Bechtel PFQCE	12-11-74	1-21-75	Spec C-209	Conc. Test Cylinders not being made & cured in accordance with Spec.
QF-38	16.3.6	Bechtel PFQCE	12-11-74	1-9-75	Spec. C-208	Sand Tests missing and/or not run in accordance with Spec.
QF-39	16.3.6	Bechtel PFQCE	12-12-74	1-8-75	Spec. C-208	Coarse Agg. Tests Reports missing and errors in tests
QF-40	16.3.4	BECHTEL PROJ SUPT.	12-19-74	1-17-75	10 CFR 50 APP B CRIT. XIII	HEAT AND SLAB NUMBERS NOT STAMPED IN LINER PLATES
QF-41	16.3.6	Bechtel PFQCE	2-24-75	3-31-75	FIM G-6	Lack of sign offs for inspection plans
QF-42	16.3.4	BECHTEL PROJ SUPT	3-18-75	3-31-75	FPG-3	UNCOVERED Q-LIST STAINLESS
QF-43	16.3.4	BECHTEL PROJ SUPT	3-18-75	4-4-75	FPG-6	UNCOVERED AND ON GROUND NON-Q - STAINLESS
QF-44	16.3.4	BECHTEL PROJ SUPT	3-18-75	3-31-75	FPG-3	NUCLEAR SERVICE CARBON STEEL PIPE ON GROUND
QF-45	16.3.4	Bechtel Proj. Supt	3-26-75	4-18-75	FPG-3	Rebar in contact with ground
QF-46	16.3.4	Bechtel Proj. Supt	3-26-75	4-11-75	FPG-3	Misc. Steel in contact with ground
QF-47	16.3.4	BECHTEL PROJ. SUPT.	4-16-75	4-18-75	FPG-3	LINER PLATE STORED IMPROPERLY
~~QF-48~~	~~16.3.4~~	~~Bechtel Proj. Supt.~~			~~FPG-3~~	~~Welding unqualified~~

Plant Midland

Unit 1 & 2

NONCONFORMANCE SUMMARY LOG

RPT NO	FILE NO	ISSUED TO	ISSUED DATE	CLOSE DATE	BRIEF DESCRIPTION
QF-1	16.6	Bechtel QAE	11/9/73	12/6/73	Cadweld Splices
QF-2	16.6	Bechtel Proj Supt	12/7/73	2-7-74	Appendix R to 7220-C-111 at site and used before it was approved
QF-3	16.6	Bechtel QC	1/16/74	2-20-74	Improper tagging of NCR's
QF-4	16.6	BECHTEL PROJ. SUPT.	1-16-74	2-19-74	WELDING ON LINER PLATE NOT DONE IN ACCORDANCE WITH REFERENCED PROCEDURE.
QF-5	16.6	BECHTEL PROJ. SUPT.	1-25-74	2-20-74	DISCREPANCY ON LEAK CHASE PRESSURE DECAY TEST PRESSURE
QF-6	16.7	QC SUPV.	1-23-74	3/27/74	CADWELD VOID COMPUTATION ERROR
QF-7	16.6	BECHTEL PROJ. SUPT.	2-6-74	3-5-74	UNCONTROLLED WELD ROD
QF-8	16.6	Bechtel PFQCE	2-19-74	3-20-74	Problems with the Champion Q A Manual
QF-9	16.6	Bechtel PFQCE	3-5-74	3-20-74	Problems with Bechtel QC cement receiving file for cement received on 6-27-73 thru 1-
QF-10	16.3	BECHTEL PROJ ENGR	3-28-74	4-29-74	WORK ON LINER PLATE NOT BEING DONE IN ACCORD WITH THE PSA
QF-11	16.7	Bechtel PFQCE	4/1/74	9/27/74	Document Control Deficiency
QF-12	16.7	Bechtel PFQCE	4/1/74	5/10/74	50.55(e) Reportability
QF-13	16.3.4	Bechtel Construction	5/16/74	6/10/74	Stainless pipe repeatedly uncovered
QF-14	16.3.4	Bechtel Construction	7/1/74	9/25/74	Material Stored Improperly
QF-15	16.3.6	Bechtel PFQCE	7-19-74	8-9-74	Vibrator Operators being used with no documentation of their qualifica
QF-16	16.3.6	BECHTEL PFQCE	7-19-74	9-10-74	SHALLOW GOUGES IN C-111-58 NOT REPAIRED PRIOR TO BLASTING & COATI
QF-17	16.3	Bechtel PFQCE, PFE QAE	7-19-74	7-31-74	Nonconforming material installed with no basis for installation documented.
QF-18	16.3.4	BECHTEL PROJ SUPT.	8-21-74	1-10-75	LOW HYDROGEN ROD PLACED IN COLD PORTABLE ROD OVENS.
QF-19	16.3.6	BECHTEL PFQCE	8-21-74	10-30-74	UNCERTIFIED WELD FILLER MATERIAL NOT HELD IN SEGREGATED STORAGE
QF-20	16.3.4	BECHTEL PROJ SUPT.	8-21-74	10-15-74	"FOR INFORMATION ONLY" DOCUMENT USED FOR QUALITY RELATED ACTIVITY.
QF-21	16.3	M'FQCS	8-21-74	9-9-75	ASME III QC MANUAL NOT IN ACCORDANCE WITH ASME CODE.
QF-22	16.3.6	BECHTEL PFQCE	8-21-74	9-19-74	EYE EXAM RESULTS MISSING FROM LEVEL PERSONNEL FILES.

Consumers Power Company

QA4-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-17-0-01	DE Horn	Bechtel QC	Subcontract's QCE's for Batch Plant and U.S. Testing Lab. not checking for latest revision to C-20B.	9/24/80	10/1/80
M-01-17-0-02	DE Horn	Bechtel QC	Scope of IR was changed without Level II approval, per PSP G-6-1 App. B "Instructions for Preparing and Processing the Inspection Record" Block 9.	9/24/80	10/1/80
M-01-17-0-03	DE Horn	Bechtel QC	Problems on the Supplementary Record or back of one - Surveillance Inspection Log - did not have revision dates of inspection criteria and SIL's were not made out to substantiate surveillance inspections signed off; also SIL's were not complete/correct.	9/25/80	10/1/80

Consumers Power Company

QA4-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGIN[illegible]ING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-16-0-01	D.E. HORN	BPCO CONSTR PROCEDURE.	COVERS ON TENDONS AT POSEYVILLE DO NOT HAVE IDENTIFICATION & TENDONS	9/5/80	10/1/80
M-01-16-0-02	D.E. HORN	BPCO Quality Control	COMPLETED POST TENSION QCIRS for Unit 2 had following concerns A) no initial block i.o. for QCE doing work, B) Calibrated	9/17/80	9/26/80
"			equip. entry left blank, C) Stressing card switched field head vs shop end for stressed end.	"	

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QA4-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-21-0-01	J.L.CORLEY	BPCO CONST&PROC.	PO's lacked reference to 10CFR part 21. FIELD PROCUREMENT	9.10.80.	
M-01-21-0-02	J.L.CORLEY	BPCO QC, PROCUREMENT	Offsite Q work - lack of QC signature	9.10.80	

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-20-0-01	J L CORLEY	BPCo CONSTRUCTION	Doc. control — WORK PRINTS require update	9.9.80	

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QAA-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-28-9-01	D.K. Martin	BPCo QC	Use of Vendor uncontrolled drawings for QC Inspection	8/13/80	9/8/80
M-01-28-9-02	D.K. Martin	BPCo QC	Voiding of QCIR's	8/13/80	8/13/80

Consumers Power Company

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
401-M-0-01	DREATING	ZACK	UNSIGNED MATERIAL TESTS REPORTS	8-8-80	

Consumers Power Company

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-13-9-01	KORafferty	BPCo LWFE	9,500 lbs filler metal returned from test booth improperly.	8/6/80	
M-01-13-9-02	KORafferty	BPCo LWFE	Rod warmers without calibration stickers.	8/6/80	
M-01-13-9-03	KORafferty	BPCo QA Receiving	E309-16 Electrode AEO #2490, PO #F-3037 in Vault without certs.	8/6/80	

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-11-0-01	RGW	Bechtel QC & Proj Engr	Density Tests Over 105%	8-4-80	10/14/80
M-01-11-0-02	RGW	Bechtel QC	Density Test - Difference in Elevation	8-4-80	10/14/80
M-01-11-0-03	RGW	Bechtel QC	Number of Passes Observed & Recorded	8-4-80	10/14/80
M-01-11-0-04	RGW	Bechtel QC & GeoTech	"Q" Placements not Being Observed	8-4-80	
M-01-11-0-05	RGW	Proj Engr	Compaction Effort	8-4-80	10/14/80
M-01-11-0-06	RGW	Proj Engr	GeoTech Approval of Soils Test Reports	8-4-80	10/14/80

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-09-0-01	JLCorley	Bechtel	(WFMC-1 vs FIW-1.120) Electrode Color Coding Requirements	7-15-80	
M-01-09-0-02	JLCorley	Bechtel	Electrode Control Heat/Lot #AEO-612 PO-F3037	7-15-80	16 SEPT 1980
M-01-09-0-03	JLCorley	Bechtel	WR6 not properly signed (T. Bishop)	7-15-80	16 7-15-80
M-01-09-0-04	JLCorley	Bechtel	CMTR not available (AEO-91 PO-F5913)	7-15-80	16 SEPT 1980
M-01-09-0-05	JLCorley	Bechtel	(Para 7.4d - FIW-1.120) Electrode control Heat/Lot #	7-15-80	16 7-15-80

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QA4-O

AUDIT FINDING REPORT LOG

PROJECTS, ENGI RING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-08-0001	KYNER	Bechtel CONST	Final readings on Megger Test Sheet Not corrected to 40°C	6-24-80	9-11-80

Consumers Power Company

QAh-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-05-0-01	D.K. MARTIN	Bechtel Project + Field Engineering	Remis in G-321D review	3/6/80	
M-01-05-0-02	D.K. MARTIN	Vendor	Signatures on QVD	3/6/80	6/27/80

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QA4-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGI[illegible]RING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-J1-02-0-01	D.K. Martin	Bechtel QA	Qualification of Liquid Penetrant Procedure	2/6/80	
M-01-02-0-02	D.K. Martin	Bechtel QA	Vacuum Box Test Time Held	2/6/80	7/17/80
M-01-02-0-03	D.K. Martin	Bechtel QA	Radigraph Density Requirements	2/6/80	

Consumers Power Company

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AUDIT FINDING REPORT LOG

PROJECTS, ENGI RING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M01-25-9-01	EL JONES	Bechtel Document Control	USE OF Identifying STAMP NOT IN Red IN Violation OF PARA 6.2 OF FPD-1.000	10/16/79	4/11/80
M01-25-9-02	EL JONES	Bechtel Document Control	OUT OF DATE Revisions OF "Work Prints" Found IN THE Work Locations	10/18/79	10/18/79

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-23-9-01	L.R. Howell	Bkg. QA	Welder Stamp missing	10-8-79	2-22-80
M-01-23-9-02	L.R. Howell	Bkg. QA.	No provisions for Level I criteria	10-8-79	

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QA4-0

AUDIT FINDING REPORT LOG

PROJECTS, ENGIN ING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-24-9-01	P.R. KYNER	Bechtel Construction	No procedure in effect for method being used to track instrumentation.	8/31/79	12/21/79

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M01-21-9-01	J.L. CORLEY	Bechtel CONSTRUCTION	Monthly Recall List for Recertification of M&T Equipment	7/26/79	1/28/80
M01-21-9-02	J.L. CORLEY	Bechtel CONSTRUCTION	Crimping Tool BPC-2398 (DAT) Calibration Failure to Expidite Para 5.1.2 of FPC-6.000	7/24/79	10/3/79

Consumers Power Company

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M01-20-9-01	E.L. JONES	Bechtel Field Engineering	TERMINATIONS MADE WITH TOOL LATER FOUND TO BE OUT OF CALIBRATION	7/10/79	11/31/80
M01-20-9-02	E.L. JONES	Bechtel Construction	Cable Not Properly Supported Inside Panel	7/10/79	12/10/79
M01-20-9-03	E.L. JONES	Bechtel QC	Cable Not Properly Identified Inside Panel	7/10/79	11/9/79
M01-20-9-04	E.L. JONES	Bechtel Construction	Loose Copper Strap As Possible Sharp Edge.	7/10/79	7/11/79
M01-20-9-05	E.L. JONES	Bechtel Field Engineering	IR's And Dwg E-900 Do Not Agree With Actual Installation.	7/10/79	

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AUDIT FINDING REPORT LOG

PROJECTS, ENG. RING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

APR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-19-S-01	DRIEATING	BECH QC	OPENINGS UNCOVERED ON EQUIPMENT	8-29-79	12-14-79

Consumers Power Company

QA4-C

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M01-18-9-01	GTB	BECHTEL QC AND CONSTRUCTION	FEMALE HEAD PRIMED WITH DRY FILM THICKNESS GREATER THAN SPECIFIED.	7/12/79	8/13/79
M01-18-9-02	GTB	BECHTEL QC	COATING OF REAR BRACKETTS WITHOUT SPECIFIED TIME BETWEEN COATS.	7/12/79	
M01-18-9-03	GTB	BECHTEL QC	QC IR #C-8.5C-227 DID NOT INCLUDE ALL REFERENCES REQUIRED.	7/12/79	8/13/79
M01-18-9-04	GTB	BECHTEL QC	IR INDICATED DEW POINT WITHIN 5°F OF SURFACE TEMP OF STEEL.	7/12/79	
M01-18-9-05	GTB	BECHTEL QC	PQCI DOES NOT PROVIDE FOR DOCUMENTATION OF TEST RESULTS, ETC.	7/12/79	8/13/79
M01-18-9-06	GTB	BECHTEL QC	PQCI C-8.50 DOES NOT PROVIDE FOR FILM THICKNES VERIFICATION ON FINAL COAT.	7/12/79	8/13/79
M01-18-9-07	GTB	BECHTEL QC	LACK OF QUANTATIVE TEST REQUIREMENTS IN PQCI	7/12/79	8/13/79

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AUDIT FINDING REPORT LOG

PROJECTS, ENGI. . .RING
AND CONSTRUCTION -
QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M01-17-9-01	GTB	BECHTEL CONST AND Q.C.	POST TENSION MATERIALS IN STORAGE, NOT IDENTIFIED FOR RETRIEVABILITY	MAY 31, 1979	7/18/79
M01-17-9-02	GTB	BECHTEL CONST AND Q.C.	POST TENSIONING MATERIALS, IN STORAGE, NOT INSPECTED	MAY 31, 1979	7/18/79

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-16-9-01	E.L. JONES	BECHTEL DOCUMENT CONTROL	OLD REVISIONS OF "WORK PRINTS" IN CONSTRUCTION AREAS NOT MARKED "VOID".	5/22/79	9/12/79
M-01-16-9-02	E.L. JONES	BECHTEL CONSTRUCTION	WORK PRINTS LOST OR MISSING FROM PERSONNEL THEY WERE ISSUED TO.	5/22/79	7/26/79
M-01-16-9-03	E.L. JONES	BECHTEL CONSTRUCTION	FAILURE TO COMPLETE ACTION ON "NEW DRAWING SIGN-OFF SHEET".	5/22/79	10/15/79
M-01-16-9-04	E.L. JONES	BECHTEL DOCUMENT CONTROL	FAILURE TO PERFORM A MONTHLY AUDIT OF WORK PRINTS AS REQUIRED BY FPD-3.000	5/22/79	9/12/79
M-01-16-9-05	E.L. JONES	BECHTEL CONSTRUCTION	APPLICABLE ATTACHMENTS MISSING FROM WORK PRINTS	5/22/79	10/24/79

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR NO.	AUDIT TEAM LEADER	ORG. RESP FOR CORRECTIVE ACTION	SUBJECT	DATE ORIGINATED	DATE CLOSED
M-01-14-9-01	LRH	Bechtel ENGR.	Welds on dogs	5-15-79	8-22-79
M-01-14-902	LRH	Bechtel ENGR	Welds across longitudinal axis	5-15-79	
M-01-14-9-03	LRH	Bechtel ENGR.	Providing Torque Range	5-15-79	6-19-80

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-13-9	M-01-13-9-01	R. OSTROWSKI	BECHTEL WELDG.	BECHTEL WELDG	BECHTEL WELDG	FINDING E-7018 ELECTRODES NOT CONTROLLED ACCORDING TO FIELD 1,120 C/A COMMITMENT By 4-16-79 C/A STATUS CLOSED	3-9-79	4-16-79	10-25-79
M-01-13-9	M-01-13-9-02	R. OSTROWSKI	BECHTEL QA	BECHTEL QA	BECHTEL QA	FINDING RECORD COPY OF WELDER QUALIFICATIONS NOT BE KEPT IN ACCORDANCE WITH BECHTEL PMCA. 7310 & 7321 C/A COMMITMENT By 4-16-79 C/A STATUS CLOSED (RE AUDIT 28 & 29 MAY 80)	3-9-79	4-16-79	16 JUN 80
						FINDING C/A COMMITMENT C/A STATUS			
						FINDING C/A COMMITMENT C/A STATUS			

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

APR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	APR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-12-9	M-01-12-9-01	E. L. J.	Bechtel QC	Bechtel QC	Bechtel QC	FINDING: INSPECTION RECORD DOES NOT REFLECT THE ACTUAL ROUTING OF CABLE OR ROUTING REFLECTED IN DWG. E-37 C/A COMMITMENT: Cable Repulled C/A STATUS: Closed	6/13/79	6/20/79	6/22/79
M-01-12-9	M-01-12-9-02	E.D.J.	Bechtel Constr. Bechtel QC	Bechtel Constr. Bechtel QC	Bechtel QC	FINDING: CABLES PRESSING AGAINST SHARP EDGES INSIDE MCC 2B55 C/A COMMITMENT: CABLES TO BE PROTECTED & TERMINATION FDSCT REVISED TO INSPECT FOR PROTECTION INSIDE PANELS/CABINETS C/A STATUS: Closed	6/13/79	6/22/79	6/22/79
M-01-12-9	M-01-12-9-03	E. L. J.	Bechtel Field Engineering	Bechtel Field Engineering	Bechtel Field Engineering	FINDING: CABLE ROUTING INDICATED IN E-37 REV. 25 DATED 2-7-79 IS NOT THE ACTUAL ROUTING OF THE CABLE. C/A COMMITMENT: DRAWING E-37 REVISED C/A STATUS: Closed	6/13/79	6/20/79	6/20/79
M-01-12-9	M-01-12-9-04	E. L. J.	Bechtel Construction	Bechtel Construction	Bechtel Construction	FINDING: FAILURE TO IDENTIFY VIAS ON SWITCHGEAR 1A05 AND 2A05. C/A COMMITMENT: See Below C/A STATUS: ALL VIAS ARE NOW MARKED ON TOP OF SWITCHGEARS	6/14/79	6/4/79	6/4/79

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-12-9	M-01-12-9-05	E. L. J.	Bechtel Field Engineering	Bechtel Field Engineering	Bechtel Field Engineering	FINDING: DRAWING E-37 Rev. 25 dated 28 Feb 79 Does Not Reflect Change In Routing of Cable As Approved By REM-1220. C/A COMMITMENT: Cable Routed Through Wrong Vias C/A STATUS: Cable Pulled Out And Will Be Repulled Thru Correct Vias As Indicated In Current Rev. Of E-37	3/15/79	5/22/79	5/22/79
M-01-12-9	M-01-12-9-06	E. L. J.	Bechtel QC	Bechtel QC	Bechtel QC	FINDING: Inspection Record Does Not Reflect The Actual Routing Of Cable. C/A COMMITMENT: Inspection Records Were Corrected And Re-Inspection Done C/A STATUS: Closed	3/15/79	6/20/79	6/20/79
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M01-11-9	M01-11-9-01	GTB	Bechtel QE.	Q.C.	Q.	FINDING: DEBRIS FOUND IN AREA OF CONCRETE PLACEMENT AS PLACING COMMENCED C/A COMMITMENT: REMOVE DEBRIS PRIOR TO PLACEMENT OF CONCRETE IN THAT AREA. C/A STATUS: CLOSED	3-19-78	3-19-78	3-19-78
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-07-9	M-01-07-9-01	PRK	Bechtel Constr.	Bechtel Eng.	Bechtel Eng.	FINDING: Assembly of Battery Racks indeterminate C/A COMMITMENT: Indeterminate at time of issue. C/A STATUS: Completed 4/16/79	2-20-79	4-16-79	4-16-79
M-01-07-9	M-01-07-9-02	PRK	Bechtel Constr.	Bechtel Eng.	Bechtel Eng.	FINDING: Battery bolts in intercell connectors not installed Per Instr. Manual. C/A COMMITMENT: Indeterminate at time of issue. C/A STATUS: Copy of TWX from Exide inserted in E12-53-1 (Installation Manual) until Addendum can be issued.	2-20-79	4/4/80	4/4/80
M-01-07-9	M-01-07-9-03	PRK	Bechtel Constr.	Bechtel Eng.	Bechtel Eng.	FINDING: No Hydrogen Monitoring system installed as required by FSAR. C/A COMMITMENT: Indeterminate atime of issue. C/A STATUS: Hydrogen Detector system is NON-Q ordered on P.O MR-J-212	2-20-79	4/4/80	4/4/80
						FINDING: C/A COMMITMENT: C/A STATUS:			

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-01-9	M-01-01-9-01	D.K. Martin	Bechtel/Construction Bechtel P/C	Bechtel/Construction Bechtel P/C	Bechtel/Construction Bechtel P/C	FINDING The FMR does not address specific quality requirements as stated in the reference drawing. C/A COMMITMENT By Feb 26, 1979. C/A STATUS Pending DKM COMPLETED ON March 2, 1979	Jan 19, 1979	March 2, 1979	March 2, 1979
M-01-01-9	M-01-01-9-02	D.K. Martin	Bechtel/Construction	Bechtel/Construction	Bechtel/Construction	FINDING MNR are not completed I/A/W FPG-9.000 para 5 C/A COMMITMENT By Feb 26, 1979 DKM All recommended corrective action has been agreed to but a Response is due March 2, 1979. DKM C/A STATUS Completed 11/13/79	Jan 23 1979	May 7, 1979	Sept 11, 1979
M-01-01-9	M-01-01-9-03	D.K. Martin	Bechtel/Construction	Bechtel/Construction	Bechtel/Construction	FINDING FMR's are not completed I/A/W FPG-8.000 para 3.3. C/A COMMITMENT By Feb 26, 1979 DKM All recommended actions have been completed except Number 3. March 2, 1979 DKM C/A STATUS Completed March 9, 1979 Final verification March 22, 1979 DKM	Jan 25 1979	March 9, 1979	March 9, 1979
M-01-01-9	M-01-01-9-04	D.K. Martin	Bechtel P/C	Bechtel P/C	Bechtel P/C	FINDING QCE Certification folders are not I/A/W SF/PSP 8.1 para 8.2.2 C/A COMMITMENT By Feb 26, 1979 C/A STATUS Completed March 2, 1979	Jan 25 1979	March 2, 1979	March 2, 1979

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AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-01-9	M-01-01-9-05	D.K. Martin	Bechtel Construction Bechtel Q/C	Bechtel Construction Bechtel Q/C	Bechtel Construction Bechtel Q/C	FINDING FMR for Repair/Rework offsite is not completed per PAP FIG-8.100 C/A COMMITMENT By Feb 26, 1979 C/A STATUS Completed March 2, 1979	Feb 5 1979	March 2, 1979	March 8 1979
						FINDING C/A COMMITMENT C/A STATUS			
						FINDING C/A COMMITMENT C/A STATUS			
						FINDING C/A COMMITMENT C/A STATUS			

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
M-01-05-9	01	RGW	J.L. MANTA	→		FINDING: Incorrect verification of material received and manufacturers Certification.	2/7/79	2/7/79	2/7/79
						C/A COMMITMENT: Corrected during course of audit			
						C/A STATUS: Closed 2/7/79			
M-01-05-9	02	RGW	J.L. MANTA	→		FINDING: Obsolete Drawing revision on stick file in field	2/7/79	2/7/79	2/19/79
						C/A COMMITMENT: Replace drawing with correct revision			
						C/A STATUS: DRAWING ISSUED TO FIELD PRIOR TO CLOSE OF AUDIT CLOSED			
						FINDING			
						C/A COMMITMENT			
						C/A STATUS			
						FINDING			
						C/A COMMITMENT			
						C/A STATUS			

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PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-50-8	01-50-8-04	PR K	Bechtel QC	→	→	FINDING: SIX DR's ON CONDUIT INSTALLATIONS NOT PROPERLY COMPLETED. C/A COMMITMENT: WILL BE CORRECTED DURING COURSE OF THIS AUDIT. C/A STATUS: CLOSED 1/12/79	8/12/21	8/21/1	8/21/1
01-51-8	01-51-8-01	D.R. KEATING	B & W	→	→	FINDING: VALVE END COVER NOT IN PLACE C/A COMMITMENT: CORRECT CONDITION AND HOLD TRAINING FOR CRAFTS C/A STATUS: CLOSED 12/12/78	8/1/21	8/8/21	8/11/21
01-04-9	01-04-9-01	G TB	BECHTEL CONSTR. & Q.C.	→	→	FINDING: STORAGE OF MATERIAL IN CONTROLLED AREA WITHOUT PROPER IDENTIFICATION C/A COMMITMENT: CORRECT STORAGE CONDITION C/A STATUS: CORRECTED PRIOR TO ISSUE	8/11/10	8/19/10	8/15/10
						FINDING: C/A COMMITMENT: C/A STATUS:			

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AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-48-8	01-48-8-11	PRK	Bechtel Engineering			FINDING: Hold TAGS ON ELECTRICAL PENETRATIONS ARE COVERED AND INCONSPICUOUS C/A COMMITMENT: INSTALL HOLD TAGS ON OUTBOARD SIDE OF PENETRATIONS, MAKE INBOARD TAGS MORE CONSPICUOUS C/A STATUS: CLOSED 1/12/79	8/31/78	9/21/78	9/26/78
01-50-8	01-50-8-01	PRK	Bechtel QC			FINDING: CONDUITS 2AJB033 AND 2AJB034 INSTALLED AND NO PREREQUISITES HAD BEEN SIGNED OFF. C/A COMMITMENT: INSPECTION RECORDS WILL BE OPENED PRIOR TO COMPLETION OF AUDIT. C/A STATUS: CLOSED 1/12/79	8/31/78	9/21/78	9/21/78
01-50-8	01-50-8-02	PRK	Bechtel QC			FINDING: CONDUIT 2AE060 WAS NOT INSTALLED IN ACCORDANCE WITH DRAWING E-36 C/A COMMITMENT: WILL DETERMINE IF DOCUMENTS OR THE ACTUAL INSTALLATION IS INCORRECT AND TAKE ACTION TO CORRECT. C/A STATUS: THESE DR's WRITTEN BY BECHTEL QC - ACTION BEING TAKEN TO CORRECT DRAWING E-36, THE INSPECTION RECORD, AND THE ACTUAL INSTALLATION.	8/31/78	9/26/78	9/26/78
01-50-8	01-50-8-03	PRK	Bechtel QC			FINDING: INSPECTION RECORD 1AC038 UPDATED FROM INSPECTION RECORD E-1.0-129. E-1.0-129 DOES NOT INCLUDE 1AC038 C/A COMMITMENT: WILL BE CORRECTED DURING COURSE OF THIS AUDIT C/A STATUS: CLOSED 1/12/79	8/31/78	9/21/78	9/21/78

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AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-48-8	01-48-8-08	PRK	BECHTEL PROCUREMENT	12/19/75	12/19/75	FINDING: Documentation missing from NCR; required by Bechtel Proc. SF/PSP G-3.2 C/A COMMITMENT: Reissue NCR 1216 with documentation. C/A STATUS: Corrected prior to issue.	12/19/75	12/19/75	12/19/75
01-48-8	01-48-8-09	PRK	Bechtel, ENGINEERING	→	→	FINDING: Spec. 7220-E-20 para. 7.3.4 of D-3 requires periodic test. C/A COMMITMENT: Issue procedure or delete requirement C/A STATUS:	12/19/75	3/19/76	5/2/79
01-48-8	01-48-8-10	PRK	Bechtel, ENGINEERING	→	→	FINDING: Bechtel Constr using uninsulated lugs (Spec. change authorized by REM4 TWX) No traceability of material. C/A COMMITMENT: Provide traceability C/A STATUS:	12/19/75	3/19/76	5/17/79
01-49-8	01-49-8-01	GTB	Bechtel Const. & QC	→	→	FINDING: Welded studs omitted from offset beam in Block Wall #25 Aux. Bldg. @ El 651'-6" C/A COMMITMENT: QC and F.E. told about proper clarification method and an NCR (#1969) documenting condition to be dispositioned by Project Engr, clarification for opposite side to follow. C/A STATUS: Closed	12-21-78	3-23-79	3-21-79

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AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-48-8	01-48-8-04	PRK	Bechtel QC	→	→	FINDING: No inspection requirements for vendor wiring modification, performed by Bechtel. C/A COMMITMENT: Revise QCI E-6.6 to include inspection criteria. C/A STATUS: ~~Corrected prior to issue~~ Completed 1/12/79	12/19/78	1/12/79	1/18/79
01-48-8	01-48-8-05	PRK	Bechtel QC	→	→	FINDING: PQCI E-6.6 para 3.4 does not reflect the actual manner in which continuity is being taken. C/A COMMITMENT: Revise para 3.4 of PQCI C/A STATUS: Completed 1/12/79	12/19/78	1/12/79	1/19/79
01-48-8	01-48-8-06	PRK	Bechtel QC	12/19/78	12/19/78	FINDING: QC Hold tag not installed on penetration 2E144 C/A COMMITMENT: Attach hold tag. C/A STATUS: Corrected prior to issue.	12/19/78	12/19/78	12/19/78
01-48-8	01-48-8-07	PRK	Bechtel QC	12/19/78	12/19/78	FINDING: PQCI E-6.6 paragraph 2.5 not signed for acceptance by W.E. C/A COMMITMENT: Submit to welding QCE's for signature. C/A STATUS: Corrected prior to issue.	12/19/78	12/19/78	12/19/78

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AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-46-S	01-46-S-05	WHB	Bechtel QE & F.E.			FINDING: Electrical Penetrations inadequately protected C/A COMMITMENT: 11/30/78 C/A STATUS: Completed 1/9/79	11/1/78	1/9/79	12/15/78
01-48-8	01-48-8-01	PRK	Bechtel QC	12/19/78	12/19/78	FINDING: SMALL ERRORS IN ENTRIES MADE IN Electrical QCIR's for Electrical Penetrations. C/A COMMITMENT: Correct errors in QCIR's Audited. C/A STATUS: Corrected at time of issue.	12/19/78	12/19/78	12/19/78
01-48-8	01-48-8-02	PRK	Bechtel QC	12/19/78	12/19/78	FINDING: PQCI E-C.6 para. 2.5 (Welding Engineer Acceptance Block) marked N/A C/A COMMITMENT: Correct para. 2.5 to reflect W.E. Acceptance. C/A STATUS: Corrected at time of issue.	12/19/78	12/19/78	12/19/78
01-48-8	01-48-8-03	PRK	Bechtel QC	12/19/78	12/19/78	FINDING: Information missing from QCIR Documents. C/A COMMITMENT: Locate missing documentation and enter on IR. C/A STATUS: Corrected prior to issue.	12/19/78	12/19/78	12/19/78

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AUDIT REPORT	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
from 01-47-8	01-47-8-04	DRK	ZACK QC			FINDING: NO INSTRUCTIONS FOR USE OF FORM C/A COMMITMENT: C/A STATUS: THIS FINDING COMBINED WITH 01-47-8-03 NUMBERS REASSIGNED.	25 NOV 78		
01-47-8	01-47-8-10	DRK	Zack QC		→	FINDING: Storage Requirements for HVAC Ducts & Equipment C/A COMMITMENT: CORRECT DISCREPANCIES C/A STATUS: CLOSED 11-9-78	2-NOV-78	11-9-78	11-9-78
01-47-8	01-47-8-10	DRK	Zack QC		→	FINDING: Improper Form completion (Missing Dwg Rev. Nos) C/A COMMITMENT: CORRECT DOCUMENTS C/A STATUS: CLOSED 11-9-78	2-NOV-78	11-9-78	11-9-78
01-47-8	01-47-8-10	MHS	BRNFL QC & F.E.		→	FINDING: Maintenance & Inspection for DHRP lapsed C/A COMMITMENT: 11/30/78 C/A STATUS: CLOSE 3/2/79	8-1-11	3/5/79	Attached to 01-47-8-03

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AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-96-8-03	01-96-8-03	WHB	BRANCH F.E. DOC.	BECHTEL QA	BECHTEL RE QC	FINDING: IDENTIFICATION OF ITEM INSPECTED NOT DOCUMENTED C/A COMMITMENT: 11-30-78 C/A STATUS: 2/15/79	10/5/78	2/15/79	2/15/79
01-47-8-01	01-47-8-01	DRK	ZACK QC		→	FINDING: TEST REPORT DOCUMENTATION C/A COMMITMENT: CORRECT ITEMS C/A STATUS: CLOSED	8 NOV 78	11-10 78	11-10 78
01-47-8-02	01-47-8-02	DRK	ZACK QC		→	FINDING: PERSONNEL RECORDS NOT AVAILABLE C/A COMMITMENT: PROVIDE RECORDS C/A STATUS: CLOSED	8 NOV 78	11-10 78	11-10 78
01-47-8-03	01-47-8-03	DRK	ZACK QC		→	FINDING: LACK OF PROCEDURE FOR ACTIVITIES INCLUDING TEMPERATURE CHECK ON ROD OVENS & WARMERS C/A COMMITMENT: C/A STATUS: CLOSED	8 NOV 78	11-24 78	16 FEB 79

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Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

APR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	APR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-44-8-10	01-44-8-01	PRK	Bechtel QC	→	→	FINDING: SEPARATION OF CABLE TRAYS FROM MCC's C/A COMMITMENT: Bechtel Letter LAD 685 Item 522 dated 2/12/79 C/A STATUS: Bechtel Letter LAD 685 Item 522 dated 2/12/79	8/10/01	2/12/79	2/12/79
01-44-8	01-44-8-02	PRK	Bechtel QC	→		FINDING: TORQUING OF BOLTS FOR SEISMIC SUPPORTS C/A COMMITMENT: 10/03/78 C/A STATUS: COMPLETED 10/03/78	10/10/01	10/3/78	10/3/78
01-44-8	01-46-8-01	WHB	Brentel F.E. & QC	Bechtel QA	Bechtel F.E. & QA/QC	FINDING: 4160 MCC DAMAGED WITH NO DOCUMENTED EVIDENCE C/A COMMITMENT: 11/30/78 C/A STATUS: 2/15/79	10/10/01	2/15/79	2/15/79
01-46-8-02	01-46-8-02	WHB	Brentel F.E. & QC	Bechtel F.E. QA/QC		FINDING: MAINTENANCE & INSPECTION ON SPACE HEATERS HAS LAPSED C/A COMMITMENT: 11/30/78 C/A STATUS: 2/15/79	10/27/78	2/15/79	2/15/79

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO.	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-36-8-S	01-36-8-01	[illegible]	FLEET E.E. WORK PRINTS	BECHTEL F.E.	BECHTEL F.E.	FINDING: ELECTRICAL WORK PRINTS NOT CONTROLLED C/A COMMITMENT: revised document system by development of the ATMS. C/A STATUS:	9/17/93	11/17/93	12/29/93
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
REPORT	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
rom 1-35-8	01-35-8-01	DRM	BECHTEL QA/QC	11/15/78		FINDING: Reference Material C/A COMMITMENT: OBTAIN REFERENCE MAT'L, JUSTIFY ANY INSERTIONS & IMPLEMENT C/A STATUS: Final Response 11/30/78 Completed DRM	9/21/78	11-15 78	12/05/78
1-35-8	01-35-8-02	DRM	BECHTEL ENG/QC	11/15/78		FINDING: Engineering Review of G-3210 C/A COMMITMENT: Response by 11/30/78 QC will implement response log and review Procurement Specs for additional ones requiring review. The AFR has been entered in a closed tracking system. C/A STATUS: Final response dated 11/30/78 Completed DRM	9/22/78	11-15 78	12/01/78
1-35-8	01-35-8-03	DRM	BECHTEL QC	11/15/78		FINDING: No Sampling Plan Approved C/A COMMITMENT: Response by 11/20/78 Partial Response 11/15/78 Response 12/1/78 Supplemental Response 1/2/79 C/A STATUS: Completed DRM	9/22/78	11-15 78	1/2/79
						FINDING: C/A COMMITMENT: C/A STATUS:			

Attachment B

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-30-8	01-30-8-02	DKM	BECHTEL QC	→	→	FINDING: Random pipe unidentifiable C/A COMMITMENT: CORRECT CONDITION C/A STATUS: ~~Interim~~ Response 11/13/78 Complete DKM	7/26/78	9/18/78	11/13/78
01-30-8	01-30-8-03	DKM	BECHTEL QC	→	→	FINDING: Undeterminante Paint on SS pipe C/A COMMITMENT: EVALUATE AND CORRECT C/A STATUS: Interim Response 11/6/78 Completed DKM	7/27/78	11/6/78	2/1/79
01-37-8	01-37-8-01	LLH	Bechtel QC	Bechtel Constr.	Bechtel Constr.	FINDING: Material Improperly Color coded C/A COMMITMENT: Correct improper color coding C/A STATUS: Closed	8-28-78	9/1/78	9/6/78
01-37-8	01-37-8-02	R.O.	Bechtel QC	→	→	FINDING: Unidentified WELD ROD IN ROD room C/A COMMITMENT: APPLY COLOR CODE AND ID C/A STATUS: CLOSED 9-6-78	8-29-78	9-6 78	9-6 78

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Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-33-8	01-33-8-02	GTB	BECHTEL CONST AND QC B&W QC	SAME	SAME	FINDING: CONCRETE BASE NOT CLEANED OF GREASE - R.P.V. SOLE PLATE C/A COMMITMENT: SEE AFR C/A STATUS: COMPLETED	8/8/78	8/17/78	9/19/78
01-33-8	01-33-8-01	WHB	BECHTEL QC	BECHTEL B&W		FINDING: conduits not meeting requirements C/A COMMITMENT: . con C/A STATUS:	7/24/78	10/10/78	11/17/80
01-33-8	01-33-8-03	WHB	BECHTEL QC	BECHTEL B.E.		FINDING: conduits not color coded in accordance with requirement C/A COMMITMENT: C/A STATUS:	7/24/78	9/18/78	9/18/78
01-30-8	01-30-8-01	DXM	BECHTEL QC	→		FINDING: Random pipe with Caps off C/A COMMITMENT: CORRECT C/A STATUS: Received response 9/19/78 Completed DXM	7/28/78	9/18/78	11/20/78

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Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01/31/78	01/31/78/01	DRK	Mech. Systems Q.A.	to be determ. by 8/30/78		FINDING: Unsigned & Unapproved Certs. C/A COMMITMENT: Obtain corrected copies C/A STATUS: Closed	7/14/78	9/12/78	11/3/78
01/31/78	01/31/78/02	DRK	Mech. Systems QA	to be determ. by 9/30/78		FINDING: Vendor documentation unsatisfactory C/A COMMITMENT: Updated docs will be provided by vendor C/A STATUS: closed	7/14/78	9/12/78	10/23/78
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-24-8	01-24-8-001	WHB	BECHTEL QA	BECHTEL QA	BECHTEL QA	FINDING: NO DOCUMENTATION FOR 500V MEGGER TEST FOR S-201 PANELS (QUD) C/A COMMITMENT: C/A STATUS:	6/23/78	8/1/78	8/1/78
01-24-8	01-24-8-002	WHB	BECHTEL QA	BECHTEL QA	BECHTEL QA	FINDING: NO CERTIFICATION OR DOCUMENTATION FOR "HEAT LOAD" CALCULATIONS IN (QUD) PACKAGE C/A COMMITMENT: C/A STATUS:	6/23/78	9/1/78	9/1/78
01-24-8	01-24-8-003	WHB	BECHTEL QA	BECHTEL QA	BECHTEL QA	FINDING: NO TEST DOCUMENTATION 7.1.1, 7.1.3, 7.1.4, 7.1.6, 7.1.7 IN QUD PACKAGE C/A COMMITMENT: C/A STATUS:	6/23/78	9/22/78	9/22/78
01-33-8	01-33-801	GTB	BECHTEL CONST. AND Q.C.	SAME	SAME	FINDING: INSUFFICIENT FORM ON GROUTING OF QUENCHER BASE C/A COMMITMENT: SEE AFR C/A STATUS: COMPLETED	7/18/78	7/11/78	7/11/78

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMMIT	C/A IMPL		FINDING	C/A COMMIT	C/A IMPL
from 11/20/78	01-20-8-03	RK	BEH QC	6-9	6-13	FINDING: NDE REPORT WELD IDENTIFICATION C/A COMMITMENT: CORRECT RECORDS C/A STATUS: (CLOSED) 6-13-78	5/23/78	6-9-78	6-13-78
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			
						FINDING: C/A COMMITMENT: C/A STATUS:			

Attachment 5
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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01/20/78	01/20/78/01	DLK	Mech. QC	Mech. QC	Mech. QC	FINDING: Records cannot be retrieved C/A COMMITMENT: Locate subject records C/A STATUS: closed	5/23/78	6/13/78	6/13/78
01/20/78	01/20/78/02	DLK	Mech. Const. QC	Mech. Const. QC	Mech. Const. QC	FINDING: Shoddish work orders improperly prepared C/A COMMITMENT: Work orders will be revised C/A STATUS: Closed	5/23/78	7/13/78	7/7/78
01/20/78	01/20/78/04	DLK	Mech. Const.	Mech. Const.	Mech. Const.	FINDING: Fabrication of Cl. 2 hangers unclear C/A COMMITMENT: Modify Spec. M-393 to clarify intent C/A STATUS: closed	5/23/78	6/7/78	6/7/78
01/20/78	01/20/78/05	DLK	Mech. Const.	Mech. Const.	Mech. Const.	FINDING: Indecipherable welder I.D. C/A COMMITMENT: I.D. system will be revised C/A STATUS: closed	5/23/78	6/27/78	7/7/78

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

APR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF		
AUDIT REPORT NO.	APR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
01-17-8	01-17-8-01	DRK	Bech. Const.	Bech. Const.	5/24/78	FINDING: Exit Signs Missing C/A COMMITMENT: Conditions will be corrected C/A STATUS: Closed	5/2/78	5/3/78	5/24/78
01-17-8	01-17-8-02	DRK	Bech. Const.	Bech. Const.	5/24/78	FINDING: Obstructive traffic in proximity of equip. C/A COMMITMENT: Protective enclosures will be provided when laborers return to work. C/A STATUS: Closed	5/2/78	5/3/78	8/9/78
01-17-8	01-17-8-03	DRK	Bech. Const.	Bech. Const.	5/24/78	FINDING: Unmarked storage area C/A COMMITMENT: Signs will be erected when laborers return C/A STATUS: Closed	5/2/78	5/3/78	8/9/78
						FINDING: C/A COMMITMENT: C/A STATUS:			

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION: AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	ORGANIZATION RESPONSIBLE FOR: FINDING	C/A COMM	C/A IMPL	STATEMENT OF:	DATE OF: FINDING	C/A COMM	C/A IMPL
03-26-8	06	~~Harold~~ Terry Corley ~~Stephens~~	B&W	B&W QC		FINDING: TIG ELECTRODES ARE NOT STORED IN WELD ROD STORAGE ROOM C/A COMMITMENT: STORE AND ISSUE TIG ELECTRODES UNDER CONTROLLED CONDITIONS. INSTRUCT ROD ROOM PERSONNEL IN THE MEANING OF THE COLOR CODE ON TIG ELECTRODES C/A STATUS: ~~Finding Withdrawn~~ KOR COMPLETED	22 JUNE 78	22 JUNE 78	12 JAN 79
03-26-8	07	~~Harold~~ Terry Corley ~~Stephens~~	B&W	B&W QC		FINDING: R.T. FILM FOR WELD 2CAA-20-9 INDICATES PROBLEMS IN PROCESSING, SCREEN CARE, AND REVERSE PLACEMENT OF IDENTIFICATION. C/A COMMITMENT: FILM PROCESSING TO BE IMPROVED, ACCEPTABLE SCREENS OBTAINED, AND IDENTIFICATIONS PLACED WITH MORE CARE C/A STATUS: COMPLETED	22 JUNE 78	22 JUNE 78	9 AUG 78
01-29-8	01	TERRY CORLEY	ZACK QC	ZACK QC		FINDING: RECORDS FOR QC PERSONNEL ARE INCOMPLETE C/A COMMITMENT: RECORDS TO BE COMPLETED AND MADE AVAILABLE FOR REVIEW C/A STATUS: ~~Procedure QWQ100 Rev 3 implemented~~ ~~QWP100 Rev 2~~	7 JULY 78	7 JULY 78	7 JULY 78
01-29-8	02	TERRY CORLEY	ZACK QC	ZACK QC		FINDING: WELD PROCEDURE QCP-1 STAMPED VOID AND SHEETS MISNUMBERED C/A COMMITMENT: REVIEW FOR ADEQUACY AND APPROVE FOR RELEASE C/A STATUS: COMPLETED	7 JULY 78	7 JULY 78	7 JULY 78

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO.	AFR NO.	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
03-26-8-	02	[illegible]	B&W	B&W QC		FINDING: WELD STOPS NOT BEING GROUND AS REQUIRED BY B&W PROCEDURE 9-WP-100 C/A COMMITMENT: WELDING IS BEING DONE ACCORDING TO PROCEDURE PENDING POSSIBLE REVISION OF THE PROCEDURE. C/A STATUS: Implemented 9WP100 Rev 2 COMPLETED	22 JUNE 78	22 JUNE 78	12 JAN 79
03-26-8	03	[illegible]	B&W	B&W QC		FINDING: NCR LOG NOT BEING PROPERLY CLEARED AND NO MONTHLY REPORT GENERATED AS REQUIRED BY B&W PROCEDURE 9-QPP-11 C/A COMMITMENT: NCR LOG TO BE KEPT CURRENT AND THE REQUIRED REPORTS ISSUED C/A STATUS: Reply received 8-29-78 COMPLETED	22 JUNE 78	22 JUNE 78	14 DEC 78
03-26-8	04	[illegible]	B&W	B&W QC		FINDING: P.T. & M.T QUALIFICATION PROCEDURES DO NOT REFERENCE THE TEST BLOCK USED. C/A COMMITMENT: B&W COPLEY OFFICE TO TAKE REQUIRED ACTION C/A STATUS: B&W did not agree FINDING CLOSED W/O ACTION REQUIRED	22 JUNE 78	22 JUNE 78	16 SEP 80
03-26-8	05	[illegible]	B&W	B&W QC		FINDING: MONTHLY REVIEW OF FORM PDS 32240 ~~TO BE LOCATED~~ OR NOT DOCUMENTED AS REQUIRED BY PROCEDURE 9-WG-102 C/A COMMITMENT: INITIATE A SIGNATURE BLOCK ON FORM PDS 32240 OR ESTABLISH A LOG OF MONTHLY REVIEWS. C/A STATUS: B&W did not agree COMPLETED	22 JUNE 78	22 JUNE 78	15 JAN 79

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Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMP	C/A IMPL		FINDING	C/A COMP	C/A IMPL
F-78-14	01	WHB	BECHTEL F.E. & QC.	BECHTEL QA & QC		FINDING: NO DOCUMENTED GUIDANCE OF MAINTENANCE AND INSPECTION PERFORMED FOR ELECTRICAL EQUIPMENT BEING TEMPORARILY PLACED C/A COMMITMENT: C/A STATUS:	3/28/78	4/3/78	8/3/78
F-78-N	02	WHB.	BECHTEL F.E. & QC	BECHTEL QA & QC		FINDING: NCR HOLD TAGS REMOVED FROM REACTOR SPRAY PUMP MTRS. 9 PUMPS (NCR 1236) C/A COMMITMENT: C/A STATUS:	3/28/78	8/3/78	8/3/78
01-18-8-[redacted]	01	MFD	BECHTEL QC	BPCo QA & QC		FINDING: CADWELDER NOT QUALIFIED C/A COMMITMENT: BPCo NCR # 1327 C/A STATUS: Closed	5/3/78	4/25/78	4/25/78
03-26-8	01	JCRAFT CORDELL	B&W	B&W QC		FINDING: WELD SYMBOLS NOT BEING STAMPED ADJACENT TO WELD AS REQUIRED BY B&W PROCEDURE 9WG 101 C/A COMMITMENT: CHANGE PROCEDURE 9 WG 100 (Rev 3 implemented) C/A STATUS: COMPLETED	22 JUNE 78	22 JUNE 78	20 OCT 78

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AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

APR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	APR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
F-78-2	01-2-8-04	DRK	BECH CONST →		→	FINDING: UNCAPPED FILLED HEAD PENETRATIONS C/A COMMITMENT: CAP FILLED HEADS C/A STATUS: CLOSED 3-13-78	3-13-78	3-13-78	3-13-78
F-78-2	01-2-8-05	DRK	BECH CONST →		→	FINDING: IMPROPER PIPE HANGER WELDING C/A COMMITMENT: TO BE DETERMINED BY 4-9-78 C/A STATUS: CLOSED 4-19-78	3-13-78	4-9-78	4-19-78
F-78-2	01-2-8-06	DRK	BECH CONST →		→	FINDING: IMPROPER FORM USED FOR FIELD CHANGE REQUEST C/A COMMITMENT: TO BE DETERMINED BY 4-9-78 C/A STATUS: CLOSED 4-25-78	3-13-78	4-9-78	4-25-78
F-78-2	01-2-8-07	DRK	BECH CONST →		→	FINDING: PIPE HANGER GROUTED ANCHOR BOLTS AND EXPANSION ANCHORS SPECIFICATION AND INSPECTION SPECIFICITY C/A COMMITMENT: TO BE DETERMINED BY 4-9-78 C/A STATUS:	3-13-78	4-9-78	

Consumers Power Company

AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

AFR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF:		
AUDIT REPORT NO	AFR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
F-78-6	01-A-6C	DRK	BECH CONST	→	→	FINDING: F-10 FORM ON AUX BLDG CRANE NOT ISSUED C/A COMMITMENT: ISSUE F-10 FORM C/A STATUS: CLOSED 2-28-78	2-24-78	2-24-78	2-28-78
F-78-2	01-28-01	DRK	BECH CONST	→	→	FINDING: IMPROPERLY SUPPORTED AND HANDLED NUCLEAR SERVICE VALVES C/A COMMITMENT: TO BE DETERMINED BY 4-4-78 C/A STATUS: CLOSED 6-5-78	3-13-78	4-4-78	6-5-78
F-78-2	01-2-8-02	DRK	BECH CONST	→	→	FINDING: CARBON STEEL CHAIN IN DIRECT CONTACT WITH STAINLESS STEEL PIPE C/A COMMITMENT: TO BE DETERMINED BY 4-4-78 C/A STATUS: CLOSED 4-12-78	3-13-78	4-4-78	4-12-78
F-78-2	01-2 8-03	DRK	BECH CONST	→	→	FINDING: LOOSE AND INADEQUATE COVERS ON NUCLEAR SERVICE VALVES C/A COMMITMENT: TO BE DETERMINED BY 4-4-78 C/A STATUS: CLOSED 4-12-78	3-13-78	4-4-78	4-12-78

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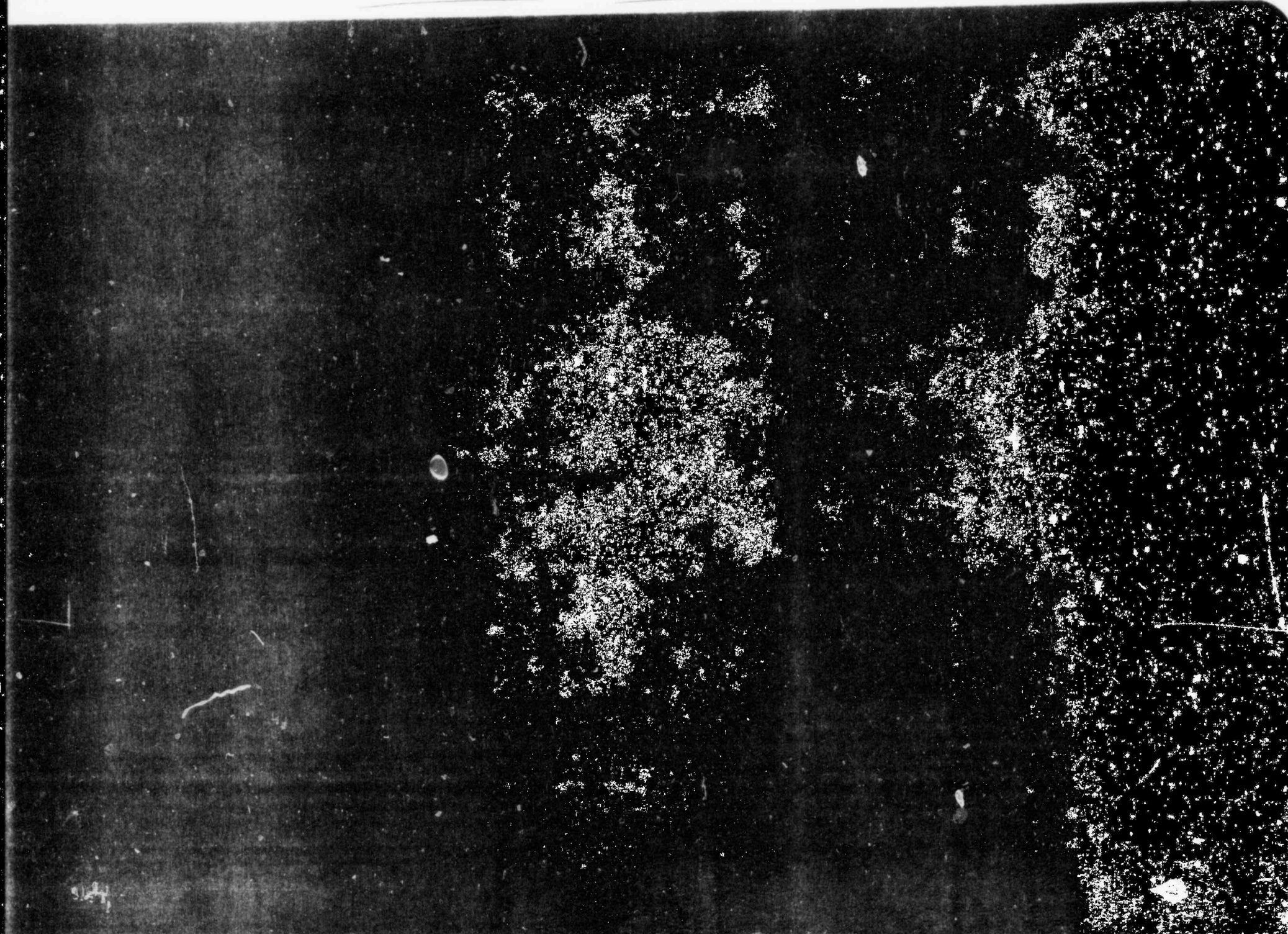
AUDIT FINDING REPORT LOG

PROJECTS, ENGINEERING AND CONSTRUCTION - QUALITY ASSURANCE DEPARTMENT

APR IDENTIFICATION			ORGANIZATION RESPONSIBLE FOR:			STATEMENT OF:	DATE OF		
AUDIT REPORT NO	APR NO	AUDIT TEAM LEADER	FINDING	C/A COMM	C/A IMPL		FINDING	C/A COMM	C/A IMPL
F-78-1	1	WHB	BECHTEL FIELD	BECHTEL FIELD	BECHTEL FIELD	FINDING: TECHNICAL SPECIFICATION NOT ADEQUATE TO MEET ASME PSAR REQUIREMENT. C/A COMMITMENT: REVISE TECHNICAL SPECIFICATION AND FIELD MODIFY PANELS C/A STATUS: waiting F-201 panel modification APR closed on 3/13/78	2/14/78	4/15/78	4/15/78
~~F-78-2~~	~~2~~	~~GTB~~	~~BECHTEL QC~~	~~BECHTEL QA~~	~~BECHTEL QA~~	FINDING: [illegible] and Slag Inst on Caldwell V. 2-74-01-IW132 C/A COMMITMENT: [illegible] IW132 C/A STATUS: NO FINDING 2-28-78			
F-78-3	C1	GTB	BECHTEL QC	BECHTEL QA	BECHTEL QA	FINDING: DEBRIS WITHIN THE LIMITS OF CONCRETE PLACEMENT C/A COMMITMENT: COMM. RESPONSE DUE MARCH 19, 1978 C/A STATUS: REVIEWED WRITTEN RESPONSE 3-20-78 CLOSED	2-19-78	3-6-78	3-6-78
F-78-5	01	GTB	BECHTEL QC	BECHTEL QA	BECHTEL QA	FINDING: VERTICAL C. J. NOT PROPERLY WETTED PRIOR TO CONCRETE PLACEMENT C/A COMMITMENT: COMM. RESPONSE DUE MARCH 19, 1978 C/A STATUS: REVIEWED WRITTEN RESPONSE 3-20-78 CLOSED	2/19/78	3-6-78	3-6-78

RE: Midland Consumers Testimony - 2/7 To 7/17/80



For me "reasonable assurance" is a difficult phrase!

(1)

Based on my assessment of Consumers past performance I am not as comfortable as Ms. Kapple on providing "reasonable assurance".

I would feel better if certain conditions or additional provisions are instituted.

(1) Consumers has testified that they are aware of the additional needs in staffing for the remedial ~~action~~ foundational work. Consumers needs to identify precisely the role ~~of each~~ and capability of each

(2) I have recommended to NRC Management that the NRC employ a full time resident to observe, inspect & provide an independent review of the in progress remedial work thereby providing the NRC with continuous information of the developments of the remedial work - starting with the dewatering sample installation, continuous monitoring of structure, preloading of the BWST valve pits, underpinning the Auxiliary Bldg & Feedwater valve pits, and piping bedded in the fill -

QA comprises all those planned & systematic actions necessary to provide adequate confidence that a structure, system or component will perform satisfactorily in service —" ref 10CFR50 App B - Intro.

therefore "QA" = "Common Sense"

For example, Criterion 7 - Control of Purchased Material

is speaks to identifying the source & quality of the material

Criteria 3 - Design Control

identifies design interfaces & coordination among participating design organizations

"Common Sense"

(3) the third item & perhaps the most important one of the day - the requirement of the Chief Executive officer (Mr. Selby) of Consumers to report periodically to NRC management the current developments of the remedial ~~the~~ foundation work, & identify the goals for the reporting period & the achievements & items not accomplished & those items specifically not accomplished as a result of ~~problems with~~ problems with design controls or field controls). In other words, Management by objectives. this would hold the corporate officer directly responsible & accountable.

Give # account for defeat

9 indicates how magnet is performing

~~Not~~ six months - preventive Costs

How much to spell How to do the job Correct.

NRC ← should FINDING's based on

that quarterly meeting - Close the loop

written a report & hold NRC

accountable

Applicant got the burden / :: 2 Billion in the ground:

It's his job, where the hell is he!

Applicatn was ~~confronted~~

They have come a long way

Scars are deep a ~~---~~ much

Subsequent active involvement by Selby reporting a periodic basis to (R IV) & Wash, D.C. his involvement & assurance

[NRR / IE] (Quarterly basis ~~report~~)

Certain objectives vs goals
levels ~~was~~ what they accomplish are

Management by objective

Organization has allocated $ for the ... to monthly a report what has been accomplished

GDC 10 CFR 50 Appendix A

Criterion I - Quality Std & Records

"Structures, Systems & Components.

Structures, Systems & components important to safety shall be designed, fabricated, erected, & tested to quality standards commensurate with the importance of the safety function to be performed. ...."

"A quality assurance program shall be established & implemented in order to provide adequate assurance that these struct, systems & components.

Redirect:

Mr. "G" do you agree with Paragraph 3 of the QA stipulation?

---

things would like to see;

by the BOARD:

Compare (commercial/nuclear)

* (1) Full time Agent of the NRC throughout the Remedial measures
(2) Require the applicant to provide better onsite coverage -
i.e. dewatering, burst, NDT. etc -
(3) Hold Corporate officers accountable the buck has to stop somewhere (#more so the 3 billion bucks have to stop)
* (4) Get down to the worker: 1ST LINE Q.C. i.e. (welder) ← ← close the loop

Managerial attitude

(1) - Understanding of the Co. commitment & need to be fully responsive to regulatory requirements

Message source to both Construction commitments & Quality commitments

---

(1) Effective management will reach responsibly to identified safety concerns & will initiate(s) corrective actions without waiting for an expression of concern by NRC or when identified by the NRC responds appropriately.

(2) Effective corporate & facility management will recognize valid needs for qualified personnel and materials to support both the QA/QC program & construction - in order to

Redirect:

(1) - Morgolee - Transcript on QA staffing

(2) - Mr. C. what is your assessment of the Trend Analysis progra-?

Redirect on ~~Hall~~ Gallagher (VIA Marguglio)

① Mr. "C" ~~what~~ is your assessment of CPC "read Analysis Program" (ref: Marguglio Testimony Pg's)

② Marguglio testimony Pg ~~1528~~ 1528-1529 re: Staffing of QA personnel ??

Ques MR "C" - did you make that finding identified in Keppler testimony Attach 2 Pg 9 - ~~Yes~~ yes -

Ques ~~Please~~ Please explain the details ----

(1) What is the basis of your testimony that before Dec 6, 1979 CPC management attitude was inconsistent to QA?

(2) What is your basis now for stating that reasonable assurance will ~~be provided~~ ~~the~~ now be accomplished —

(4) Has management required thorough corrective actions
(negative) - Corrective actions are only directed at the particular problem or symptom rather than the root cause - e.g. inadequate test results for compaction, moisture control -
[illegible]: If something was to be painted red - it, it was found blue CPCo would repaint it red - never looks to see that the person painted had red paint & instructs -

(5) Has management required compliance with approved procedures?
Trend analysis has shown some awful trends in electrical & mechanical area - rational - increase in work & inspection rather than poor work being done & requiring attention, training, tech direction - etc -

(8) Has management required timely correction of items adverse to safety?
(negative) - re: air line causing voids & movements & disturbance of soil material in tank farm area was left leaking for 3-4 months to a year before corrected & only after I insisted something be done to re-route line,

(7). TANK Farm: in Oct 78 - I & CPCo knew material was inadequately compacted - at that time only a small part of the tank foundation was built instead of fixing problem right then - continued to build the tank - fill it with water & then Lo & behold - the foundation is overstressed & seriously cracked -

(8) - Even though the material throughout the site was KNOWN to be inadequately compacted - ONLY @ my & other NRC personnel insistence was boring taken under the auxiliary bldg - Finding - inadequate material - major modification necessary -
THANK goodness the NRC has persisted @ the Midland Site!

Managerial attitude:

Based on my involvement with the Midland project's Consumers Power Co. management since August 1978 which included participation in approximately 14 inspections & numerous meetings — I can only conclude that the management attitude has been inconsistent with the basic fundamentals of Quality Assurance; Specifically:

→ (1) Has management supported the QA/QC program ... the quality image of the QA/QC organization? (Negative)

(a) management has not provided well-qualified individuals to the QC/QA effort: In fact I was told, "Do not think we will put our best people in QC or QA" (ref: Project manager in response to finding that QC inspectors for post tensioning work activity were not qualified)

(b) management had not supported QA findings — i.e. involved findings that equipment had not been qualified —

(c) management's attitude that QA/QC is a hindrance rather than an effective tool to determine, control & document the quality level of the job

→ (2) Has management provided & make available the necessary materials & qualified personnel? In the civil QC/QA area — management has not provided either the required # of QA staff or the experience level — Rather new personnel are novice without experience (ECM)

In the QC organization CPCo has permitted assigning personnel without any prior work education & the most minimal training to be certified @ QC inspector — i.e. Post-Tensioning inspectors; Electrical inspectors —

(3) Has management been responsive to NRC concerns & noncompliance items; (Negative) — CPCo has not been responsive to NRC findings — most are refuted even in view of common sense — "Q" vs. Non "Q" — (backfill vs concrete) Soils findings ⟷ re: design control —

Recommend to Sniezek to have a "Resident" for the remedial work.—

(BOARD)

whether the parties will use as background or foundation

** whether the applicant QA/QC program is consistent with NRC requirements including the remedial work in the future!

"Full & True Disclosure of the Facts"

Attachments to Contention 3

Attach #1. Professional Qualifications

Attach #2 Provides the NRC investigation Report 78-20 which ~~is~~ documents the results of the NRC investigation in to the settlement issue @ the midland Plant- & Provides the basis for the issuance of the Dec 6th, 1978 ORder.

Attach no #3 Provides NRC inspection report ~~81-01~~ 80-32 which includes the NRC follow up to consumers response to 10 CFR 50.54 (f), Question 23- this was performed @ the Bechtel Ann Arbor office

A1

Attachment #4 Provides the NRC inspection Report 81-01 which include the following to Consumers 50.54 (f) Quest in 23, this was performed @ the Midland site.

~~Dorka~~: suggested to "Mr. QA"
to do a cost/benefit analyses
For Inspection personnel to keep up
with work activities

Integrated in cost effective program??

Decker. Difficult Ques 7/10 AM

Although it may get better & better is it good enough to do the job: Is there a standard to know if better ~~to~~ is good enough to do the job!

response by BWM! QCO has employed MAC

(1) Program met NRC requirements except to 5 findings BWM. Low consequence

(2) QA was above average in the industry

(3) specially above average in view of when the project started

QA STAFF: US

	QA	QC
1978 (end of)	41 Bechtel + CPCO	90 Bechtel

2400 Bechtel manual on-site (safety related + non-safety
(≃ 50% safety related

	QA	QC
1980 (end)	60 Bechtel + ~~QA~~ CPCO (NDAND)	107 Bechtel

1575 (Bechtel manual)

Cowan: wants to know what went wrong with QA!

Discuss: "intent" to withhold info from the NRC

78-20 Pg 21 - Admin Bldg -

(Bored) - are facts on Pg 21 true: Keeley - to the best of my knowledge this are true

Ques: What was the process of issuing Audit report?

Keeley explain process:

Fact: they (CPCo) were going thru the "process" are rigid, however, it was not "effective, or comprehensive or technically sound"

Redirect for EG:

(1) who is the current Bechtel QA head-on-site
ANS: MR. MARION Dietrich

* Pg 1199: Line 7: #1 "people not paying enough attention to detail"

Line 10: #2 "that there was not a qualified geotechnical engineer on the site ... having direct supervision of all these activities

Line 16: "I AM talking about everybody & by detail I guess what I am saying is that geotechnical engineer would have been more deeply involved in observing, & things like that, the tests that were going on".

1172 - 1175 = BOARD order on QA stipulation

July 7, 1981 - Hearing @ Midland

ASLB - Licensing Board - Ralph Decker - Nuclear Engr.
Fred Cowan - Health Physics
Charles Bechhoefer - Attn'y - Judge

CPCo - (1) Testimony of J. Cook
(2) " " G. Keeley
(3) " " B. Marguglio
(4) QA Stipulation -

July 8, 1981
" Ruling on Proposed Stipulation" (June 5, 1981

Findings of FACT

FACT: Keeley: Cause of not selecting correct test standard was (1) lack of attention to detail (2) not having a qualified geotechnical engineer on-site.

Keeley: later determined the Soils problem was not localized.

OPENING STATEMENT

The hearing that begins today arises out of an Order issued by the NRC Staff against Consumers Power Company more than 1-1/2 years ago. The Order, which was issued on December 6, 1979, modified the Midland construction permits by prohibiting any further soils construction and physical implementation of the proposed remedial actions. The reasons for the Order were three-fold: (1) quality assurance deficiencies involving the settlement of the DGB and soil activities at the Midland site; (2) a material false statement in the FSAR; and (3) numerous unresolved safety issues associated with the remedial actions proposed to correct the soil deficiencies under and around safety-related structures. Because Consumers Power Company requested a hearing, the Order modifying the construction permits did not go into effect immediately and also is not in effect today. Consumers, however, has voluntarily agreed to comply with the prohibitions in the Order with the exception of Consumers' recent decision, in which the Staff concurred, to proceed with the installation of some back-up wells.

By way of background information, the Staff will briefly recount the significant events that both preceded and prompted the issuance of the Order.

In July 1978--less than 6 months after the start of construction on the DGB--Consumers observed that there was excessive settlement of the structure. Indeed, the settlement values at that time were approaching the

total settlement values for the 40-year life of the building. This excessive settlement was reported orally to the NRC resident inspector at the end of July.

Late in September, Consumer filed with the NRC (a written notification pursuant to 10 CFR 50.55(e)) of a significant deficiency in construction--namely, excessive settlement of DGB. An investigation by the NRC Office of Inspection and Enforcement followed. The conclusions of that investigation were that (1) there was inadequate control and supervision of the plant fill; (2) corrective action regarding nonconformances was inadequate; (3) construction specifications and design bases were not followed; (4) interface between design organization and construction was inadequate; and (5) the FSAR contained inconsistent, incorrect and unsupported statements.

In January of 1979, Consumers began placing a 20-ft. sand surcharge on the DGB area. This remedial action proceeded without the approval or concurrence of the NRC Staff. The surcharge was removed in August when Consumers' experts determined that secondary consolidation had been reached.

In the spring of 1979, Consumers took soil borings at the Midland site. The results of these borings showed that the fill material beneath several additional structures was also inadequate. On the basis of these results, Consumers proposed remedial measures for these other structures.

In March of 1979, the NRC Staff issued the initial 10 CFR 50.54(f) request for information concerning the adequacy of the plant fill, the quality assurance program and the determination and justification of acceptance criteria for the various remedial measures already taken and proposed to be taken by Consumers. While Consumers did respond to the 50.54(f) requests, most of their responses were found incomplete and inadequate therefore necessitating the issuance of follow-up requests for information.

Suffice it to say that as of December 6, 1979, when the Order was issued, there were numerous unresolved safety issues associated with the proposed remedial measures. In general terms, the Staff was not satisfied that the designs for the proposed remedial actions were sufficiently conservative.

As a result of the 50.54(f) requests, follow-up requests and other communications between itself and the Staff, Consumers has gradually changed the proposed "fixes" to take account of the safety concerns raised by the staff. Indeed, within the past 6 months, Consumers has changed the fixes for two of the major structures affected by the inadequate fill.

For example, the "fix" originally proposed by Consumers for the Service Water Pump Structure involved placing piles and corbels beneath the cantilevered portion of the structure. The Staff did not have reasonable assurance that piles and corbels would adequately support the cantilevered portion of that structure and, therefore, in November, 1980 posed several interrogatories with respect to the pile and corbel design. In March of this year, in response to interrogatories, Consumers informed the Staff

that it had decided to drop the pile and corbel design "fix" and now proposed a more conservative "fix," specifically, a continous wall footing which will extend to the glacial till. In fact, as recently as May of this year, Consumers abandoned the originally proposed fix for the Auxiliary Building Electrical Penetration areas which was to place caissons under the area and instead has decided to proceed with a more conservatively designed "fix" which involves removing the bad fill and replacing it with a mass of concrete. The NRC Staff has welcomed these changes since they address the Staff's original concerns. The staff is currently in the process of either waiting for more specific information on certain "fixes" or reviewing for approval information already received on other "fixes."

Ordinarily, in an enforcement proceeding such as this, the Staff would proceed first with its presentation of testimony on the basis for the Order. However, because the Staff and Consumers are currently in the process of negotiating stipulations and because a proposed stipulation already has been filed on QA, the Staff has decided to postpone presentation of its case in support of the Order and instead to proceed with its testimony on QA and management attitude in response to Intervenor Barbara Stamiris' Contentions 1, 2 and 3.

In addition to addressing certain of Mrs. Stamiris' contentions in the following 2 weeks of hearing, Consumers and the Staff will seek a ruling from the Licensing Board on the proposed quality assurance stipulation and the Staff will present testimony in support of the last paragraph of the stipulation.

This stipulation which was filed by Consumers and the Staff on June 8 consists of 3 paragraphs. The first 2 paragraphs relate to the enforcement aspect of the case, that is, in paragraph 1 Consumers admits that prior to December 1979 there were certain enumerated QA deficiencies associated with soil construction activities at the Midland site and then in paragraph 2 Consumers agrees not to contest the Staff's conclusion that these enumerated QA deficiencies constituted a breakdown in QA and an adequate basis for issuance of the December 6 Order. Because Consumers has submitted to the jurisdiction of the Licensing Board with respect to the QA breakdown, it is not necessary for the parties to present testimony in support of that issue.

Paragraph 3 of the proposed stipulation, however, is a different matter. That paragraph addresses the present QA situation at Midland and specifically stipulates that NRC has reasonable assurance that QA and QC programs will be appropriately implemented with respect to future soils construction activities. Because that paragraph involves a health and safety finding which the Board cannot delegate to the Staff but rather must independently make, Mr. Keppler - the Director of Region 3 - will present testimony with respect to NRC's appraisal of Consumers' quality assurance performance.

Paragraph 3 also stipulates that the QA program satisfies all requisite NRC criteria. This statement was included at the urging of Consumers. It must be noted, however, that the docketed QA program is not at issue in this proceeding. The Staff has never alleged that the QA program was

inadequate; the implementation of the program is what the Staff has found deficient. Nevertheless, Mr. Gilray - a QA engineer - will appear with Mr. Keppler to provide testimony in support of paragraph 3.

If the proposed stipulation is accepted, the Staff maintains that it has satisfied its burden of going forward with evidence "sufficient to require reasonable minds to inquire further."

With respect to Mrs. Stamiris' contentions the Staff plans on introducing testimony on the following:

(1) In general terms Contention 1 alleges Consumers' less than complete and candid dedication to providing information to the NRC. The contention specifies examples in support of its thesis. Staff witnesses will address all of Contention 1, with the exception of 1(d). That includes the 6 supplemental examples that Mrs. Stamiris raised in an April 20, 1981 pleading. The parties agreed to postpone presenting testimony on 1(d) because that subpart deals with matters that are currently the subject of stipulation discussions.

(2) Parts of Contention 2 will also be addressed. Contention 2 alleges that Consumers' time and financial pressures have adversely affected resolution of the soil settlement problem. Staff witnesses will address only 2(a), (c) and (d) during this portion of the hearing. Contention 2(b) and the 12

supplemental examples will be addressed during the August session.

(3) Contention 3 alleges failure to implement Consumers' QA program. That contention will be addressed in full by a Staff witness.

The balance of Mrs. Stamiris' contentions and Mrs. Sinclair and Mr. Marshall's OL contention will be addressed at a later session of this proceeding.

Before Consumers proceeds with presenting its witnesses, the Staff is prepared to offer Darl Hood's testimony which responds to the Licensing Board's concern with continued construction. This testimony, which was recently updated, addresses the installation of back-up interceptor wells and the surcharging of the 2 valve pits adjacent to the Borated Water Storage tanks.

In closing, I would like to inform the Board that the Staff is still on schedule with its seismic review. As reported to you at the April pre-hearing conference, the Staff will have a position on the vibratory ground motion input for the original ground surface and for the fill by August 15. The Staff will then need a month to develop testimony on the seismic input. Accordingly, the Staff will be prepared to file its seismic testimony in mid September and to go to hearing on this issue in the fall.

E. Gallagher

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
CONSUMERS POWER COMPANY	)	Docket Nos. 50-329 OM & OL 50-330 OM & OL
(Midland Plant, Units 1 and 2	)	

II
Paton/Jones
Brown/Olmstead
FF

CERTIFICATE OF SERVICE

I, JoAnne G. Bloom, hereby certify that a copy of the direct testimonies of Stephen H. Howell and James W. Cook, for Consumers Power Company in the above captioned matter was served upon all persons shown in the attached service list by deposit in the United States mail, first class, this 5th day of June, 1981. In addition, a copy was sent by Federal Express to Judge Bechhoefer.

JoAnne G. Bloom

Consumers Testimony

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Date | Record should show that this is for prospective only - that information could be destroyed but no need of it unless for what it offered for —

M—

This is the testimony of Gilbert S Keeley. I have been employed by Consumers Power Company since 1961. I am currently Midland Project Manager. My present duties include working on the Midland Soils hearing, reviewing the technical aspects of the proposed remedial fixes and providing guidance to the licensing group on soils-related matters. In addition, I provide direction to Midland managers in the areas of design production, construction, testing and administration of contracts. I report directly to James W Cook, Vice-President of Projects, Engineering and Construction.

II

Paton / Jones
Brown / Olmstead
FP

From July 1971 1975 to March 1980, the date of the appointment of a Vice-President for Midland, my Midland Project duties also included overall responsibility for licensing, design, construction, testing, cost analysis, scheduling and the administration of contracts between Consumers Power and its principal suppliers and of the contract between Consumers and Dow Chemical.

cost
Dow
attn
p3

From November 1972 to July 1975 I was Director of Quality Assurance Services for nuclear and conventional power plants' design and construction. In that capacity I was responsible for structuring and implementing the Consumers Power Quality Assurance Program.

WHAT happened?

From 1970 to November 1972 I was director of Electric Plant Projects Engineering. My duties included supervising a staff in various engineering disciplines involved in the design of nuclear and fossil power plants. This staff also developed the technical basis for specifications issued by Consumers Power for the procurement of major equipment.

I also have held the following positions in the Consumers organization: From 1968 to 1970 I was a Supervising Nuclear Engineer with responsibility over a staff of engineers engaged in writing specification's for the procurement of

~~8104150390~~ 21pp

nuclear fuel; from 1963 to 1970 I was a Nuclear Engineer; and from 1961 to 1963 I was the Startup Engineer at Consumers Power Big Rock Point Nuclear Plant.

From 1955 to 1961 I was employed in the Atomic Power Division of Westinghouse Electric Corporation as an engineer. From 1949 to 1955 I was an engineer at Pacific Gas and Electric Company, and from 1948 to 1949 I was a test engineer with General Electric.

In 1948 I graduated from the University of Missouri with a BS in Electrical Engineering. I have taken postgraduate courses at the University of Idaho and the University of Michigan.

I have held various positions in engineering societies and committees relating to my work. During the years 1964 to 1970 I was a member of the IEEE Nuclear Standards Group; from 1970 to 1975 I was a member of the ASME N45.2 Standards Committee, which wrote QA standards to supplement Appendix B to 10 CFR 50; and from 1972 to 1975 I was Chairman of the ASME N45.3.13 work group, which wrote the QA standard on Control of Procurement.

I am a Registered Engineer in the State of Michigan and a member of Tau Beta Pi, the National Engineering Honorary Fraternity, and of the Michigan Society of Professional Engineers.

In this testimony I will provide a sequential history of events and activities relating to the soils settlement issues at the Midland Site. My overview will cover important events and activities in various areas, including quality assurance, communications and meetings between Consumers and the NRC Staff, construction activities and events at the site, design activities, and managerial decisions. In addition, I will address certain specific

contentions of Barbara Stamiris, including example 8 with respect to Stamiris Contention 2, set forth in Stamiris' Response to Applicant's Interrogatories, dealing with "failure to excavate loose sands as committed to in the PSAR," and example 9, alleging that "installation of preload instrumentation was subject to time pressure assoc. (sic) with frost protection considerations."

A chronology of some of the important dates regarding the construction of the Midland Nuclear Power Plant is set forth in the attached Keeley Exhibit 1.

As set forth in the attached Keeley Exhibit 2, the placement of the soils underlying the Diesel Generator Building began in October 1975 and concluded in October 1977. From the start of the soils placements activities to July 1978, when the soils settlement was observed, NRC Inspection and Enforcement Region III made periodic inspections of site construction activities.

On March 26, 1973 the Midland Atomic Safety & Licensing Appeal Board (ALAB) issued memorandum and order ALAB-106. The requirements of ALAB-106 were, among other things,

1. On the first day of each calendar quarter, reports be submitted to the regulatory staff on construction work to be performed during that quarter, containing names of QA Supervisors and engineers of both applicant and the architect-engineer who will be on-site during the period covered by the report;

2. A statement of QA qualifications of each individual named be supplied;

3. On a monthly basis, nonconformance reports covering previous month's work be forwarded to the staff, with enough detail so that the reasons for the discrepancies, if any, will be apparent.

The Board requested that copies of all reports be forwarded to it by the Staff on a timely basis, together with any comments that the Staff may have. The Board further stated that it expected that the Staff would closely monitor the activities of the applicant and architect-engineer. The reporting requirements of ALAB-106 were in effect during the entire time of the soils placement activities.

Consumers Power has complied with all the requirements of ALAB-106 since its issuance. In fact, all of the Consumers Power nonconformances (QF's) and Bechtel nonconformances (NRC's) mentioned in the Soils IE Investigation Reports No. 50-329/78-20 and 50-330/78-20 had been provided to the Staff and Region III the month following their issuance. However, prior to the release on March 22, 1979 of the results of the NRC's soils investigation, (i.e. Investigation Reports No. 50-329/78-20 and 50-330/78-20), neither the Staff nor Region III had made any comment or suggestion whatsoever to Consumers Power or Bechtel that adequate corrective action had not been taken with respect to soils nonconformances.

In August, 1977, Consumers Power became aware of settlement of a grade beam for the Administration Building, a non-safety related structure. Investigation indicated that in the affected area the fill had been compacted to a value lower than that required by the specification. It was determined that the testing contractor, U S Testing, had selected lower maximum laboratory dry density standards than were appropriate, which resulted in an indication that the soils underlying the grade beam had been compacted to greater than 95% of optimum. In actuality, such soils were compacted in a range of 83.1% to 90.5% of optimum.

The fill in this area had been placed and compacted with large equipment, after which it had been partially excavated to permit placement of concrete for the steam tunnel and Administration Building. Of a total of seven grade beams in the area, only one exhibited settlement. The inadequately compacted soil under the columns supporting the failed beam was removed and replaced with lean concrete.

To determine the extent of the poorly compacted fill, the two adjacent grade beams were load tested, with no indication of problems. In addition, from September 27, 1977 through September 30, 1977 two borings were taken in the area of the grade beams, one boring in the diesel generator building area, and one boring near the evaporator building area. The latter two borings indicated no problems in those two areas. Based upon the results of this investigation, the nature of the failure and the information available at the time, it was concluded that the grade beam failure was localized.

Shortly after that determination, construction of the Diesel Generator Building began with the sump concrete pour in October 1977.

As stated in FSAR Section 2.5.4.10.4, structural settlement measurements were to be monitored to provide a history of time-movement in order to verify settlement predicted by analysis. The details of the survey frequency are described in FSAR Section 2.5.4.13.2. They basically consisted of survey measurements for Seismic Category I and II structures every 60 days during construction and every 90 days during the first year of operation, with an evaluation to determine frequency for subsequent years. For Seismic Category I and II tanks, survey measurements are called for after the tanks are installed and prior to hydrostatic testing, during hydrostatic testing, after hydrostatic testing with the tanks empty, and after filling of tank for

operation, with an evaluation of previous data to determine frequency during subsequent years.

In July 1978, during routine monitoring of structures for settlement, it was found that settlement of the Diesel Generator Building was in excess of that which would have been expected. Accordingly, on August 21, 1978 a Nonco..formance Report was issued; on August 22, 1978 the NRC Region III Resident Inspector was notified of this potentially reportable condition; and on August 23, 1978 construction on the building was placed on hold.

As of August 23, 1978 55% of the concrete for the Diesel Generator Building had been placed, with the walls in place to an elevation of 30 feet above grade, the generator pedestals poured, the mud mat poured inside the building, the electrical duct banks placed under the building with horizontal and vertical runs completed, the underground piping in the area under and adjacent to the building installed, and all backfill placed to grade level.

On September 7, 1978 the NRC Region III Resident Inspector was notified that Consumers Power had determined that the condition with respect to the Diesel Generator Building soils was reportable per 10 CFR 50.55(e). This was based on the fact that analysis of soil borings started on 8/25/78 showed that compaction of soil was significantly less than was measured during initial placement of the fill. Committments were made to provide a formal report by October 7, 1978.

On September 29, 1978 the first 50.55(e) report was issued with the following recommended actions:

1. Determine the amount of settlement of the diesel generator building and increase the frequency of foundation survey measurements to find if the settlement is or will be excessive.

2. Determine the cause of settlement.

3. If the settlement is or will be excessive, determine what actions are required to correct the condition and preclude recurrence.

These recommended actions were implemented. In addition, a boring exploration and testing program which had been initiated on 8/25/78 to provide better definition of the fill conditions under the building and to obtain soil samples for laboratory tests, was continued.

Subsequent to the issuance of the initial 50.55(e) report on September 29, 1978, there were additional 50.55(e) reports transmitted on November 7, 1978, December 21, 1978, January 5, 1979, February 23, 1979, April 30, 1979, June 25, 1979, August 10, 1979 and September 5, 1979. These reports were provided to inform Region 3 and the NRR Staff of conditions relative to the settlement, investigative actions, remedial actions proposed or implemented, and material presented to the Staff in a meeting of July 18, 1979 which consisted of conceptual designs for the remedial activities.

Following discovery of the settlement problems, initiation of the exploration and testing program, and issuance of 50.55(e) reports on September 29, 1978 and November 7, 1978, the NRC Inspection & Enforcement Branch conducted an investigation in December, 1978 and January, 1979 and held meetings with Consumers Power Management in February and March 1979.

Also shortly after the settlement problem was discovered, a Task Force made up of Consumers Power and Bechtel personnel was formed to resolve the technical

issues relating to foundation soils. In September 1978, Drs. Ralph Peck and Alfred Hendron were retained as consultants to assist in the evaluation of data and feasibility of corrective actions. On September 28, 1978, a site visit was made by Dr. Peck to acquaint him with general site conditions, settlement observations and preliminary findings of the exploration and testing program. In October 1978 Dr. Woods of the University of Michigan was retained as a consultant for interpretation of dutch cone penetration tests and Mr. Dunnicliff was retained to assist in developing a soils monitoring program.

The first major issue facing the task force was to determine what was to be done about the diesel generator building settlement problem. After a careful consideration of alternatives, the task force, upon the unanimous recommendation of the consultants, decided upon the "pre-load" or "surcharge" approach. This involved placing a layer of sand over and around the soils under the diesel building foundation. The additional weight of this sand would accelerate the consolidation of the soils below the building foundation. The technical basis for the proposal will be fully described in the testimony of Dr Ralph Peck.

The task force's recommendation was adopted by Consumers Power management. The task force also advised that construction work on the diesel generator building could resume, since the additional structural weight thereby produced would enhance the effectiveness of the pre-load. Management concurred, and construction of the diesel generator building resumed.

While the various remedial options were being considered, a field engineer recommended, and the task force decided, that certain instrumentation associated with the proposed surcharge be installed prior to the placement of

frost protection. The so-called "frost protection" consists of the placement of a thin layer of fill over existing grade to protect lower layers from freezing, a necessary first step in the preload process. Because some of the instrumentation to be installed in connection with the proposed surcharge required excavation or sub-surface installation, it was advantageous to install such instrumentation prior to placement of the frost protection layer. While some of this instrumentation was installed prior to the final decision in favor of the surcharge option, the instrumentation involved only minimal cost and had no effect on the choice for remedial action. This responds to example 9 in Stamiris' answers to Applicant's interrogatories.

The monitoring program recommended by consultants was implemented by site surveyors and included measurements of 29 settlement markers on the Diesel Generator structure and pedestals. Twenty-nine soil borings and 13 dutch cone penetrations were taken in the area of the Diesel Generator Building. Soil borings were also taken in other plant fill areas.

Several meetings were held with the Staff and, later, with their Consultants to inform them with regard to planned remedial actions. In addition to the meetings with the Region III IE personnel previously referenced, there was a meeting on-site December 3 and 4, 1978, attended by Dr Lyman Heller, the NRC's chief geotechnical reviewer, Darl Hood, NRC Project Manager, other NRC personnel including representatives from Region III, Bechtel Engineers and Consultants and Consumers personnel. At that meeting, the history of the soils problem was reviewed, the site exploration program was described and various aspects of the recommended pre load option were described and discussed.

Instrumentation installed at the site prior to the placement of the surcharge included piezometers, strain gauges for crack width measurement, borros anchors, and settlement markers. In addition, profiling of underground piping was carried out both before and after the surcharge placement.

On January 26, 1979 application of the surcharge to the Diesel Generator Building was commenced. Application of the first ten feet of fill material was concluded in approximately 25 days. On the advice of Dr Peck, placement was then stopped for a period of approximately two weeks in order to observe instrumentation. Application of the surcharge then recommenced and continued for approximately 25 additional days, at which point the surcharge height reached its maximum level of 20 feet. The surcharge remained in place at its maximum level from April 6 to August 15. During that period instrumentation (piezometers) and settlement markers were observed to determine the effectiveness of the surcharge. Based upon a review of data by Drs Peck and Hendron, the surcharge had carried out its purpose by August 15, when removal was started. The removal operation was completed by August 30.

1979

The settlement data for the Diesel Generator Building and pedestals as well as plots of borros anchors, settlement platforms data, preload intensity data, piezometer readings and cooling pond level readings was provided to the NRC in 50.55(e) reports. This information was also provided, in part, in answers to 50.54(f) questions, and in meetings with the NRC.

In January 1979, settlement data, including that of the new monitoring program observed to that date, indicated that with the exception of the Diesel Generator Building and the pedestal (which had total settlements of 3-3/4" and 4-1/4" maximum, respectively), other structures had minor settlements. This was based on a foundation data survey program that had been expanded from that

committed to in the FSAR to provide an increase in foundation settlement points from 69 to 180 with the additional points being for structures located on plant fill. The measured intervals were decreased to 7 days on the Diesel Generator Building and 14 days on other structures on plant fill. The 60 day period remained in effect for other structures.

In the spring of 1979, additional borings were taken at the Midland Site. Based upon the results and analysis of borings, which were provided to the NRC via 50.55(e) reports, 50.54(f) responses, and meetings, it was decided that remedial action should be taken for the overhang portion of the Service Water Pump Structure, the Auxiliary Building Electrical Penetration Areas, and the Feedwater Isolation Valve Pits. Initially it was proposed that such remedial action would consist of chemical grouting to stabilize medium dense sand areas as discussed in the 50.55(e) report dated June 25, 1979, as well as the use of piling for support of the overhang portion of the Service Water Pump Structure. Seismic Category I tanks located on fill were to be filled with water and monitored for settlement, although the boring program indicated adequate compaction of the soils under the Borated Water Storage Tank ("BWST") and Emergency Diesel Fuel Oil Storage Tanks.

On March 21, 1979, the NRC Staff issued an initial 10 CFR 50.54(f) request for information. Subsequent requests were issued on November 19, 1979; June 30, 1980; August 4, 1980 and August 27, 1980. Consumers Power has responded to these questions during a period from April 24, 1979 through the present. On February 7, 1980 Region III was notified that due to the fact that 50.54(f) questions had been submitted and since an Order modifying the Construction Permits was sent to the Company on December 6, 1979, there would be no further 50.55(e) reports. Further information would be provided via responses to 50.54(f) questions.

At a meeting on June 18 and 19, 1979, Consumers Power Consultants, including Peck & Hendron, recommended that the site be permanently dewatered, since it was recognized that there were potential difficulties in assuring that grouting would reach all sand pockets.

On July 18, 1979 a meeting was held with the Staff during which they were informed of the following:

1. Options considered to correct the various soils issues.
2. Results of the investigative program.
3. Settlement monitoring program including effects of surcharge.
4. Decision to implement site dewatering.
5. Remedial Work in Progress or Planned
   (a) Diesel Generator Structure
   (b) Service Water Pump Structure
   (c) Tank Farm
   (d) Diesel Oil Tanks
   (e) Underground Utilites
   (f) Auxiliary Building and Feedwater Isolation Valve Pits
   (g) Liquefaction Potential
   (h) Dewatering
6. Analytical investigations (structural, seismic, soils)
7. Statement by Dr. Peck on adequacy of remedial action.
8. Schedule for remedial activities.
9. Cause investigation.
10. QA/QC corrective actions.

The information presented to the Staff was then formally transmitted in the 50.55(e) report dated August 10, 1979.

On July 31, 1979 the NRC Project Manager, Darl Hood, stated to Consumers Power that the positive aspects of the July 18, 1979 meeting were the proposed design fixes. It was the consensus of opinion of Consumers Power and its Consultants that the NRC Staff had accepted the conceptual designs proposed and discussed to that date, and that there were no major problem areas.

On October 16, 1979 Consumers Power Company was informed that the US Army Corps of Engineers was to assist the NRC Staff in their review. On February 26, 1980 Consumers Power was notified that the Navy Weapons Center would also be assisting the NRC Staff, and on February 29, 1980 Consumers Power was informed that ETEC would be assisting the NRC Staff, as well.

After engaging consultant assistance, the NRC asked Consumers Power to advise the Consultants of the history of the problem, activities accomplished and planned remedial actions. Meetings for those purposes were held on November 14, 1979; January 16, 1980; February 27, 1980; and February 28, 1980. In the latter two meetings, Consumers informed the Staff that it had elected not proceed with further remedial actions until NRC Staff approval was secured. This was done voluntarily and was not mandated by the Order issued by the NRC Staff on December 6, 1979.

Included in some of the documentation and in some of the meetings listed above was the subject of the cause of the excessive settlement. The causes and corrective actions are described in detail in the answers to 50.54(f), Questions 1 and 23. Corrective actions taken on these causes as well as other quality issues are discussed in detail in the testimony of B W Marguglio.

A meeting was held on 9/27/79 between Consumers Power and NRC Management to discuss upgrading of the plant to incorporate the results of TMI-2 and general licensing critical path areas. Consumers Power was then informed that there were problems with NRC resources and that NRC Project Management had been urging the NRC Technical Staff to take a position with regard to the status of technical review in the soils area, but had so far been unsuccessful.

A 50.55(e) report dated September 5, 1979 indicated that the preload had been successfully completed. There had been essentially no settlement during the previous six weeks, as shown on figures attached to the report. Sufficient data had been obtained to allow prediction of long term settlement by extrapolation, and preliminary calculations indicated that residual settlement due to secondary compression of clay would be less than one inch over 40 years. In a 50.55(e) report dated November 2, 1979, it was indicated that the settlement monitoring of the Diesel Generator Building and pedestals would be changed from once a week to once a month until January 30, 1980, after which monitoring would be carried out in accordance with the regular foundation data survey program as described in the FSAR.

On November 19, 1979 the Staff sent 50.54(f) Questions 24-35 which concerned dewatering, site specific seismic spectra, structural analysis, settlement of the Diesel Generator Building, crack analysis load testing of the borated water storage tank and additional exploration, sampling, and testing to determine soil properties resulting from the preload program. These questions were received on November 26, 1979. On December 6, 1979, prior to the time for response to the latest 50.54(f) Questions, an order was issued modifying the Midland construction permits. In part the order claimed that, "Several of the Staff's requests are directed to the determination and justification of acceptance criteria to be applied to various remedial measures taken and

proposed by the licensee. Such criteria, coupled with the details of the remedial action, are necessary for the Staff to evaluate the technical adequacy and proper implementation of the proposed action. The information provided by the licensee fails to provide such criteria. Therefore, based on a review of the information provided by the Licensee in response to Staff questions, the Staff cannot conclude at this time that the safety issues associated with remedial action taken or planned to be taken by the Licensee to correct the soil deficiencies will be resolved." It had been assumed by Consumers Power that answers to 50.54(f) questions, as well as the information provided in 50.55(e) reports, were adequately responsive to the information the staff required for technical adequacy. On December 26, 1979 Consumers requested a hearing. Since requesting the hearing, additional 50.54(f) questions were issued by the Staff on June 30, 1980, August 4, 1980 and August 27, 1980 and additional answers and information have been provided by Consumers Power. Substantial information has also been provided to the Staff in subsequent meetings and via various discovery in connection with the hearing.

A letter on October 14, 1980, from R C Tedesco of the NRC Staff advised Consumers Power of a changed Staff position with respect to the criteria to be used for the seismic review of the Midland Site. Since that time Consumers Power and the Staff have conducted several meetings in which Consumer's Power has presented its proposal to meet the Staff criteria. The development of that proposal, the so called site specific response spectra (SSRS), has been described in detail in Consumers Power Motion to Defer Consideration of Seismic Issues. At the prehearing conference on April 27, 1981, the Staff and Applicant agreed upon, and the Board approved, a method for considering the seismic aspects of the proposed remedial action. Information on this subject

has been provided to the Staff, and meetings on the subject have been, and will continue to be, held.

Another area of discussion between Consumers Power and the Staff concerned a request for additional borings, submitted by the Staff on June 30, 1980. This subject is discussed at length in James Cook's testimony. Consumers Power is presently in the process of taking the borings requested by the Staff, results of which should be available in July, 1981.

I will now address an "additional example" in connection with Stamiris' Contention 2, which alleges that "financial and time pressures have directly and adversely affected resolution of soils settlement issues." The "example" provided by Stamiris in her response to Applicant's Interrogatory Number 2a, was "the failure to excavate loose sands as committed to in the PSAR." I disagree with this allegation, for the following reasons:

On 2/24/78 the NRC issued an FSAR question, #362.2, relating to a PSAR commitment to remove naturally occurring loose sand, if any, from beneath Class I and certain non-Class I structures. A review of relevant documentation failed to show that the commitment had been met in all areas. As a result, Consumers Power took steps, including an analysis of borings, to insure that loose sands were not present, and documented its results for the NRC in the response to FSAR Question 362.2. It was concluded, based upon analysis, that the naturally occurring sands at the site met density requirements except in a few isolated lenses of no significance to Category I Structures. The matter was discussed with the NRC Geotechnical Section on April 10, 1979, and was considered a closed issue.

The above information demonstrates that the resolution of the loose sands question had no relationship whatsoever to "financial and time pressures" On the contrary, Consumers Power took the necessary steps and incurred the necessary expense, both in money and time, to insure that a satisfactory technical solution was acheived.

Conclusion

The above rendition of events and activities at the Midland site demonstrates the tremendous expenditure of time and effort on the part of Consumers and Bechtel to satisfactorily resolve soils issues. This overview, while it does not cover every meeting, event or communication, does cover the highlights, and does provide a basis for putting the issues dealt with in other testimony in proper perspective.

Keeley Exhibit 1

The following are some important dates regarding the construction of the Midland Nuclear Power Plant:

Event	Date
PSAR transmitted to AEC-BRL for early review	October 31, 1968
Application for construction permit filed with Atomic Energy Commission	January 13, 1969
Construction permit hearing begins	December 1, 1970
Construction permits issued by Atomic Energy Commission	December 15, 1972
ALAB 106 issued	March 26, 1973
Atomic Energy Commission issues amendment to construction permits incorporating quality assurance reporting requirements	May 23, 2973
AEC Director of Regulation issues show cause order with respect to cadwelding	December 3, 1973
Show Cause hearing (on cadwelding issue) starts in Midland	July 16, 1974
Atomic Safety and Licensing Board issues findings from its Show Cause hearing.	September 25, 1974
First of the two 330-ton nuclear reactor vessels arrives at plant site	November 29, 1974
United States Court of Appeals for the District of Columbia Circuit remanded to the Nuclear Regulatory Commission for reconsideration of several issues in the 1973 order granting construction permits.	July 21, 1976
Final Safety Analysis Report Docketed	November 18, 1977
Filling of 880-acre cooling pond begins.	March 30, 1978
In a unanimous opinion, U S Supreme Court overturns July 1976 Court of Appeals ruling and upholds validity of Midland construction permits. Supreme Court remands to Appeals Court for further review a portion of the case concerning adequacy of an AEC rulemaking proceeding on environmental effects of the nuclear fuel cycle.	April 3, 1978

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NRC publishes notice of acceptance for review of, and opportunity for hearing on, application to operate the Midland units.	May 5, 1978
NRC issues Order modifying Midland construction permits with respect to soils problem.	December 6, 1979
Consumers Power Board of Directors announces new commercial operation dates of December 1983 for Unit 2 and July 1984 for Unit 1.	July 2, 1980
Consumers Power Company submits Revision 32 to Final Safety Analysis Report. 2000-page revision includes normal rereview and design evaluation.	January 1981

Keeley Exhibit 2

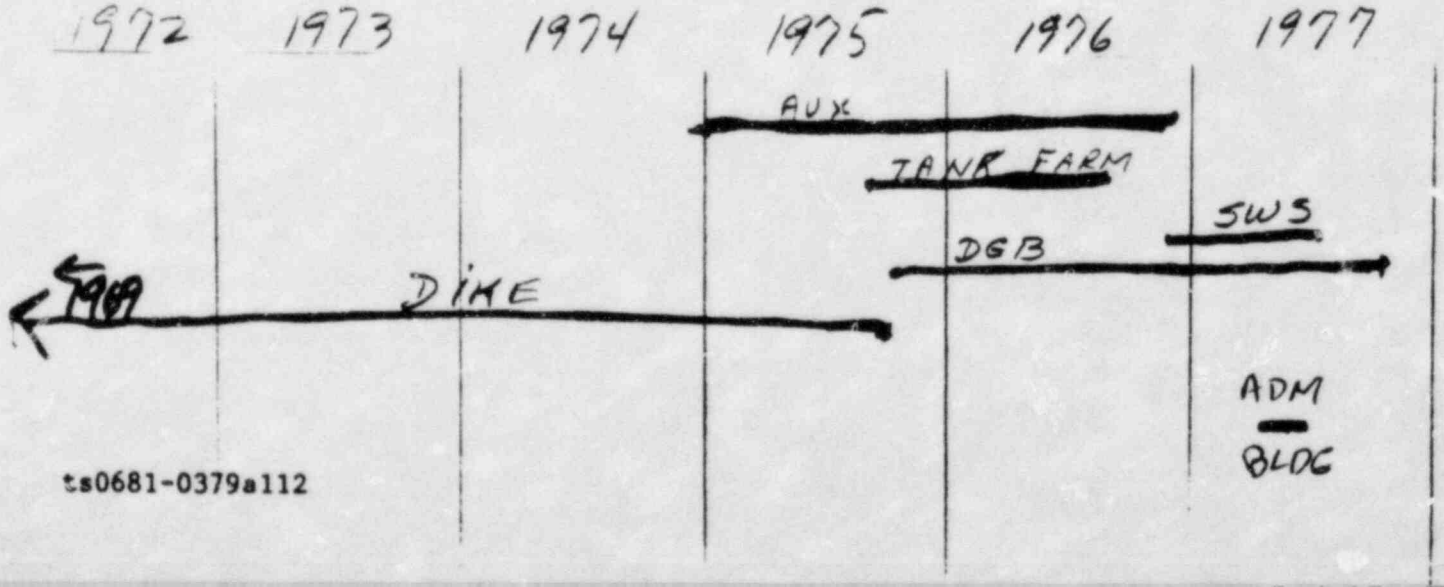
MIDLAND PROJECT

Selected Soils Placement Activity[1]

	Starting Date	Completion Date
Q-List Soils Placement		
Structure		
Auxiliary Building electrical penetration area	December 1974	November 1976
Tank Farm Area (Borated Water Storage Tanks)	September 1975	August 1976
Service Water Structure Cantilever Section	November 1976	June 1977
Diesel Generator Building	October 1975	October 1977
Non-Q-List Soils Placement		
Dike	July 1969	October 1975
Administration Building[2]	May 1977	June 1977

[1] "Q-list soils placement" shown is soils placement for support of the structure only. Not true *

[2] Based upon an attachment from a letter, J F Newgen to M D Edley, dated February 1, 1978.



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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of		
CONSUMERS POWER COMPANY	Docket Nos.	50-329-OM 50-330-OM 50-329-OL 50-330-OL
(Midland Plant, Units 1 and 2)		

AFFIDAVIT OF GILBERT S KEELEY

I am Gilbert S Keeley. I am presently employed by Consumers Power Company as the Project Manager, Midland Project. Based upon knowledge, information, and belief my testimony in the Midland Soils Case, which is attached hereto, is true and correct.

Consumers Power Company

Dated June 4, 1981

By Gilbert S. Keeley

Sworn and subscribed to before me on this 4th day of June, 1981.

Notary Public, Jackson County, Michigan
My commission expires September 16, 1984.

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DIRECT TESTIMONY - BENJAMIN W. MARGUGLIO

I. Introduction and Scope of Testimony

My name is Benjamin W. Marguglio. My employment as the Director of Quality Assurance for Projects, Engineering and Construction at Consumers Power Company (CP Co) began on January 1, 1977. In that capacity, my responsibility with regard to the Midland Project was to establish and maintain quality assurance policies, procedures and standards -- in essence, to establish and maintain the Quality Assurance Program--and to assure the implementation of the Program. At that time, I was responsible also for directly implementing, on a line organization basis, selected portions of the Program.

In March 1980, I became the Director of Environmental Services, Quality Assurance and Testing and in August 1980 I became Director of Environmental Services and Quality Assurance. In this capacity, my responsibility to the Midland Project is now different from my responsibility previous to March 1980 in that although I continue to have responsibility for the establishment and maintenance of the Quality Assurance Program, I am no longer responsible for directly implementing, on a line organization basis, any portion of the Program other than quality assurance audit and quality assurance programmatic training.

For approximately five years prior to joining CP Co, I was the Director of the Quality Division of EG&G,

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Idaho (and its predecessor company, Aerojet Nuclear Company) at the Idaho National Engineering Laboratory. At the time I left, the EG&G, Idaho Quality Division consisted of approximately 125 persons who were involved in the design and construction of a variety of nuclear facilities. As the Quality Division Director, I had responsibility for the Quality Assurance Program definition as well as for the implementation, on a line organization basis, of major portions of the Program. On a part-time basis, I taught quality courses at the graduate schools of both the University of Idaho and, earlier, the University of Dallas. Altogether, I have over 25 years of industrial experience, approximately 21 years of which have been spent in quality assurance-related assignments at various organizational levels and five years of which were spent in a project management assignment.

I am a Fellow of the American Society for Quality Control (ASQC) having been elected to that rank in 1973, and I am certified by ASQC as both a Quality Engineer and a Reliability Engineer. I am also a Registered Professional Quality Engineer in the State of California.

I am the author of a reference book entitled, Quality Systems In The Nuclear Industry and of over a dozen published technical papers.

My Bachelors and Masters Degrees are in statistics and were awarded in 1954 and 1955, respectively, by the City University of New York.

My testimony will be in two parts. The first part will cover the "programmatic" improvements to the Midland Project Quality Assurance Program which were adopted since late 1976 to the present, but which were independent of the corrective actions taken in response to the Diesel Generator Building settlement. By "programmatic" improvements, I mean those improvements which apply to a large portion of the Midland Project Quality Assurance Program or which apply to more than one activity, such as soils placement. The second part of my testimony will cover the Midland Project Quality Assurance Program improvements which were adopted as corrective actions in response to the Diesel Generator Building settlement. This portion of my testimony also responds to Intervenor Stamiris Contentions number 3 and 2(c). Some of these corrective actions were programmatic and some were generic to soils placement activities.

II. Programmatic Improvements to the Midland Project Quality Assurance Program.

The programmatic improvements which I am about to discuss are arranged to correspond to the criteria given in Title 10 of the Code of Federal Regulations, Part 50, Appendix B. These criteria constitute the basic quality assurance requirements for items and activities which are necessary to either prevent a nuclear accident or to mitigate its consequences. At this point, I must emphasize that the classification of these improvements under a particular Appendix B

criterion is a matter of judgment. Some of these improvements might be classified, reasonably, under Appendix B criteria other than the ones I have specified.

The programmatic improvements which I will discuss first relate to Appendix B, Criterion I, "Organization."

As a result of a national search, I was hired on January 1, 1977, as noted earlier, to direct the Quality Assurance Department for CP Co's Projects, Engineering and Construction -- i.e., for projects in the design and construction phase, the largest of which was and is the Midland Project. I reported then, and still do, to the office of the Vice President-Projects, Engineering and Construction. My predecessor served as the Quality Assurance Director in 1975 and 1976, prior to which time he had extensive operations and maintenance experience whereas my quality assurance background and credentials, as given earlier, are substantially different.

Who! Keeley?

One of my initial actions was to reorganize the CP Co Quality Assurance Department to provide three separate sections applicable to the Midland Project. The first was the Inspection, Examination and Test Verification Section. The activities of this Section were focused at the construction site at Midland. With this reorganization, the Section Head reported directly to me, whereas he had previously reported to an intermediary who, in turn, reported to me. This aspect of the reorganization resulted in my direct involvement with the site quality assurance activities. It

*

made it easier for the site Quality Assurance Department personnel to escalate their concerns to my level and it made it easier for me to communicate the required quality assurance improvements. It also brought the authority of my office to bear upon the corrective action process.

The second quality assurance section created was the Quality Assurance Engineering Section. Its Section Head again reporting directly to me instead of to the intermediary, resulting in the same benefits as for the Inspection Section. I recruited Walter R. Bird for this position. Mr. Bird had worked for me in this same relative capacity at EG&G, Idaho. We then recruited Robert Southon, to head the Mechanical Group within the Quality Assurance Engineering Section. He, too, had worked in a similar role at EG&G, Idaho. Both Messrs Bird and Southon had prior experience in quality assurance engineering activities which highly correlated to the quality assurance engineering activities needed for the Midland Project. Mr. Bird is a Registered Professional Engineer in Mechanical Engineering, has a Masters Degree in Mechanical Engineering, had almost 15 years of experience at the time, of which at least three years were directly related quality assurance experience at a middle management level. Having worked directly for me in Idaho, I was convinced of his suitability for his role as the Midland Project Quality Assurance Engineering Section Head.

The third quality assurance section created was the Audit Section. The Audit Section Head also reported

directly to me, resulting in the same advantages from the direct reporting relationship as noted in the previously.

My responsibilities as the Director of the CP Co Quality Assurance Department and the responsibilities of the three aforementioned Section Heads within the Department were described in our Quality Assurance Program Policy sent as part of a CP Co Quality Assurance Topical Report dated February 1978; the Topical Report documents the CP Co commitments to NRC requirements. (See Marguglio Exhibit 1).

Other actions that I took resulted in an increase in the technical capabilities of the CP Co Quality Assurance Department personnel as a whole, and in an increase in the number of Department personnel assigned to the Midland Project. Of the nine persons within the Department who were assigned to the Midland Project and who were classified as Executive, Administrative & Professional (EA&P) personnel at the time of my initial employment, five were transferred out of the Department and replaced with others who had higher educational or experience levels directly relating to quality assurance for nuclear design and construction. In addition, by the end of 1977, the number of Quality Assurance Department EA&P-type personnel assigned to the Midland Project had increased to 22, and by the end of 1979, the number had increased still further to 26.

These changes in the Department's organization and its personnel constituency and size enabled us to play a stronger role in preventing defects as well as in detecting and correcting them. I'll discuss the specifics of these preventive functions later in my testimony.

In March 1980, the CP Co Midland Project Office was established to replace the then existing Midland Project Management Organization. The Midland Project Office is headed by a Vice President, assisted by the Project Manager, whereas the former Midland Project Management Organization head was only the Project Manager. Reporting to the Midland Project Office are six department managers who have responsibility for safety and licensing, design production, site operations (construction and pre-operatonal testing), quality assurance, cost and schedule, and administration. The Bechtel Midland Project organization has also been restructured to facilitate the direct interface between the CP Co MPO Departments and the Bechtel Midland Project organizational elements. Attached,. as Exhibit 2 to this testimony, is a chart of CP Co MPO and Bechtel Midland Project organizations, showing the various lines of direct communication between the two.

In addition, the number of the CP Co EA&P personnel in the section has grown from 30 at the end of 1976 to the present number of 541.

The establishment of the Midland Project Office with its self-sufficient organizational structure, with its

paralleling of Bechtel's project organizational structure and with its increase in size, resulted in CP Co obtaining quality-related information on a more timely basis, and participating more directly in decisions relating to quality assurance. It strengthened the Midland Project Office control of the project and of the project decisions. These changes provided impetus to the prevention of problems and to the more timely resolution and closure of open items.

Concurrent with the establishing of Midland Project Office in March 1980, was the initial formation of the Midland Project Quality Assurance Department (MPQAD), with Walter R. Bird as its manager. I have already provided a brief description of Mr. Bird's qualifications; he was named MPQAD Manager with my strong endorsement. As I noted earlier in my testimony, at the same time I was appointed Director of Environmental Services, Quality Assurance & Testing.

The responsibilities of the MPQAD Manager were essentially the same as were those of the Director of the Quality Assurance Department, the office I had held, with one exception. Mr. Bird assumed all of my former responsibilities, except that I continued to have the responsibility for the establishment and maintenance of the Quality Assurance Program and for the conduct of quality assurance audit and programmatic training. Thus for quality assurance programmatic matters, Mr. Bird continues to report to me, but for all other matters he reports to the Midland Project Office. As part of my testimony, I have allocated the CP Co

Quality Assurance Topical Report dated March 18, 1980 which outlines the organizational changes I have just described. (See Marguglio Exhibit 3). When compared to Exhibit 1, it demonstrates that the MPQAD has the same responsibilities as were assigned formerly to the CP Co Quality Assurance Department.

In August 1980, the Bechtel Midland Project Quality Assurance organization was integrated into the MPQAD, making the MPQAD only quality assurance organization supporting the Project. Thus, the MPQAD now performs all of the quality assurance functions for the Project which were previously assigned to the Bechtel Midland Project Quality Assurance organization in its former, primary quality assurance role and those assigned to the CP Co, in its overview role. Attached to this testimony as Marguglio Exhibit 4, is a chart of the organization of MPQAD, defining the MPQAD lines of communication.

The organization change places a CP Co employee, Mr. Bird, as the Manager of MPQAD. In addition to the MPQAD Manager, the Site Quality Assurance Superintendent and the Section Heads of Quality Assurance Engineering, Inspection, Administration and Quality Assurance Services, who each report to the MPQAD Manager, are permanent CP Co employees. The MPQAD is currently staffed with 73 persons; 55 persons all permanent CP Co employees or personnel under direct contract to CP Co; 18 are Bechtel employees. In addition to these, the time of 6 more persons in the Audit Section, who report to me, is devoted to the Midland Project Quality

Assurance Program and, or course, my secretary and I are also part of the Program.

The integration and staffing increase provide the MPQAD with a more timely and complete involvement in both preventive and corrective activities. The existence of the singular Quality Assurance entity (MPQAD), as contrasted to the functioning of two separate quality assurance entities (Bechtel's and CP Co's), has had the effect of promoting the interests of the Project as a whole over and above any parochial interests.

That completes my testimony with regard to the programmatic improvements relating to Appendix B, Criterion I, "Organization." I will now describe some programmatic improvements relating to Appendix B, Criterion II, "QA Program."

In November 1976, the Quality Assurance Program was revised to voluntarily commit the Midland Project to the following quality assurance standards and NRC Regulatory Guides which were unavailable at the inception of the Project and, therefore, not committed to in the original Topical Report: ANSI N45.2.1-1972; N45.2.2-1972; N45.2.3-1973; N45.2.4-1972; N45.2.5-1974; N45.2.6-1973; N45.2.8-Draft 3, Rev 4; N45.2.9-1974; N45.2.10-1973; N45.2.11-1974; N45.2.12-Draft 4, Rev 1; N45.2.13-Draft 3, Rev 3; N101.4-1972; and Regulatory Guides 1.28-June 1972; 1.30-August 1972; 1.37-March 1973; 1.38-March 1973; 1.39-March 1973; 1.54-June 1973; 1.55-June 1973; 1.58-August 1973; 1.64-February 1973; 1.74-February 1974; 1.88-August 1974; and 1.94-April 1975.

These standards and Regulatory Guides deal with a variety of quality-related subjects including requirements for the overall Quality Assurance program; requirements for Quality Assurance of design; requirements for Quality Assurance of procurement; requirements for the inspection and test of structural steel, structural concrete, instrumentation, electrical and mechanical equipment, and protective coatings; requirements for cleaning and housekeeping; requirements for packaging, shipping, receiving, storage and handling; requirements for quality assurance records; requirements for the qualification and certification of inspection, examination and test personnel; and requirements for auditing. These standards represent the state of the quality assurance art at this time, since there have not been any major changes to the standards since 1976 with which the Project does not comply.

Bechtel procedures were originated or revised as necessary to accommodate the implementation of these commitments. Examples of Bechtel procedures which were either originated or revised are Manager of Engineering Department (MED) Procedure 2.13, "Project Engineering Team Organization Responsibilities"; Engineering Department Project Instruction (EDPI) 4.55.1, "Project Material Requisitions, Midland Project"; Field Procedure General (FPG) 4.00, "Storage and Storage Maintenance of Equipment and Materials"; FPG 7.000, "Housekeeping and Cleanliness Control During Construction"; and Project Special Provision (PSP) G07.1, "Documentation, Records and Correspondence Control."

In December 1979, the CP Co Quality Assurance Program Procedures (QAPPs) were originated or revised largely in accordance with recommendations which I made to a Management Task Force consisting of the Senior Vice President (my superior, whom I previously noted as the Vice President, but who had since been promoted) of Projects, Engineering & Construction, the Midland Project Manager and other members of the Senior Vice President's staff, besides myself, who had responsibilities for CP Co Midland Project quality-related functions. These QAPPs provided quality assurance requirements, responsibilities and interface procedures -- i.e., procedures describing the interfaces among various departments within Projects, Engineering & Construction.

The following subjects are covered by new or revised QAPPs: quality assurance policies; quality assurance program procedures; identification of safety-related items; quality assurance training; preparation of design documents; control of design changes; design verification; control of design interfaces; processing procurement requisitions to incorporate quality assurance requirements; department procedures relating to quality assurance; control of quality-related documents; evaluation of suppliers for quality considerations; source inspection; identification and control of items; control of special processes; site construction inspection; turnover from Bechtel to CP Co; preoperational testing; control of measurement equipment; handling, storage and shipping controls; control of nonconforming items;

processing NRC Bulletins, Circulars and Information Notices; processing notices from manufacturers; stop work orders; allegations; corrective action; quality records; auditing; quality assurance management meetings; and reporting to NRC.

For example, the QAPP with respect to auditing (QAPP 18-1) was modified to provide far greater specificity regarding such matters as audit schedules, documentation of audit findings and identification of personnel who are to be apprised of audit findings. (See Marguglio Exhibits 5 and 6, the QAPP 18-1 as of February 28, 1977 and January 1, 1980). Similarly, the QAPPs describing management involvement in quality assurance matters has been made more specific. QAPP 19-1 identifies the individuals who must attend quarterly Quality Status Meetings and requires both a written agenda and written meeting minutes to be distributed. QAPP 20-1 describes the method for informing CP Co management about the status of the Qaulity Assurance Program. (See Marguglio Exhibits 7 and, 8 QAPP 19-1 as of January 1, 1980 and 20-1 as of February 28, 1977).

The new or revised QAPPs resulted in the addition of some quality assurance requirements, in the increased specificity of other quality assurance requirements and of the departmental interfaces necessary to implement those requirements. They also resulted in improved flexibility allowing the then existing CP Co Quality Assurance Department to participate in the Midland Project on either a primary or overview basis. Prior to that time, the Quality

Assurance Department's activities were of the overview type only. "Primary" participation means that a particular organization has direct responsibility for performing a quality assurance function while "overview" participation means that no such direct responsibility exists -- rather a review type function is contemplated.

In addition, the relatively high level of Company management participation in the Task Force strengthened the management's already strong quality assurance understanding and attitude.

At approximately the same time as the new and revised CP Co QAPPs were issued, 28 CP Co Quality Assurance Department Procedures (QADSs) were revised and 13 new QADPs were originated. These new and revised QADPs provided numerous technical improvements. For example, inspection plans were required as a prerequisite to the performance of inspection and the contents of the inspection plans were specified. Previously, no such requirements existed. The QADPs incorporated specific checklists for the Quality Assurance Department's performance of design reviews whereas, previously, no such checklists existed. The QADPs incorporated in excess of 100 procurement quality assurance requirements which were to be imposed contractually, as applicable. (The number of such requirements has since risen to approximately 200.) The QADPs introduced detailed nonconformance reporting forms to facilitate the Quality Assurance Department's inspection and overinspection.

Subjects covered in the QADPs included: organization; the preparation of procedures; personnel training; personnel qualification and certification; design review; processing procurement documents; prebid and preaward quality evaluation; inspection planning; source and receiving inspection; construction inspection; maintenance inspection; checkout and preoperational test verification; turnover from Bechtel to CP Co; nonconformance reporting; corrective action; nonconformance and quality action statusing; stop work orders; reporting to the NRC; documentation control; quality records; inspection stamp control; processing manufacturer's notices; responding to NRC inspection reports; personnel safety; review of external documents which could impact the quality assurance program; and trend analysis; among others.

With the advent of the MPQAD, the QADPs were converted into MPQAD Procedures and are in effect today.

In the last quarter of 1979, the Bechtel Midland Project Quality Assurance organization implemented a computerized tracking system to provide increased visibility to and accountability for the open quality-related action items. This system is now being administered by MPQAD. For each action item entered into the system, the output reports identify the organization responsible for the action, the schedule for the completion of the action, the status of the action, and the MPQAD staff member responsible for following

up to assure the completion of the action and the closure of the item.

The number of open quality-related action items as of November 23, 1979, was 237. As of April 11, 1980, this number was reduced to 155, a reduction of 34.6 percent. At that point, the scope of the system was expanded to provide for the tracking of additional items for which the action rested with the Bechtel, Ann Arbor office. The initial effect was to increase the number of open quality-related action items from 155 to 273, an increase of 118 open items. As of the end of April 1981, this number was increased to 461, representing further specificity in the tracking system.

An additional change has been made to this system recently to provide a truncated, prioritized list of actions which warrant special management involvement due to their complexity or importance or due to the status of the actions in comparison to the commitments. This change provides information promptly to Mr. J. Cook, the Vice President responsible for the Midland Project and involves him directly in resolution of significant quality-related issues.

In addition to these improvements, the system for tracking open quality-related action items has enabled management attention to be focused on the most significant actions and on the total number of actions for which each organization is responsible. This resulted in a marked reduction in the number of old, outstanding actions, even though the total number of outstanding actions at the end of

which items?

May 1981 has increased from the inception of the system due to the fact that the system was changed to broaden its scope, as noted earlier.

In the last quarter of 1979, another system was implemented to measure the quantity and ages of the open quality nonconformances, as differentiated from the system for tracking open quality-related action items described immediately above. As an example, in November 1979, the number of open quality construction Discrepancy Reports was 1,603 whereas at the end of May 1981, the number was 502, a reduction of 111 or 69 percent.

The system for tracking open quality nonconformances has also facilitated concentrating managerial attention on matters which assisted in achieving the significant reductions noted.

A parallel effort resulted in the reduction of the number of open and outstanding Quality Control Inspection Records (QCIRs). QCIRs describe the construction inspections to be made and provide a record of the status of those inspections. In the fourteen month period ending January 1980, the number of open QCIRs was reduced from over 22,000 to less than 16,000. As of the end of April 1981, the number was 15,128. A part of this reduction was attributable to the shortening of the time span between the completion of the construction activity and the completion of the corresponding inspection activity. To put these numbers in perspective, the total number of closed QCIRs, representing

completed and accepted construction work, was approximately 8,300 as of the end of May 1981.

The CP Co Quality Assurance Department, and its successor, the MPQAD, have been provding an in-line review and approval of the Nonconformance Reports originated by Bechtel and selected site contractors. The purpose of this review and approval is to assure the adequacy of the process by which the Nonconformance Report is dispositioned and closed. The MPQAD assures that the disposition is made by persons who are authorized and designated to do so and that the justification for the disposition is appropriate and documented.

In the same manner, commencing in August 1980, the MPQAD has been providing an in-line review and approval of the disposition and closure process for any requests from Bechtel suppliers to accept nonconforming items as is or on the basis of their repair. Previously, the review and approval of the supplier requests was required of only the Bechtel Engineering and Procurement organizations with an "information only" copy provided after the fact to both the Bechtel and CP Co Quality Assurance organizations.

The MPQAD in-line review and approval of these requests provides both a timely assessment of the dispositioning process and a timely feedback as to a given supplier's ability to achieve the quality-related requirements. MPQAD now has greater involvement and control in the correction of

the root cause of the supplier's problem or of any Bechtel problem which may arise in processing the supplier's request.

Historically, the Bechtel Quality Control organization has been reviewing and approving Purchase Orders (POs) originated at the site. The purpose of this review was primarily to assure that the design and quality criteria previously established by Project Engineering were translated accurately into the POs. In September 1980, the MPQAD replaced the Bechtel Quality Control organization as the reviewer of these field POs. (This responsibility change is consistent with the MPQAD's review and approval of the POs originated at the Bechtel, Ann Arbor Office). The scope and purpose of the MPQAD review and approval is broader than was the scope and purpose of the Bechtel Quality Control review and approval. Thus, MPQAD assures the technical adequacy of the quality assurance requirements, adjusting them as appropriate, to fit current conditions.

That completes my testimony with regard to the programmatic improvements relating to Appendix B, Criterion II, "QA Program." I will now describe some programmatic improvements relating to Appendix B, Criterion III, "Design Control."

In the last quarter of 1977, Walter R. Bird submitted a CP Co Quality Assurance Engineering Section objective which I, in turn, submitted as a CP Co Quality Assurance Department objective to the Vice President - Projects, Engineering & Construction. The objective was to assess, on

a sampling basis, the adequacy of the process by which equipment was being environmentally and seismically qualified and to assess the level of assurance that the equipment qualification results were consistent with the commitments made in the Final Safety Analysis Report (FSAR). The review began in the first quarter of 1978 and resulted in the issuance of three CP Co Nonconformance Reports in late June 1978. On November 13, 1978, CP Co issued a 50.55(e) Report based on the CP Co Quality Assurance Department Nonconformance Reports issued in late June 1978. This 50.55(e) Report alerted the industry to the generic problems relating to equipment environmental and seismic qualification. The CP Co 50.55(e) Report and the associated CP Co corrective action plan preceded, by three months, the NRC Bulletin (79-01) which required actions nearly identical to those which had been planned and begun for the Midland Project, as I will describe below.

In April 1978, the Bechtel San Francisco Power Division issued a quality assurance information flyer which identified three cases for which the qualification test reports approved by Bechtel did not meet the purchase specification and FSAR requirements. As a result of this information, the Bechtel Midland Project organization reviewed seven qualification test reports which had been approved by Bechtel Engineering. The Bechtel Midland Project Quality Assurance organization issued a Quality Action Request in June 1978

and hardware deficiencies were identified in a Bechtel Nonconformance Report issued on October 4, 1978.

The documentation for all equipment requiring environmental and seismic qualification has since been re-reviewed by Bechtel Midland Project Quality Engineering personnel. For each such equipment, the re-review encompassed a comparison of the FSAR requirements, the Institute of Electrical & Electronic Engineers (IEEE) standard requirements and the procurement specification requirements to assure their consistency and adequacy. A comparison was then made between those requirements and the actual test procedures and test reports provided by the equipment suppliers. This equipment qualification documentation re-review was performed using a disciplined system which was documented in accordance with a formal procedure. The re-review was completed in January 1979 and the Bechtel Quality Control organization issued approximately 50 Bechtel Nonconformance Reports against the equipment found to be nonconforming or potentially nonconforming.

Due to the nature of the problems discovered during the qualification documentation re-review and the fact that these problems were generic to the Bechtel Engineering Department, several Bechtel procedural changes were made. These procedural changes better defined the role of the Bechtel Quality Engineer. Manager of Engineering Directive (MED) 4.49-0 was revised to add paragraph 4.3, as follows:

> "The Project Quality Engineer shall review all specifications, attachments and addenda for completeness, inspectability of the commodity, compliance with the quality codes and standards, control of special processes, quality considerations, and qualification test requirements prior to approval by the Project Engineer."

Engineering Department Project Instruction (EDPI) 4.25.1 was revised to add paragraph 4.4, as follows:

> "Test procedures and test results relating to equipment qualification shall be routed to Quality Engineering and Licensing for review (nuclear projects only). All other documents relating to qualification require interface as defined in Table I."

In addition, a Bechtel Power Corporation Design Guide for Environmental Qualification of Safety-Related Equipment was provided for use by Bechtel engineers.

Training relating to qualification testing also was provided to Bechtel engineers. 147 Project personnel have received this training. Included in the training were such topics as testing standards, methods of testing, testing documentation, and interpretation of testing results -- all with emphasis on the problems found during the aforementioned qualification documentation re-review.

This whole re-review experience, along with the procedural changes and training, have produced a significant improvement in the Bechtel Midland Project organization activities relating to qualification test.

Assurance that the current qualification test requirements are being met is gained from a periodic report

issued by the Bechtel Midland Project organization which provides the statusing and tracking of the open aformentioned Nonconformance Reports and other related action items, as well as from the documented corrective actions. An additional assessment is being accomplished in association with an ongoing activity to provide qualification information requested by the NRC, in a letter from D. F. Ross, Jr. entitled, "Qualification of Safety-Related Electrical Equipment," dated February 21, 1980.

This activity involves the identification of safety-related equipment including, for each equipment, the model manufacturer, location, service description, environmental conditions and applicable qualification report. The assessment involves a re-re-review (a third review) of the qualification report, using a detailed checklist to verify conformance to the requirements given in NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." This assessment is scheduled for completion by October 1981 and is being performed by Commonwealth Associates, Inc. of Jackson, Michigan, an outside consulting firm, thus providing independence from the prior Bechtel Midland Project qualification documentation re-review process.

In 1977, the CP Co Quality Assurance Engineering Section performed a review of Bechtel field-oriented specifications to determine the adequacy of their specificity, the clarity of their wording, supportive of construction and inspection activities. Forty-nine specifications for fabri-

cation and installation were reviewed. The forty-nine specifications covered the significant work activities not yet completed at the site. This review and the Bechtel Engineering disposition of the CP Co Quality Assurance Engineering comments resulted in the revision to twelve of the forty-nine specifications. These revisions were for tolerance and word changes which improved the clarity and increased specificity.

Also in 1977, the CP Co Quality Assurance Engineering Section and the Bechtel Engineering Department, each independently, reviewed the dimensional tolerances for a portion of the Reactor Building Spray System (RBSS). Forty design documents were reviewed by each organization, including drawings for the RBSS installation which are typical of drawings for other safety-related installations and specifications generic to the installation of all safety-related systems. The results of these reviews confirmed that dimensional tolerances were generally available for the installation of safety-related systems. Revisions were made to seven generic design documents to clarify dimensional tolerances.

The review of the forty-nine field-oriented specifications and of the forty design documents relating to the RBSS provide an increased confidence in the clarity of these documents. And, through the process of resolving the CP Co Quality Assurance Engineering review comments, Bechtel

Engineering personnel increased their awareness of the need for specificity in the preparation of design documents. In 1978, a review was conducted of 91 Bechtel Field Change Requests (FCRs) to assess the sensitivity of Bechtel Field Engineering personnel to the need for tolerances, specificity and clarity in design documentation. If Bechtel Field Engineering personnel were requesting changes to design document (documents originated early in the project prior to the aforementioned specificity reviews), it would be indicative, that the need for tolerances, specificity and clarity was also acknowledged by them. Of the 91 FCRs reviewed by Bechtel, 11 were found to have been originated for these reasons.

Specifications and drawings are now subject to a continuing review by MPQAD in conjunction with the MPQAD overinspections of site construction activities. In addition, revisions to specifications are now subject to MPQAD review and approval prior to their issuance.

That completes my testimony with regard to the programmatic improvements relating to Appendix B, Criterion III, "Design Control." I will now describe some programmatic improvements relating to Appendix B, Criterion VII, "Control of Purchased Material, Equipment and Services."

The system for the evaluation of the degree to which suppliers conform to quality requirements has been changed in two ways. First, we have increased, to a minimum of 10 per year, the number of CP Co Audit and Administration

Section audits of suppliers. Second, the Bechtel Manager of Engineering Directives have been revised to provide for specific inspection points, as necessary, in Bechtel originated procurement documentation as designated by the Bechtel Supplier Quality or the Bechtel Engineering organizations.

In addition, a contract clause was originated and is being implemented through the MPQAD Procedures to provide, that specific inspection points be contractually imposed on suppliers as necessary for CP Co-originated procurement packages for design and construction.

In February 1978, the CP Co Quality Assurance Department engaged Science Applications, Incorporated an independent consultant, to perform an audit of the quality verification documents for the Nuclear Steam Supply System (NSSS) supplied by B&W, Lynchburg. Quality verification documents are documents which are intended to demonstrate that an item meets its design and workmanship requirements. The results of the audit indicated that a complete re-review of this documentation was appropriate, and in conjunction with B&W, the CP Co Quality Assurance Department established and documented the requirements by which to accomplish the re-review. The re-review has been completed by the B&W Quality Assurance organization. The nonconformances have been dispositioned and corrected, as necessary, and the effectiveness of the re-review has been verified through additional audits by the

CP Co Audit and Administration Section and by summary reviews by the MPQAD.

In 1979, at the direction of the CP Co Quality Assurance Department, the Bechtel Quality Control and Bechtel Supplier Quality organizations started a re-review of quality verification documents originated prior to July 1978 by Bechtel suppliers. The re-review is limited to verification documents originated prior to July 1978 because, as of that date, the Bechtel Quality Control and Supplier Quality organizations began making their initial review of these with a much more specific and improved procedure. The purpose of the re-review of the older documents is to provide additional assurance of the quality of the supplied hardware by confirming that the quality verification documents are available, legible and technically acceptable. The re-review is being performed on a systematic sampling basis. When the adequacy of a supplier's quality verification documents cannot be judged, to be wholly acceptable, 100 percent of that supplier's quality verification documents are subjected to the re-review process. All nonconformances are being dispositioned and corrected, as necessary, under the auspices of the joint Bechtel/CP Co MPQAD Material Review Board. At the end of May 1981, the re-review and disposition of the supplier quality verification documents was complete for approximately 2,500 purchase order packages, a completion percentage of approximately 44.

This re-review activity, in conjunction with the improved procedures for the review of supplier quality verification documents and the training of 159 Bechtel Supplier Quality representatives in May and June, 1980 (the Midland Project uses approximately 70 of these representatives for supplier evaluation, source inspection and source surveillance activities), has resulted in a reduction in the number of nonconformances in these documents as received at the site.

In 1980, at the direction of the MPQAD, and based on a suggestion by James Keppler, Director of NRC Region III, the Bechtel Quality Control and Supplier Quality organizations began a re-review of the certain types of Bechtel purchase orders issued prior to July 1980. These include purchase orders issued at the site for bulk items for which there was no Bechtel inspection required during the items' fabrication at the suppliers' facilities (although there may have been Bechtel inspection at the conclusion of the fabrication processes at the suppliers' facilities and although there was receiving inspection in each case). There are approximately 1,700 such field purchase orders being re-reviewed.

Another re-review concerns field purchase orders for which Bechtel in-process inspection at the suppliers' facilities was required. There are approximately 50 such field purchase orders. Finally, a third type re-review involves purchase orders originated at the Bechtel, Ann Arbor Office. These purchase orders had required Bechtel

in-process inspection at the suppliers' facilities and involved a subjective engineering judgment which indicated that the supplier may have had some difficulty in meeting the requirements. There are approximately 50 such purchase orders.

The purpose of this purchase order re-review is to identify any "flags," or "adverse conditions" for which the available documentation does not provide evidence of the adequate disposition or resolution of the condition. The purchase order re-review for "flags" is being accomplished on a disciplined basis by experienced personnel who have been specifically trained to accomplish this task in accordance with a documented procedure. The reason for limiting the re-review of these types of purchase orders to those which were originated prior to July 1978 is because since that time the Bechtel Quality Control and Bechtel Supplier Quality organizations have implemented changes, which I believe to be improvements, in the way in which the purchase order documentation is initially reviewed and the way in which the disposition of any question is initially documented.

As of the end of May 1981, 421 purchase orders, or 23 percent, have been re-reviewed. Although there are some "flags" yet to be resolved, there are no serious hardware concerns as of that time.

Beginning in 1979, selected major procurements were processed through the CP Co Quality Assurance Program, rather than through the Bechtel Quality Assurance Program,

in order to provide CP Co with direct control of the new work represented by these procurements. For the installation of the Nuclear Steam Supply System (NSSS) and for the preservice inspection (PSI), the CP Co Quality Assurance Department was established as the primary organization responsible for performing quality engineering, inspection, examination, test verification and audit. This is in contrast to the responsibility for "overviewing" these activities as they are performed by the Bechtel Quality Engineering, Bechtel Supplier Quality, Bechtel Quality Control and Bechtel Quality Assurance organizations. The NSSS erection is approximately 90 percent complete. The PSI is approximately 75 percent complete. For these activities, both the execution of the Quality Assurance Program and the supplier's performance have been above average based on the relatively low number of nonconformance reports originated and on their relative lack of significance. I anticipate that any additional future site work will also be executed wholly utilizing the CP Co Quality Assurance Program.

That completes my testimony with regard to the programmatic improvements relating to Appendix B, Criterion VII, "Control of Purchased Material, Equipment and Services." I will now describe a programmatic improvement relating to Appendix B, Criterion IX, "Control of Special Processes."

The process control which I am about to describe was implemented to avoid damage to electrical cable, both the wire and its insulation, while it is being pulled through

a run of conduit which contains one or more 90° bends. Based on input from the Bechtel Field Engineering and Bechtel Quality Control organizations as to the actual field conditions, a computer program calculates the expected pull forces that will be required to pull a given cable or group of cables through a given conduit. The program also calculates the maximum allowable pull force that can be used without subjecting the cable or cables to damage. The output of this program is reviewed by Bechtel Quality Control personnel prior to pulling any cable which is categorized as Class 1E. Obviously, cable is not allowed to be pulled if the expected pulling force exceeds the allowable pulling force. This process control has worked effectively as evidenced by the relative absence of MPQAD originated Nonconformance Reports as well as the relative absence of NRC Items of Noncompliance or Unresolved Items in this area.

Next, my testimony will describe programmatic improvements relating to Appendix B, Criterion X, "Inspection."

MPQAD and Bechtel Quality Control personnel who perform inspection are now certified to requirements which exceed the requirements of the Ameircan National Standards Institute (ANSI) Standard N45.2.6. Certifying inspectors on a discipline-by-discipline basis satisfies the requirements of ANSI N45.2.6. For example, it is acceptable to certify an inspector as a civil inspector or to certify him as an electrical inspector or to certify him as a mechanical

inspector -- civil, electrical and mechanical being among the major disciplines.

However, in 1979, the CP Co Quality Assurance Department (and its successor, the MPQAD) started to certify its inspection personnel to each specific inspection plan that is used on a repetitive basis. For example, within the civil discipline, one who is to perform the inspection of concrete must first be certified to the specific plan for the inspection of concrete; one who is to perform soils inspection must first be certified to the specific plan for the inspection of soils. Such certification is also used for other activities within the civil discipline, such as the installation of anchor bolts, or the installation of tendons for post-tensioning the concrete containment structure. Similarly, in 1980, at the direction of the CP Co Quality Assurance Department, Bechtel began certifying its Quality Control inspection personnel to the individual Bechtel inspection plans which are called Project Quality Control Instructions. The changes that I have just described apply to Bechtel Quality Control and MPQAD personnel who are Level I and II Inspectors in accordance with the ANSI N45.2.6 classification system.

In 1976, the CP Co Quality Assurance Department started to perform overinspection of the placement of reinforcing steel bar and of the placement of other embedments in concrete. An overinspection is an inspection of a characteristic which was previously inspected by the primary

inspection organization--for the most part, that being the Bechtel Quality Control organization, the B&W Quality Control organization, or any one of a number of other site contractor Quality Control organizations. The purpose of the overinspection is to evaluate the appropriateness of the decision made by the primary inspection organization regarding the acceptability or unacceptability of the characteristic. In any case for which the decision was inappropriate, action is taken to prevent recurrence of a similar situation. Obviously, a higher degree of assurance in the quality of the characteristics which are overinspected also results.

In 1978, overinspection was extended to cover other civil work and to cover the mechanical, welding, electrical, and instrumentation and controls work. The overinspection activity implemented in 1978 was changed in three ways. First, overinspection started to be performed in accordance with specific inspection plans, whereas previously this had not been the case. Second, a review for specificity of the applicable Bechtel drawings, specifications, Field Procedures and Quality Control Instructions, was incorporated as part of overinspection. Finally, we began to "front end load" the overinspection -- i.e., to perform overinspection to a greater degree at the inception of a new activity to provide more timely identification of nonconforming conditions and necessary corrective action in both the construction and primary inspection processes.

The MPQAD overinspection of Bechtel Quality Control's civil inspection, mechanical inspection, electrical inspection and welding inspection is accomplished on a sampling basis. The interpretation of on-site radiographs is overinspected on a sampling basis, except for radiographic interpretations for the Nuclear Steam Supply System (NSSS) for which overinspection is on a 100 percent basis. The overinspection of the interpretation of radiographs received from Bechtel suppliers is also accomplished on a sampling basis. Specific, documented sampling plans have been established for these purposes.

As of the end of May 1981, the CP Co Quality Assurance Department and its successor, the MPQAD, has performed 98 civil, 160 mechanical, 152 electrical, 45 welding, 15 NDE and 10 radiographic interpretation overinspections. Each of these overinspections corresponds to a work package which involves numerous characteristics.

Thus, the implementation of overinspection and the implementation of the changes to the way in which the overinspection was accomplished, represent significant improvements to the Quality Assurance Program.

In 1977, the CP Co Quality Assurance Department reviewed 54 Bechtel Project Quality Control Instructions (PQCIs) or inspection plans. The review resulted in revisions to 44 of these PQCIs to provide a specific delineation of the characteristics required to be inspected and to

provide greater specificity as to the method to be used for the inspection of each characteristic.

That concludes my testimony with regard to the programmatic improvements relating to Appendix B, Criterion X, "Inspection." I will now describe some programmatic improvements relating to Appendix B, Criterion XVI, "Corrective Action."

Earlier I provided testimony regarding the status-ing, reporting and reduction of open quality action items and open quality indicators. That testimony could just as well been categorized under Criterion XVI, "Corrective Action." Keeping that in mind, I will not repeat that testimony at this point.

An activity referred to as "trend analysis" was started by the Bechtel Quality Assurance organization in 1974. Trend analysis involves categorizing various types of Bechtel originated nonconformance reports by the work, performance area, and by the type of nonconformance reported. By grouping the nonconformance report data into these performance areas and by counting the number of nonconformances which fall into each area and into each nonconformance type during each period, one can determine whether there is an adverse trend or an undesirably high frequency of a nonconformance, regardless of trend.

In 1976, the Bechtel Quality Assurance organization formalized this trend analysis activity in accordance with a documented procedure. In 1977, at the direction of

the CP Co Quality Assurance Departement, the procedure was changed to cover 30 performance areas instead of the few areas previously covered and to distribute copies of the trend analysis reports to both CP CO and Bechtel management personnel. In 1978, at the direction of the CP Co Quality Assurance Department, as suggested by NRC Region III inspectors, the system was changed again to broaden the data base for trend analysis. Previously, a micro approach was being used in that the nonconformance data were categorized into narrow performance areas and nonconformance types. At this point, a macro approach was added whereby the same data also was grouped into larger categories of performance areas and nonconformance types. This permitted the identification of broader trends, which might have been overlooked within the more detailed "micro" classification.

In 1980, another change was made to require the MPQAD Manager to make and document a specific review of each monthly trend analysis report. If the trend data for a given month exceeds specified parameters for a specific performance area, automatically an assessment is made as to whether a Stop Work Order should be issued for that performance area.

The last of my testimony with regard to programmatic improvements relates to Appendix B, Criterion XVIII, "Audits."

In 1980, the Bechtel Quality Assurance Program was changed to require two quality assurance audits to be made per year, instead of one, by Bechtel management. In addition, over the years since 1977, both the Bechtel and CP Co

Quality Assurance organizations increased the emphasis in auditing the technical engineering activities and in determining the adequacy of the policies and procedures, as contrasted to auditing merely to determine the degree to which these policies and procedures are being implemented.

Earlier I testified with regard to audits of supplier facilities. This testimony could just as well have been categorized under this Criterion XVIII, "Auditing." However, keeping that testimony in mind, I will not repeat it at this point.

Both the CP Co "Corporate" audit (made by the Audit & Administration Section) and the MPQAD audit activities were changed to require that auditors and lead auditors be qualified and certified in accordance with the requirements of ANSI Standard N45.2.23, except that the auditors are not required to perform a stipulated number of audits per year in order to maintain their certification status.

In accordance with existing quality assurance procedures, the Management Analysis Co (MAC), an independent consultant, was engaged to perform two special quality assurance audits in September 1978 and September 1980. The findings in the audits and MAC's specific comments have been used to develop some of the improvements in the Quality Assurance Program discussed in my testimony.

In May 1981 MAC finished an extensive "special" assessment of the adequacy of the corrective actions taken by CPCo and Bechtel for terms identified in 10 CFR §50.55(e)

Reports, the quality of supplied hardware at the site and the overall effectiveness of the Midland Quality Assurance Program. The results of this assessment have been submitted to the NRC. In the assessment MAC concluded:

> "the Midland Quality Assurance Program . . . in general . . . meets the NRC requirements and is adequate for the control of quality assurance of safety related hardware."

Further, MAC determined that:

> "the overall assessment of Midland's Quality Assurance Program is that it is somewhat above average for nuclear plants, particularly those for which construction permits had been issued in the same time frame."

This concludes my testimony with regard to the improvements made to the Midland Project Quality Assurance Program.

Recognizing the fact that the Program was approved by the NRC in 1975, recognizing the large number of improvements that have been made to the Program since 1976, recognizing the significance of these improvements, the published NRC conclusions about the Program, and finally, the general state of the quality assurance programs for other projects, I am confident of the Midland Project Quality Assurance Program. I believe it is in compliance with the NRC requirements, that it is adequate for its purpose, and that it is among the best in the industry. In addition, in my opinion, these improvements I have described demonstrated CP Co management's willingness to make large upfront investments for quality assurance, to accept changes in the Quality Assurance Program, to be informed about the state of quality

assurance. They indicate a management willing to make timely decisions on quality assurance matters, to promote quality assurance throughout the organization, and, very importantly, to interact responsibly with the NRC.

III. Midland Project Quality Assurance Program Improvements Adopted As Corrective Actions for the Diesel Generator Building Settlement.

The second part of my testimony deals with other Midland Project Quality Assurance Program improvements or corrective actions in response to the Diesel Generator Building settlement. Some of these corrective actions were programmatic and some were generic to soils placement activities.

On April 24, 1979, CPCo submitted to the NRC Staff a response to their 10 CFR §50.54(f) question 1; subsequently, on November 13, 1979 CP Co responded to 10 CFR §50.54(f) question 23. These responses have been revised periodically to provide additional information. They explicitly detail the additional programmatic improvements not covered in the first part of my testimony. They also provide a description of generic improvements and corrective actions relating to the specific soils placement activities which are the subject of this hearing. In light of their subject matter and since I made the final decisions regarding the content and language of these responses, they will serve as the second part of my testimony dealing with the corrective actions concerning the diesel generator building. (See Marguglio Exhibits 9 and 10).

CP Co continues to meet the commitment made in our responses to these questions and regularly apprises the NRC Staff of their status. I have attached, also as part of my testimony, a copy of the March 1981 Status Report, outlining the current status of these improvements and corrections. (Marguglio Exhibit 11).

Our responses to 10 CFR §50.54(f) questions 1 and 23 directly relate to the allegations put forth by Intervenor Stamiris in her contention 3. Absent from our response to these questions, however, is any discussion of the incidents described in contention (2)(c), relating to an alleged company practice of "substituting" construction materials for other than those specified, on the basis of "commercial" and "expediency" reasons. The contention asserts this adversely affected the soils settlement. I will now take the opportunity to address that contention.

Our responses to the 10 CFR §50.54(f) questions 1 and 23 were directed at those events which possibly related to the Diesel Generator Building settlement; the incidents described in contention (2)(c) in no way relate to soils settlement. In fact the statements in the contention are factually incorrect.

The contention identifies one non-conformance report -- NCR QF 203 -- as its basis. The report, by CP Co's own quality assurance section, was written because it appeared that materials not in compliance with construction specifications were improperly accepted for use on the Project.

After an investigation by the CP Co Quality Assurance Department, however, it was found that the materials in question complied with applicable construction specifications as outlined in the design documents. The non-conformance report was written because the materials did not meet the standards found in the "receiving inspection plan," an internally developed document. In this case, the receiving inspection plan had more stringent requirements for the particular materials than were found in the construction specifications. Thus, the receiving inspection plan was incorrect. There was never any substitution of an unapproved material for an approved one here; only the originally specified and approved materials were used in the first place.

The contention also refers to an event in which lean concrete was placed around electrical duct banks, implying that this, too, somehow threatened safety and caused the settlement. Here, too, the contention is inaccurate. Lean concrete was used to replace the soils material around certain duct banks because of the difficulty in compacting the soils material. Such action was in complete compliance with the applicable construction specification, C-211, "Technical Specification for Structural Backfill". C-211, in effect since 1974, permitted the use of lean concrete in place of soils material. Thus, there was no basis at all for the allegation in contention 2(c) that financial and time schedule pressures forced CP Co to take

certain action in regard to soils materials that compromised health and safety and caused the settlement of the Diesel Generator Building.

N

I. INTRODUCTION AND SCOPE OF TESTIMONY

My name is James W. Cook. I am Vice President Projects, Engineering and Construction for Consumers Power Company. In this capacity, I am responsible for the engineering and construction, including quality assurance, for all the Company's production, generation and transmission facilities and major modifications thereto. Because of the nature of the Company's construction program, both currently and for the immediate future, the vast majority of my responsibilities focus on the construction of the Midland Nuclear Plant. I have been in my current position since October 1980, and I have been directly responsible for the Midland Project since March 1980 when I was appointed Vice President for the Midland Project. In my present position, I retain the direct responsibility for and involvement with the Midland Project.

I graduated from Princeton University in 1962 with a Bachelor of Science Degree in Chemical Engineering. I also attended Pennsylvania State University and received a Master of Engineering Degree in Nuclear Engineering in 1965. In addition, I attended, on a part-time basis, the Polytechnic Institute of Brooklyn (now part of the State University of New York) where I took a number of graduate courses in the Chemical Engineering Department. I am a registered professional engineer in the State of New York.

After graduation from Princeton, I joined the American Electric Power Service Corporation, the technical and management services arm of the American Electric Power System. During my 10 years as part of the AEPSC

Engineering Department in New York, I held a number of positions in the mechanical and nuclear engineering areas. The majority of my experience at AEPSC related to various activities associated with the design of the D C Cook Nuclear Plant located in Bridgeman, Michigan. I directly participated in and was responsible for the initial cost estimates and design studies, the safety analyses and technical licensing activities leading to the construction permit, and the initial formulation of the analytical methods and staffing of the fuel management program for the D C Cook Plant. My final position at AEP was Section Head, Physics and Fuel Management. In 1972, I joined the Stone and Webster Engineering Corporation in Boston. At Stone and Webster, I undertook a number of assignments, first, as an Assistant Project Engineer and then as a Project Engineer with responsibility for the engineering of several nuclear power plants being designed by Stone and Webster. My final assignment at Stone and Webster was as Project Engineer for Millstone Unit 3 currently under construction near Waterford, Connecticut. In 1977, I joined Consumers Power Company as Vice President Energy Planning, a staff position coordinating the Company's overall corporate planning activities and reporting directly to the Company's top management. I held this position until March 1980.

I hold membership in various professional societies and industry committees related to my work. I have been a member of the American Nuclear Society since my graduation from Penn State either through individual or corporate membership. Among my more recent industry committee activities are the following: I am a member of the Executive

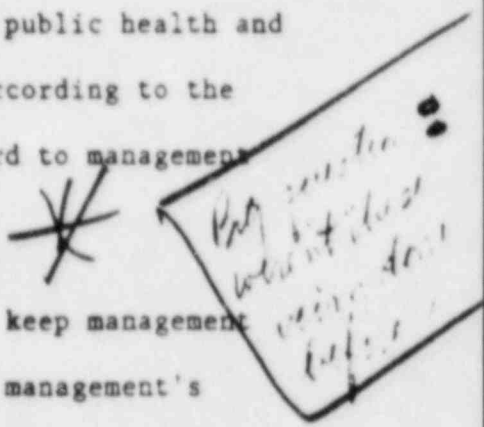
Advisory Committee on Nuclear Power of the Edison Electric Institute. I am a member of the Steering Committee of the Utility Occupational Radiation Standards Group (UORSG). I am a member of the Policy Committee of the Atomic Industrial Forum's Industry Degraded Core Rulemaking (IDCOR) Group. I have also recently joined the Atomic Industrial Forum's Policy Committee on Nuclear Regulation.

I am testifying today about the commitment of Consumers Power Company management to construct the Midland Nuclear Plant in a manner so as to comply with all applicable regulatory requirements and to operate safely and reliably when the plant is placed into operation. My testimony on the subject of this commitment is limited in light of the ruling of the Atomic Safety and Licensing Board (ASLB) dated October 24, 1980 which limited the scope of the intervenor Stamiris's contentions on "management attitude" as follows:

> " W e note that the contentions are to be understood as limited to the resolution of the soils settlement issues, to the implementation of the QA/QC program with respect to the resolution of such issues and to factors which could be said to bear upon the Applicant's managerial attitude in resolving such issues."

Accordingly, my testimony on management attitude covers the time period beginning March of 1980 and running to the present. The period prior to March 1980 is covered in the testimony of Mr Stephen H. Howell.

My testimony will generally address the points raised in the ASLB order; ie, how management has gone about trying to resolve the soils settlement issues and how we have implemented the QA/QC program. In addition, I will follow the same general approach utilized in Mr Howell's testimony but describing activities that occurred only in the time period of my direct involvement. This approach was chosen because I agree that any useful discussion of Consumers Power Company management attitude must focus on actions taken or planned to assure that the Midland Plant is built in a manner consistent with the protection of public health and safety. The actions I describe will be organized according to the following criteria which seem appropriate with regard to management attitude:



1. The existence of an organizational structure to keep management informed of construction and quality issues and management's willingness to be informed on those subjects;

2. Prompt, effective and complete communication with the NRC on matters affecting the construction permit and the operating license;

3. Prompt and effective investigations of deviations from design or construction specifications;

4. Expedited management decision-making on programs and measures essential for the successful completion of the project; and

5. Management's willingness to expend effort and resources to meet regulatory requirements.

II. INDICATORS OF A POSITIVE MANAGEMENT ATTITUDE

A. Information Flow to Management - Midland Project Organization

The recognition in the second half of 1979 that the Midland Nuclear Plant could not be completed on the then existing schedule led to a reappraisal by many knowledgeable individuals in the Company, including the Chief Executive Officer, of how the entire project could best be organized to successfully complete the project. This reappraisal was in full swing when I was approached in March 1980 to become directly involved in completing the project. I accepted the assignment of heading the Midland Project and was thereafter involved in the reorganization of the project. The general format of the organizational planning was to identify and evaluate every idea and experience that the Company's management had accumulated over the years in their individual participation in building nuclear power plants both for Consumers Power Company and elsewhere. This retrospective included my own experience in both another utility's and an architect/engineer's organization and the views of the Company's Chief Executive Officer from his experiences at General Electric prior to joining Consumers Power Company.

In my view the Company was able to benefit from industry's collective experience and management's own perspective of the specific external environment that the Company would face in proceeding with the project. The major results of this project restructuring were put into place starting in March of 1980 and

continuing until August. The general objectives that the reorganization sought to achieve can be summarized as follows:

- Increasing participation by Consumers Power Company in all aspects of the project while still recognizing that major portions of the project would be the direct undertaking of the other major participants; ie, Bechtel and B&W.

- Evaluating all the participating organizations with regard to the quality and depth of personnel in the leadership positions and the adequacy of the project resources to accomplish the work required to finish the project.

- Making the project within Consumers Power Company as self-contained as practicable. This meant that any resource being utilized on more than a minimal basis would be reassigned to full-time project involvement.

- Aligning the resources of all the participating organizations to the extent possible to reinforce the concept of a single project team working together as opposed to separate organizations working more or less as independent contractors. This organizational concept spanned all phases of the project including quality assurance, operations and the various contractor organizations.

The net result of this reorganization when combined with the replanning of the work required to complete the project resulted in significant increases in the professional personnel assigned to the

job in all of the major organizations participating in the job. One of the benefits that derives from this approach, which culminated in the March reorganization but had been evolving for several years previously, was more direct Consumers Power Company involvement and control over the subtier activities in the contractor organizations. This involvement meant that more timely decisions can be made due to the Consumers Power project personnel now dealing more closely with the activities within the contractor organizations. This also meant that potential problems can be identified and escalated to Consumers' management attention earlier. Also the utility personnel, with more of a hands-on approach, become more sensitized to the specific problems encountered by contractor personnel. As a result, better working relationships and mutual respect can be developed, and the single team approach can be fostered within the entire project organization.

The CP Co Midland Project organizational structure that resulted from the 1980 reorganization is depicted in general form in Exhibit 1 to my testimony. Although not detailed here, considerable thought was given to making the major organizational units interface properly. The importance of proper interfaces and communications becomes apparent when recognition is given to the fact that over 500 employees currently report through the CP Co project organization and well over 4,000 employees are currently at work on Midland through the Bechtel organizational structure.

I should also note that during the time frame of the overall reorganization (second half of 1979 through the first half of 1980) most of the key management positions for the Midland Project at both Bechtel and B&W were restaffed and expanded in recognition of the magnitude and complexity of the remaining work.

The specific organizational change effecting quality assurance was to completely integrate the Consumers Power Company and Bechtel quality assurance organizations into a single entity called the Midland Project Quality Assurance Department (MPQAD). This organization, headed by Consumers Power Company quality assurance personnel, was made a direct part of the Midland Project and not only directly reports to me as the head of the Midland Project Office but also supports the Bechtel Project Manager in terms of his needs for quality assurance staff. The details of the quality assurance organization are more fully discussed in the testimony of Mr Benjamin W. Marguglio.

The ability of the corporate and project management to be informed on the progress and problems of the project under the new organization can be described in several ways. First, by having a corporate officer involved directly in the day-to-day management of the project, corporate management's involvement and awareness has to be increased. Second, the extent of management's access to information can be charted by the amount of correspondence, of which a large fraction is in the quality assurance area, that is sent

directly to the Vice President Projects, Engineering and Construction. In addition, there are a number of monthly and other periodic project management level meetings that directly discuss project progress and problems and are either partially or totally devoted to quality assurance matters. Further, there have been and continue to be ad hoc problem-solving sessions chaired by myself which are directly related to quality matters.

Finally not only am I fully informed, both on a formal and informal basis of the overall project status, but also considerable information goes directly to the Company's Chief Executive Officer (CEO). Shortly after the Midland Project was reorganized, the project established biweekly briefings for the Company's CEO on all aspects of the project and specifically including quality assurance. The majority of these briefings take place at the jobsite. These meetings were established to increase the level of information flow to the CEO in addition to his previous level of regularly scheduled and informal briefings.

B. Communication with the NRC

As one who has dealt on and off with the NRC over the past 16 years, I must express amazement with the amount of information which has been forwarded to the NRC as part of this proceeding. To have lack of information as even a potential issue in this proceeding caused me some initial puzzlement. In fact, my perception upon joining the project was to sense a frustration that existed based on the

conclusions of those involved in this matter that nobody was listening on the other end. However, I also realized as I became more familiar with the detailed issues that the complete analytical responses sought by the NRC staff in certain areas were still to be provided on a schedule tied to the completion of detailed engineering. My concern over the lack of review rapidly changed as significant review activities proceeded in 1980; and, as these activities proceeded, significant additional submittals to the staff also followed. In addition to the amount of written material that has been presented to the staff, there have been numerous meetings with staff personnel on both the working level and management level on an ongoing basis throughout the period that I have been associated with the project. As a result, it is my firm belief that the lines of communication were wide open for the entire time period that my testimony covers. As I will discuss further here and under Section II D of this testimony, there has been and continues to be direct management level communication regarding the items in this proceeding that are deemed to be significant and which are in need of resolution between the Company and the NRC. These include both engineering and quality assurance topics. The meetings with the NRC in which I have participated during the past year are summarized in Exhibit 2 of this testimony.

In the quality assurance area, I have had a number of direct conversations with Mr Keppler, the Director of Region III. The majority of these discussions have occurred as a result of his

report to me and others in Consumers Power's management with regard to the NRC's systematic analysis of licensee performance (SALP). I have met with Mr Keppler and his senior staff three times at his headquarters as part of my follow-up to his report. The culmination of this effort was the March 13, 1981 presentation to Mr Keppler and his staff by me and my associates regarding a number of quality assurance program improvements, some of which are directly discussed in this proceeding in Mr Marguglio's testimony. During that March 13 presentation to Mr Keppler, I urged him to personnally visit the Midland site to view on a first hand basis the operation of our Midland Project organization. Mr Keppler did visit the site during May as part of an exhaustive NRC audit of our quality assurance program; and I believe that as a result of his visit, he now has an improved understanding of the MPQAD operation.

Although not directly related to the soils issues, the general approach the Company has always taken with regard to reporting to the NRC under Section 50.55(e) of the Code of Federal Regulations, Part 10, is indicative of a positive management attitude. The general approach has been ~~to be conservative~~ to err on the side of conservatism and report any potentially reportable situation including those that are still indeterminate because of the need to conduct more analysis. This policy gives the NRC staff an additional opportunity to review and comment on our internal evaluation logic. It is my perception that the NRC staff are generally supportive of and appreciate this approach.

In conclusion, I believe we have implemented and are currently maintaining a significant level of communication with the NRC not only on soils related activities but also on the entire range of project activities. It is my belief that this policy and its continued execution are paramount to the successful completion of the Midland Plant. I believe that the NRC staff management shares this belief and is committed to working with me to the extent they are able within the requirements of the overall discharge of their duties.

C. Investigation of Deviations from Construction Specifications

Since this testimony is limited to the specific soils deviations that occurred in the period of 1975 through 1977, this topic has been fully covered in the testimony of Mr Stephen H Howell. Nevertheless, I would emphasize that we are committed to investigate thoroughly any deviations from specifications, as they are identified. This will continue until the completion of the project.

D. Improved Decision-Making Via the Midland Project Organization

The general aspects of the reorganization of the Midland Project were discussed under Section II A of this testimony. In this section let me address specifically how that organization has operated in a decision-making mode in relation to the matters of this proceeding. Very shortly after joining the project, I recognized that the scope and depth of the soils related activities

required considerable senior supervisory attention. This realization led to the assignment, on an essentially full-time basis, of Consumers Power's second ranking manager for Midland, the Project Manager, Mr Gilbert S Keeley, to oversee all activities associated with this proceeding. Mr Keeley's involvement soon led to a comparable commitment in the Bechtel organization and an Assistant Project Manager, Mr Al Boos, was named to work directly with Mr Keeley. The scope of the activities required to resolve and complete the matters related to the "soils" area has led to the development of essentially a mini-project working within the overall project on nothing but "soils" issues. This arrangement means there is continuous senior project supervision for soils matters.

The soils mini-project does not mean that either myself or others in the Company's top management are not involved or aware of the major issues in this matter. A specific example will illustrate my point. As analyses and detailed design of the remedial fixes proceeded, and NRC preferences and positions about them became better known, certain decisions of considerable importance in this matter have been undertaken. By the first of this year, it became clear that the original remedial fixes, particularly, the service water pump structure underpinning design would not have sufficient margin above the original design basis for the plant to meet the new NRC staff position for seismic margin analysis as communicated by the NRC letter of October 14, 1980. Certain options as to how we could best meet this new staff position were prepared, and a technical summary

and recommendation was presented to me in late January, 1981 by those directly involved in formulating the design. Based on my evaluation of the ultimate acceptability of the various options as inferred from this new, initial stage of design information, I reversed the recommendation and selected the more extensive and therefore more costly revision to the underpinning design for the service water structure. This information was then conveyed to the NRC staff management by a telephone call in February and formally documented together with a number of additional "soils" items by letter in March. The above example is indicative of management involvement and their attitude in the resolution of the various issues in this proceeding, both technically and as a matter of policy. It is not an isolated example. Over the course of the past year, I have had continuing discussions on various "soils" related issues with both NRR technical management and as mentioned previously with the I&E quality assurance management.

My contact with the NRR technical management, specifically Mr Vollmer and Mr Knight, began in the summer of 1980. The Company had requested an opportunity to ask the NRC to reconsider its request for additional soils borings. These borings were deemed necessary by the NRC to supplement the data supporting the conclusion of preeminent consultants, Bechtel, and ourselves that the preload program for the diesel generator building had been successful. The Company, with the benefit of advice from our consultants, believed that these borings were unnecessary for a variety of reasons. I

pursued this matter with the staff management both formally and informally trying to achieve a responsible resolution. Upon finally recognizing that we would be unable to convince the staff to alter their request, rather than appeal further or resort to the litigation of this issue, I directed the project to undertake the additional borings. I did this even though I remained concerned that these borings may be inconclusive or even confusing and may not aid either the Company or the NRC in resolving the issues in question. My decision rested on a conviction that it was more productive to supply the NRC with the information they sought rather than to vindicate our initial position by means of long hearings on the question.

In addition to the ongoing discussions regarding the borings, I have expended considerable effort in both direct meetings and telephone conversations with the NRR technical management to explore ways to satisfy the NRC conerns on the other outstanding issues in a manner that will be productive to all parties - the NRC, the Company and the public. These discussions have included the issues of the seismic input parameters for the Midland Plant margin check and the underpinning designs for both the auxiliary building and the service water pump house. I believe, based on the good faith efforts to resolve the issues in this hearing on the basis of a full exchange of relevant technical data, that we are significantly closer to resolving many of the NRC's concerns than we were when these discussions commenced. It is also clear to me that the decision

being made are probably going to increase to some extent the direct costs of the Midland Plant.

E. Management's Willingness to Expend Effort and Resources to Successfully Execute Quality Assurance Programs

Earlier portions of my testimony, specifically Section II A, provide an indication of the Company's willingness to essentially put all available resources into the effort to successfully complete Midland. That this was not a single occurrence but a continuing trend has been indicated in both Mr Stephen H. Howell's and Mr Benjamin W. Marguglio's testimony. During my tenure, this commitment has been particularly gratifying based on the generally depressed economic conditions in which the Company has been operating. In a time of severe cost-cutting and a Company-wide hiring freeze, the nuclear power program at Consumers Power Company has been the only area in which requests for additional resources have been fully supported. With specific reference to the quality assurance organization, we have continued to build an expanded organization in both scope and depth. The only constraint that we have experienced has been the difficulty in locating and recruiting top quality, experienced quality assurance professionals. The problem is that the market for these individuals is difficult because demand far outweighs supply. Even so, we have met with considerable success in this effort as can be demonstrated by a review of the background of the current quality assurance staff.

In addition to building a top level quality assurance staff, we have also been willing to look outside the Company for additional assistance and consultation. Mr Howell's and Mr Marguglio's testimony have identified the use of an outside consulting firm to conduct a biennial audit of the Company's quality assurance program. As part of the Company's response to the Midland Plant portion of our SALP review, we commissioned the same consultant, Management Analysis Company, to perform a more extensive quality assessment of not only the overall program but also of our responses and follow through to past quality problems and an assessment, on a sampling basis, of the inplace hardware at the plant. This study has been completed and the consultant's report has been forwarded to the NRC for their information.

Further, in the management consulting field, the Company has retained and is currently proceeding with a review of quality management approaches utilizing the services of Phillip Crosby and Associates. Mr Crosby is a nationally known quality assurance consultant whose experience chiefly relates to manufacturing operations but whose overall philosophy and quality management approach appear to have generic applications and are therefore of possible value in the nuclear power field. One of the first major steps in working with Mr Crosby is a consultation over a two-day period at his offices with the 10 or so top officers and managers directly involved in the Midland Project, including the Company's CEO and myself. This consultation will be held in June. The

necessary research and orientation of Mr Crosby's staff to our Company and the Midland Project has already been completed.

III. CONTENTIONS OF INTERVENOR STAMIRIS

Allegations regarding the commitment of Consumers Power Company's management to a responsible construction program arise from certain contentions of intervenor Stamiris. These contentions are attached as an appendix to the ASLB's prehearing conference order in this matter, dated October 24, 1980.

Contention 1 and Contention 2, Parts a, b, c and d, all relate to activities that occurred prior to my participation on the project and as such have been addressed in the testimony of others. Contention 2e asserts that "Consumers Power Company's financial and time schedule pressures have directly and adversely affected resolution of soils issues....by failing to freely comply with NRC testing requests to further evaluate soils settlements remediation inasmuch as such programs are not allowed time for in the new completion schedule presented July 29, 1980."

First, as noted previously Consumers Power has accommodated the NRC's request for additional borings and test data. The borings are essentially complete and the testing is well underway. These activities are reflected on current soils schedules which have been provided to both the NRC and the intervenor.

Further, I disagree with this contention both as a matter of fact and of logic. By matter of fact, it is the Company's right to appeal any NRC staff decision to staff management at several levels and to the NRC

Commissioners if the Company so desires. If there were no appeals process in the nuclear regulatory arena, I am sure there would be a race to the nearest court or Congressional Committee between both licensees and intervenors to rectify that situation. Therefore, I find it difficult to understand how the Company's wish to avail itself of that right would be questioned in terms of bad management attitude. To set the record straight, Consumers Power Company has utilized the finest consulting talent available in this field; in fact, these are consultants who have done considerable work in the past for the NRC. Dr Ralph Peck, one of the consultants and a world reknown authority in soils engineering, expressed his conviction that these borings would not add any further data with respect to his conclusions regarding the status of the soils under the Diesel Generator Building. Therefore, it should not be surprising that the Company chose to follow the advice of the consultants and tried to convince the NRC staff that additional borings were unnecessary.

With regard to logic, the contention seems backwards. The NRC staff was under no obligation to reverse its original position based on our utilization of the appeal process. This is in fact what has happened. Subsequently, the Company in order to move this issue forward felt obliged to accommodate the staff request. My own personal involvement in this matter was outlined earlier in this testimony. It could therefore be argued that having failed to convince the staff to change their mind, I have in fact adversely impacted the financial and time schedule of this aspect of the project by utilizing the appeal.

Thus, both in fact and in logic, I conclude that the Contention 2e is without merit.

IV. CONCLUSION

In this testimony, I have attempted no more than to cover some of the more salient indicators of Consumers Power Company's management commitment to construct the Midland Plant in a responsible way. We are first and foremost mindful of our obligation as an NRC licensee to protect the public health and safety. In addition, the very factor asserted to foster a "poor" management attitude - time and schedule considerations - have just the opposite effect. We now estimate that the Midland Plant when completed will have cost approximately 3.1 billion dollars. This enormous sum is approximately equal to the total value (at original acquisition cost) of all Consumers Power Company's other electric assets put together. No rational person and no responsible corporate management could possibly be indifferent to design and construction quality when so enormous a sum of money is at stake. Contrary to popular belief, cost and schedule are important incentives to achieving quality. Anyone who has any experience in nuclear plant project management or any other business for that matter, soon becomes aware that the best guarantee of achieving project budgets or schedules is to "Do it right the first time." Also, in the electric power industry today, the result corporate management is striving for is to design and operate all their facilities at high capacity factors; ie, high reliability. Thus, the laws of practical economics directly reinforce the need to achieve a quality product.

EXHIBIT

MIDLAND PROJECT ORGANIZATION

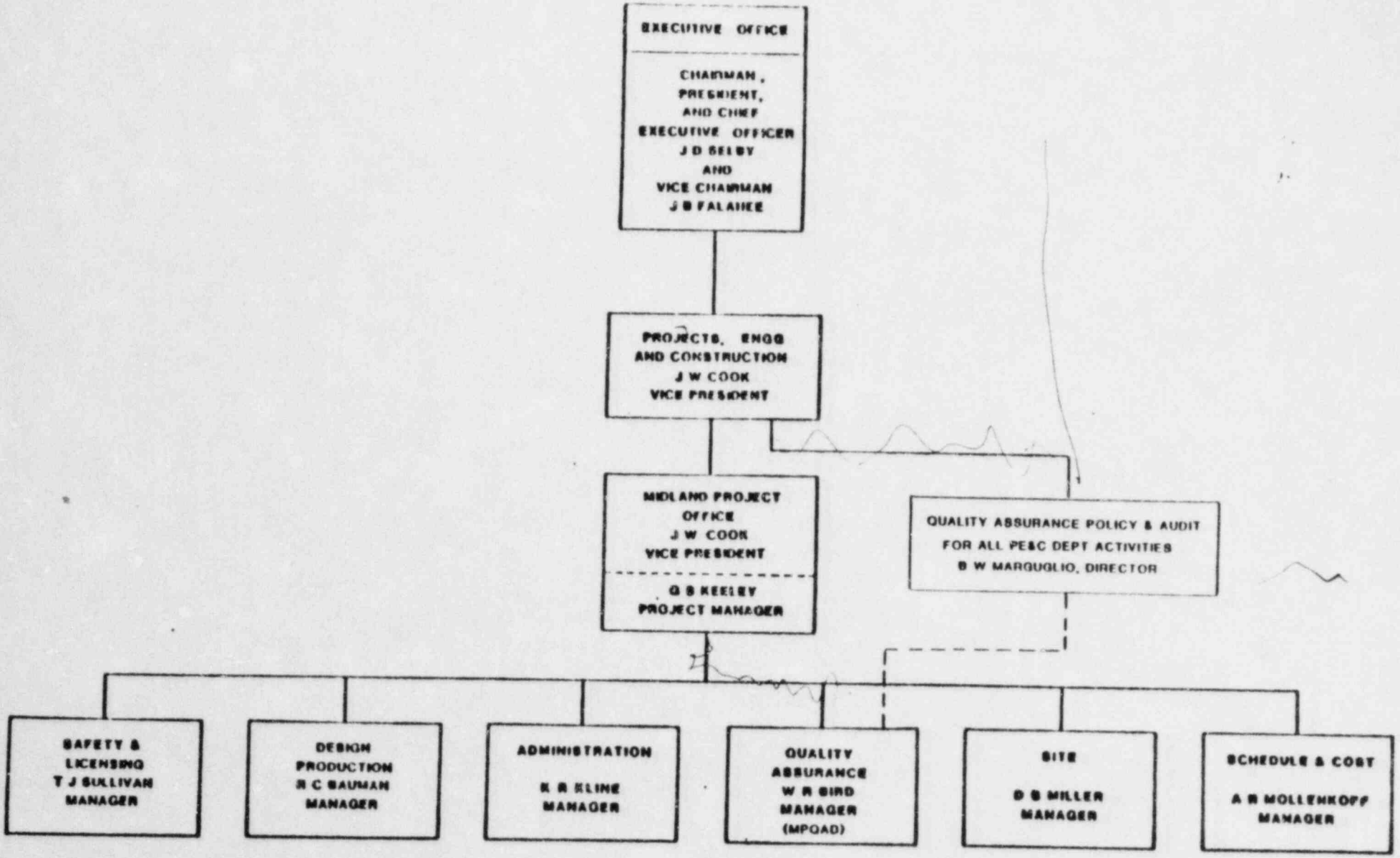


EXHIBIT 2

J W Cook Participation in Meetings
with NRC on Midland Nuclear Plant

	Meeting Date	Location	NRC Participation	Subject
1.	5/ 2/80	Glen Ellyn, IL	J Keppler, G Fiorelli et al	RV Holddown Bolts and HVAC Audit Findings; Project Reorganization
2.	5/23/80	Bethesda, MD	D Hood et al	RV Support Modifications
3.	5/28/80	Washington, DC	D Eisenhut, H Thornburg et al	Licensing and Soils Issues
4.	6/13/80	Bethesda, MD	R Purple, R Tedesco et al	Licensing and Construction Status; Project Reorganization
5.	8/25/80	Besthesda, MD	H Denton, D Eisenhut et al	Licensing Review Plan
6.	8/29/80	Midland, MI	R Vollmer, J Knight et al	Appeals Meeting on Additional Borings
7.	11/24/80	Jackson, MI	J Keppler et al	SALP Program
8.	12/ 2/80	Glen Ellyn, IL	G Fiorelli, R Knop et al	SALP Follow-Up and QA Organization
9.	12/ 5/80	Bethesda, MD	R Jackson, D Hood et al	Site Specific Seismic Response Spectra
10.	12/ 5/80	Bethesda, MD	R Vollmer	Issues in Soils Hearings
11.	12/11/80	Ann Arbor, MI	J Gilray, E Gallagher	Exit Meeting - Follow-Up to 50.54(f) Question Responses
12.	12/17/80	Glen Ellyn, IL	J Keppler et al	SALP Follow-Up and QA Organization
	3/13/81	Glen Ellyn, IL	J Keppler et al	Project Organization and QA Program Update

EXHIBIT 2

J W Cook Participation in Meetings with NRC on Midland Nuclear Plant (contd)

	Meeting Date	Location	NRC Participation	Subject
14.	4/16/81	Bethesda, MD	R Jackson, D Hood et al	Site Specific Seismic Response Spectra
15.	4/16/81	Bethesda, MD	R Vollmer, J Knight et al	Seismic Requirements for Soils Hearings and Operating Licenuse
16.	5/ 1/81	Midland, MI	C Williams et al	Exit Meeting - Electrical Inspection
17.	5/ 8/81	Bethesda, MD	J Knight, D Hood et al	Soils Issues Summary
18.	5/18, 20 21/81	Midland, MI	C Williams et al	General Midland QA Audit
19.	5/21/81	Midland, MI	J Keppler	Presentation on Midland Project Organization and Operation
20.	5/22/81	Midland, MI	J Keppler, C Williams et al	Exit Meeting - QA Program Inspection and Site Visit

NOTE: Meeting List does not include telephone contacts.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CONSUMERS POWER COMPANY

(Midland Nuclear Power Plant,
Units 1 and 2)

Docket Nos. 50-329-OM
50-330-OM
50-329-OL
50-329-OL

County of Jackson)
)ss
State of Michigan)

AFFIDAVIT OF JAMES W. COOK

I am James W. Cook. I am presently employed by Consumers Power Company as Vice President,Projects,Engineering and Construction. Based upon knowledge, information and belief my testimony in the Midland Soils Hearing, which is attached hereto, is true and correct.

James W. Cook

Subscribed and sworn to before me this 5th day of June, 1981.

Betty L Bishop
Notary Public, Jackson County, Michigan
My Commission Expires: September 21, 1982

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CONSUMERS POWER COMPANY

(Midland Plant, Units 1 and 2)

Docket Nos. 50-329-OM
50-330-OM
50-329-OL
50-330-OL

County of Jackson)
)ss
State of Michigan)

AFFIDAVIT OF STEPHEN H. HOWELL

I am Stephen H. Howell. I am presently employed by Consumers Power Company as Executive Vice President, Energy Distribution and General Services. Based upon knowledge, information and belief my testimony for the Midland Soils Hearing, which has been sent in a separate mailing, is true and correct.

Stephen H. Howell

Subscribed and sworn to before me this 8th day of June, 1981.

Notary Public, Jackson County, Michigan

My Commission Expires: September 21, 1982

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CONSUMERS POWER COMPANY

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CERTIFICATE OF SERVICE

I hereby certify that copies of Testimony of J. W. Cook, G. S. Keeley, with attached affidavits, and an affidavit of S. H. Howell, were served upon the following persons by depositing copies thereof in the United States Mail, first class postage, on this 8th day of June, 1981.

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DIRECT TESTIMONY - STEPHEN H. HOWELL

I. Introduction and Scope of Testimony

My name is Stephen H. Howell. I am Executive Vice President, Energy Distribution and General Services, for Consumers Power Company.

I graduated from Princeton University in 1954 with a Bachelor of Science Degree in Engineering. I also attended Massachusetts Institute of Technology on a Sloan Fellowship and received a Masters of Science Degree in Industrial Management in 1966.

After graduation from Princeton, I served two years on active duty in the United States Navy and thereafter worked for five years as an Exploration Geologist for the Ohio Oil Company. In 1961, I joined Consumers Power Company as a Geologist in the Gas Department. I held successive jobs in the Gas Department in underground gas storage, oil and gas exploration, gas production and transmission, and gas distribution, before being named Executive Manager of Gas Engineering and Construction in 1968. In 1970, I was appointed Executive Manager of Electric and Generating Plant Construction. In this capacity, my responsibilities included construction of the Company's new nuclear and non-nuclear electric generation plants and transmission lines. In 1971, I was named Executive Manager of Electric Plant Projects, with responsibility for the engineering, construction and

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project management for all of Consumers Power Company's nuclear and non-nuclear generating plant projects.

In 1972, I was elected Vice President, Electric Plant Projects, with similar responsibilities. In 1978, I was elected Senior Vice President, Projects, Engineering and Construction, with continued responsibility for nuclear and non-nuclear construction activities. In October, 1980, I was elected to my present position, Executive Vice President, Energy Distribution and General Services. In this capacity, I am responsible for gas and electric distribution, including distribution engineering and construction activities, region operations, customer services and general services.

I have held membership in various professional societies related to my work. I was the Founding Chairman of the Edison Electric Institute Construction Committee. I have been a member of the Atomic Industrial Forum's Policy Committee on Nuclear Regulation. I am Chairman of the Atomic Industrial Forum Committee on Design, Construction and Operation and have chaired various subcommittees and work groups of the Atomic Industrial Forum and I am a member of the American Nuclear Society. I am a registered Professional Engineer in the State of Michigan.

My present duties do not include responsibility for the construction of the Midland Project. My involvement with the Midland Project spans the period May 1970 to October 1980. However, I was the officer directly in charge of

all aspects of the Project from July 1972 until J. W. Cook's appointment as the Vice President of Consumers Power Company with direct responsibility for the Midland Project in March 1980. Mr. Cook reported to me in this capacity until October 1980. Accordingly the substance of my testimony will deal with the period ending March 1980. Mr. Cook's testimony will cover the period from March 1980 to the present.

I am testifying today about the commitment of Consumers Power Company's management to construct the Midland Project in a manner so as to comply with all applicable regulatory requirements and so that the plant will operate safely and reliably. My testimony on the subject of this commitment is in response to the ruling of the Atomic Safety and Licensing Board ("ASLB") dated October 24, 1980, which limited the scope of Intervenor Stamiris' contentions on "management attitude" as follows:

> "[W]e are admitting the various contentions which raise the 'managerial attitude' issue. In doing so, however, we note that the contentions are to be understood as limited to the resolution of the soils settlement issues, to the implementation of the QA/QC program with respect to the resolution of such issues, and to factors which could be said to bear upon the Applicant's managerial attitude in resolving such issues."

My testimony on managerial attitude, then, covers the time period beginning in 1978 when the settlement issue arose to March, 1980 when my direct involvement in the resolution of the issue ended.

Any discussion of the commitment of Consumers Power Company management to a responsible Midland construction program must focus not on subjective mental states but on actions taken or planned by corporate management to assure that the Midland Project is built in a manner consistent with protection of the public health and safety. It is these actions I will address. They demonstrate that Consumers Power Company's management has never held back in implementing regulatory requirements once the content and scope of those requirements were known. Indeed, in certain crucial areas, management has encouraged activity by Company and Bechtel personnel to anticipate and take into account new safety-related technical matters even though the NRC has not adopted specific regulatory requirements for such matters.

II. Direct Managment Involvement in Resolution of Soils Settlement Issues.

As the corporate officer most directly concerned with the Midland Project my participation in the resolution of the soils settlement was both immediate and extensive. Other levels of management were also involved in decision-making. As a result of this management participation, the Company would insure that public health and safety would be protected by seeing that significant issues were dealt with promptly and by those with the authority to assure satisfactory resolution.

The unusual settlement of the Diesel Generator Building was discovered in late July 1978 by jobsite engi-

neers performing routine follow-up survey measurements. I was informed of the unanticipated settlement shortly after it was discovered, and was fully informed of all developments after that. The NRC on-site inspector was informed that settlement of the Diesel Generator Building exceeded expected ranges on August 22, 1978.

A few days later, on August 28, 1978, the Company stopped construction activities on the Diesel Generator Building until an initial investigation of the settlement, including a soil boring program was begun. When results of the soil boring program and further survey data were available, I reviewed the matter fully with Mr. Keeley, the Project Manager and with Mr. Marguglio, the Director of Quality Assurance. We agreed that the matter was reportable under the criteria of 10 CFR 50.55(e) and followed our reporting procedures. This information was communicated to the Region III office of the NRC by telephone on September 7, 1978. NRC has been kept fully informed of developments in the continuing investigation of the soils settlement issue, both as it affects the Diesel Generator Building, and for the other structures.

Consumers Power Company fully recognizes and accepts its obligation to promptly and fully apprise the NRC of construction progress at the Midland Project, and of any significant variances from construction specifications. It has fulfilled these obligations with respect to soils placement activities affecting the Diesel Generator Building,

auxiliary building, service water pump structure, and borated water storage tanks. I am aware of no assertions by the NRC Staff that Consumers Power Company has not communicated promptly with the NRC Staff, or that it has attempted to withhold information from NRC.

In addition to the joint efforts of Bechtel and Consumers Power Company to discover the source of the Diesel Generator Building settlement problem, Dr. R. B. Peck and Dr. A. J. Hendron, Jr., (independent soil and foundation consultants of nationally-recognized competence), were retained to assist in the investigation into the nature and causes of the problem. The investigations of Consumers Power Company, Bechtel, and Drs. Peck and Hendron had identified improper fill soils compaction as the probable cause of the Diesel Generator Building settlement. Following consultation with members of the NRC Staff, it was decided to broaden the scope of the investigation to include consideration of whether other project structures might be underlain by improperly compacted soils. As a result of the expanded investigation, which included soil boring, settlement recording, and detailed mapping and monitoring of cracks in concrete structures, it was determined that along with the Diesel Generator Building, the Auxiliary Building, the Service Water Pump Structure, and the Borated Water Storage Tank Foundations were founded, in whole or in part, upon fill material whose properties should be investigated.

The nature of the effects upon the above Category I structures, and proposed remedies, will be described in detail by other witnesses. My purpose is to demonstrate that the investigation into the unusual settlement of the Diesel Generator Building was timely and comprehensive. Once the cause was determined, the scope of the investigation was expanded to all other Category I structures that might have been affected by improper soils compaction. Consumers Power Company management has been, and remains, vitally interested in ensuring that all design and construction problems at the Midland Project are promptly and thoroughly investigated and corrected so that the facility can be completed and licensed to operate in a manner consistent with the protection of the public health and safety. Construction of the Diesel Generator Building was stopped while the soil settlement problem was investigated. Furthermore, work on remedial measures was stopped following the December 6, 1979 Order. This suspension was ordered by me despite the fact that our decision to request a hearing on the Order had the effect of staying its effectiveness, and thus we were not required to suspend this work.

III. Management Involvement in the Quality Assurance Program With Respect to Resolution of the Soils Settlement Issues

An aspect of the resolution of the Midland Project settlement problems which expressly reflects the extent and nature of Consumers Power Company's corporate involvement

and concern is the development and direction of the Company's Quality Assurance Program. The thrust of the Company's commitment is to maintain the best state-of-the-art quality assurance program. The result of this commitment has been the progressive improvement of the program as the Company explores and implements new means to achieve that goal.

The importance of continuing to improve the Company's corporate-wide quality assurance effort (including Midland) was recognized even before the events which led to this hearing. By 1976, I had concluded that the quality assurance function, particularly with respect to major generation plant construction projects like Midland, was becoming of sufficient importance that the Company's quality assurance effort required the direction of an experienced quality assurance professional. Accordingly, I decided to hire Mr. Marguglio as Director of Quality Assurance, after a nation-wide search by an executive search firm. Mr. Marguglio joined the Company in January 1977, and directly reported to me in my capacity as Vice President, Projects, Engineering and Construction. At that time, this Quality Assurance Department had line responsibility at construction projects (including Midland) for establishing quality assurance programs and standards, for devising procedures to assure that the standards were met, and additional responsibilities more fully described by Mr. Marguglio.

Prior to 1978, there had been a number of organizational changes in the Midland Quality Assurance organiza-

tion. In each instance, the change in organization was made in order to increase the effectiveness of the quality assurance organization. Some of these changes were recommended by independent consultants employed by Consumers Power Company to audit the Midland quality assurance program. Others followed suggestions and recommendations by Consumers Power Company personnel. In each instance, I, as senior management representative, actively supported these organizational changes.

In March, 1980, the decision was made to integrate the Bechtel Power Corporation quality assurance responsibilities and personnel at the Project with those of the Consumer Power Company. Preparation for making this change to a single quality assurance organization was immediately begun and in August, 1980, the change was fully implemented. This centralization provides single-point accountability for implementation of the project Quality Assurance Program. Mr. Marguglio will discuss in greater detail the reorganization of the project quality assurance effort.

It is my belief that Consumers Power Company management has taken all reasonable measures to create a quality assurance organization with the high-level executive personnel, technical quality assurance specialists, tools and support needed to identify quality assurance problems, and with all authority to examine, decide among alternatives, and implement measures to correct them.

There are other indications of a positive management attitude with respect to management participation in quality-assurance related activities. One significant measure of my own involvement with Quality Assurance matters during the period from the discovery of the soils settlement problem in August 1978 through the end of 1979 is the amount of time I devoted to meetings on Quality Assurance matters. Not all were specifically related to Midland, but they all involved improvements in the Company's Quality Assurance Program. Over this 74-week period, I attended or presided over 122 meetings primarily devoted to Quality Assurance matters, for an average of over 3-1/2 hours per week in such meetings. Additionally, I attended 108 other meetings or conferences during the same time period in which Quality Assurance may have been discussed, for an additional 5 hours per week on the average. During this entire period, I might add, I was Senior Vice President for Projects, Engineering and Construction with significant other demands on my time (including other issues relating to Midland) in addition to Quality Assurance.

In addition to these meetings, which were noted at the time on my calendar, there were innumerable telephone and other conservations concerning Quality Assurance progress and operations. I required routine reports and information to keep me constantly advised. There are stated requirements in our procedures that I be informed about items reportable under 10 CFR §50.55(e) or Part 21. (See

QAPP 20-1, Howell Exhibit 1). In addition, there are stated requirements that I would receive a written resume of quality assurance activities monthly, and I established a requirement for a quarterly Quality Assurance Management Meeting to discuss progress and any problems and to help resolution of any Quality Assurance items. (See Policy No. 20 - Vol. 1. Quality Assurance Program Manual, Howell Exhibit 2). Furthermore, my instructions were that I would receive a copy of any nonconformance written by Consumers Power Company in the progress of the job. I did receive these documents, read them and where appropriate, discussed the substance of them with cognizant Company and Bechtel personnel.

I also routinely received copies of all audit reports on audits run by Consumers Power Company Quality Assurance personnel. Of course, the inspection reports from the NRC I&E Branch were addressed to me and I read and distributed these reports for action. In addition, all submittals of information concerning the NRC were submitted over my signature and I read and was aware of them. This included submittal of the routine reports of Consumers Power Company nonconformances, Quality Assurance personnel resumes and construction schedules submitted in response to ALAB-106. Where problem areas arose that needed special actions or corrections, I took action or approved recommendations. An example of this can be seen in our commitment to the FSAR review which took place following the diesel generator building settlement and the review or re-review of equipment

qualification. In the latter instance our prompt action made us one of the first in the industry to detect problems in the area and, indeed, to take corrective action.

Yet another demonstration of the management commitment to periodically review the performance of the corporate Quality Assurance program and to consider improvements, is the policy of having competent independent consultants conduct a major audit of the Quality Assurance program biennially. This audit requirement was established by Section 3.2.7 of Quality Assurance Program Policy No. 20 (Howell Exhibit 2). The consultant's report is directed to the appropriate Company officers and is to summarize quality-related problems and nonconformances, describe resolutions, and makes recommendations regarding where and how Quality Assurance policies and procedures might be improved.

The biennial audit was performed in 1976 by Nuclear Audit and Testing Company, and in 1978 and 1980 by Management Analysis Company. The recommendation of the consultants were received by the Company in a timely fashion and all recommendations were resolved. I personally reviewed these recommendations and participated ir their resolution.

IV. Other Factors Which Demonstrate a Positive Management Attitude With Respect to Resolution of Soils Settlement Issues

One key indicator of a positive management attitude is the existence of an organization in which responsible corporate officers and managers are informed of developments

affecting a particular project and actively participate in resulting decisions. The Midland Project Organization has evolved over the years, both in response to internal goals of improved effectiveness and in response to changing regulatory requirements. These changes have increased management involvement in the day to day affairs of the Project. While the organizational changes I am about to describe were not solely and directly caused by the unanticipated soil settlement at the Midland site, I believe that effective resolution of that issue has been facilitiated by these organizational changes.

By the beginning of 1980, I had determined that certain changes in Midland project management were desirable in order to promote the objective of unified direction and control of project activities. This resulted in the formation of a new organization with a significant increase in manpower assigned to the Midland Project, and in the appointment of Mr. Cook as Vice President in charge of the Midland Project Office. The purpose of the change was to make possible more effective supervision of Bechtel's efforts by involving the Company more closely in project design, scheduling and cost control, working in cooperation with Bechtel. This reorganization gives Consumers Power Company management daily participation in the Project and provides a more comprehensive interface with Bechtel's Midland Project organization. The change also integrated into the Project Office the Company's Nuclear Safety Task Force, project

quality assurance activities, and other service functions in order to improve communication and control. This is discussed in greater detail in the testimony of Mr. Cook.

While not directly related to resolution of the soils settlement issues, I would like to describe another organizational change which demonstrates a positive managerial attitude -- the Company's commitment of resources to the investigation of potential safety problems and to anticipating changing regulatory requirements.

In the wake of the Three Mile Island accident in March 1979, the NRC suspended review of operating license applications, including that for Consumers Power Company's Midland Plant which had been docketed and accepted for review in November 1977. In order to consolidate our ongoing safety review efforts and to assure that we would determine and properly take into account the implications of the TMI incident, I directed the formation of the Midland Nuclear Safety Task Force (NSTF) in April 1979.

The NSTF was a multidiscipline group of about a dozen engineers drawn from Engineering, Project Management, Quality Assurance, and operational departments then working on various aspects of the Midland project. The NSTF functioned for approximately one year in concert with Babcock and Wilcox (B&W) personnel specifically assigned to this effort as well as other outside consultants. The NSTF undertook technical evaluations of a variety of safety-related issues and documented the results of these analyses

in formal recommendations to Project management. They were presented to me, I reviewed and approved them. Improvements in plant design resulted from implementation of these recommendations.

The activity of the NSTF allowed Consumers Power Company in most cases to anticipate new NRC requirements as a result of TMI which had not already been incorporated into the Midland design prior to the accident. In other cases the Company was able to take positions outlining proposed acceptable alternative approaches to NRC requirements. As a result of the investigations of the NSTF, Consumers Power Company was able to anticipate many of the safety-related changes in NRC requirements, and committed to adopt them at Midland in advance of any NRC directive to do.

V. Contentions of Intervenor Stamiris

Certain allegations regarding the commitment of Consumers Power Company management to construct a safe plant arise from contentions of Intervenor Stamiris. These contentions are attached as an Appendix to the ASLB's Prehearing Conference Order in this matter dated October 24, 1980. In this part of my testimony, I will address some of those contentions as they relate to my involvement in the Midland Project.

Regarding contention 1, relating to the adequacy and completeness of our communication with the NRC, I have generally discussed Consumers Power Company management's

dedication to full disclosure to the NRC in other sections of this testimony. Although other witnesses will specifically address the details of that contention, at this time I must reiterate the scope of the Company's commitment to meaningful communications with the NRC. Consumers Power Company is committed to complying with all regulatory requirements in its construction of the Midland Plant so that the project can be completed on schedule, consistent with protection of the public health and safety, and providing a safe and efficient source of energy for our customers. As part of that commitment Consumers Power must fully inform the NRC of all aspects of the Project both in recognition of our obligations to the public and as a matter of enlightened self-interest.

I will now address some of the specific contentions. Contention 1(a) makes reference to language in the December 9, 1979 Order which alleges that the Company's FSAR contained "a material false statement", implying that its alleged existence reflects a "less than complete and candid dedication to providing information." First, the term "material false statement" must be put in context: even if there were a material false statement, that fact by itself in no way indicates a reluctance or a lack of frankness in providing the NRC with information. A "material false statement" is a term of art with legal connotations which derives from language in previous NRC Orders and decisions. In more simple terms, it means that there is an error or

inconsistency in the FSAR which may have influenced the Staff's analysis and approval of the FSAR. It in no way implies that the information was deliberately falsified or withheld.

The NRC has asserted that an error in the FSAR has materially affected its analysis and approval of that FSAR. There is no allegation, however, that the error was made intentionally. In this context such an error can only be categorized as inadvertent. The FSAR itself is a document consisting of some 20 volumes, each 3 to 3-1/2 inches thick, to which in excess of 30 revisions have been made, and which is derived from information which was developed over a period of 10 years. It should be obvious that one error in 20 volumes of technical data compiled over that period of time should not be taken as conclusive proof of a "poor management attitude."

On the contrary, the attitude of the Company toward providing the NRC with complete and correct information is reflected in its response to the discovery of the error. As a result of finding this error in the FSAR, the Company instituted an extensive review of the FSAR for errors of fact which was a job of significant magnitude given the size and derivation of the FSAR. This study required a period in excess of 12 months involving 340 people and at a significant cost of manpower and dollars. Furthermore, in the process of this review and correction, it was determined that the FSAR needed some updating in

terms of editorial work, integration and cleanup, and this project was also instituted. It is still in process and is expected to be essentially completed in June, 1981. It, too, involved a considerable amount of resources, both in dedication of manpower and dollars.

Contention 1(b) asserts that Consumers Power Company failed to provide information resolving the geologic classification of site. The contention confuses an honest difference of opinion among experts with a reluctance to provide information.

It is the position of Consumers Power that the Midland Project site is located in the Michigan Basin, a separate tectonic province, and as such information relating to that province should be used as imput in the seismic aspects of plant design. The NRC believes another classification is proper, the "Central Stable Region", necessitating different design criteria. Under such circumstances, Consumers Power had both an obligation and a right to explain its opposing view. An examination of the discussions between the NRC Staff and the Company attempting to resolve the dispute discloses that all the information the NRC Staff requested about Consumer Power's position was supplied to them. The fact that the "seismic" question remained unresolved derived not from a lack of information but from a disagreement as to what the information provided meant.

Consumers Power's seismic engineers and consultant advised me that the Michigan Basin is a separate tectonic

province. Based on my own review of this conclusion, I concurred in that judgment. This commenced a still ongoing dialogue between the NRC Staff and Consumers Power involving the exchange of information concerning the relative positions. As part of this discussion the NRC Staff submitted questions to the Company about its position as it was articulated in the FSAR. The record shows that Consumers Power has answered these questions promptly and completely. (See Consumers Power's Answers to FSAR Questions, Howell, Exhibit 3). That some of the NRC Staff's questions were "followed up" with more questions only reflects the fact of the disagreement and the efforts to resolve it -- not a reluctance on the part of the Company to provide information. Contrary to the contention, the "failure" to resolve the geologic classification dispute does not derive from a "poor" managerial attitude or inadequate information. It is only an example of the still ongoing process by which such issues are resolved.

I will next address contentions 2(a) and 2(b). The apparent basis of these contentions is that Consumers Power Company management has attempted to rush through the NRC review process, with consequent compromises of public health and safety.

Contention 2(a) asserts that the timing of the Company's submission of the FSAR for NRC Staff review was prompted by improper motives. It makes reference to a statement appearing on pp. 1-2 of Consumers Power Company's response to question 1(b) of the NRC Staff's Secton 50.54(f)

information requests regarding plant fill. The complete statement follows:

> "The Midland FSAR was submitted to the NRC at an earlier point in the project schedule than would have normally occurred in order to provide additional time for the operating license hearings due to the forecasted intervention. Consequently, some of the material required to be included in the FSAR was not available at the time of its initial submittal, or was supplied based upon preliminary design information. As the design and construction continued, the appropriate sections of the FSAR were revised or updated to include the necessary information...."

This contention really alleges no conduct that is in any way improper. I note that 10 CFR 2.101 clearly provides for supplementing or amending filed license applications, including FSARs. Consumers Power Company's decision to file the FSAR when it did was influenced by the expectation of a protracted hearing process associated with anticipated interventions. This decision to file the FSAR at a date earlier than scheduled was reviewed with the NRC Staff. I am attaching a copy of a letter I sent the NRC Staff explaining our proposed schedule changes and submission date of the FSAR. (Howell Exhibit 4). In a return letter, the NRC Staff stated that "The...date...established for the submittal of the FSAR is acceptable." (Howell Exhibit 5). It was deemed desirable to provide the adequate time for technical review of the FSAR by the NRC Staff while still accommodating an anticipated protracted hearing. Revision and supplementation of the FSAR following filing is common-

place. Moreover, if the FSAR was so incomplete as to be unacceptable to the NRC Staff, the application for an operating license would not have been docketed.

Regarding contention 2(d), that continuation of work on the Diesel Generator Building after the discovery of the settlement problem precluded thorough consideration of the "removal and replacement" option, the contention is incorrect both as to its premise and the conclusion.

First, the contention is factually incorrect. No work continued on the Diesel Generator Building until after a complete investigation determined the cause of the settlement and the safety consequences of continuing the work. In August 1978, shortly after the settlement was discovered, we halted construction in order to investigate the origins of the problem. It was only after we found the cause of the settlement -- inadequate compaction -- that we continued work.

Further, the continuance of the work on the Diesel Generator Building was done in accordance with our conclusion that the preloading of the building provided a safe and technically adequate means of remedying the settlement. The concept of preloading involves adding excess weight to the building to force its ultimate settlement by compacting the soils beneath it. Finishing the work on the building could only add to its weight -- and therefore aid the end result of the remedy. This was done in accordance with the recommendations of our experts.

Second, the underlying implication of Stamiris' contention -- that preload was chosen because it was cheap and quick and removal and replacement rejected because it took time and money -- is just plain wrong.

The Company decided to solve the Diesel Generator Building settlement problem through a "preloading" program after first evaluating all the available technical remedies. It was only after determining which of the options presented a viable technical solution to the settlement problem, that other considerations -- the acceptance of the solution by the NRC, its cost and its feasibility in relation to the construction schedule -- were factored in. The Company's position has always been that the technical adequacy of the solution is a prerequisite to the consideration of its financial and time consequences. The choice of the preload remedy instead of precluding a "removal and replacement" plan permitted "removal and replacement" to continue as an alternative in the event that the results of the preload were unsatisfactory.

As our December 1978 report to the NRC Staff discloses, the process by which a remedy for the Diesel Generator Building was chosen started with the hiring of the best expert consultants in the field. Among other tasks assigned, the consultants were to present options for resolving the Diesel Generator Building settlement to Project management. Although 6 alternative plans were developed only 2 were found suitable: (1) the preloading of the

building; and (2) removal and replacement of the building. Upon recommendation by our consultants, the preload solution was chosen. This process was documented in a letter and an interim 10 CFS §50.55(e) report sent to the NRC Staff in early January, some 4 months before the preload was begun. (See Howell Exhibit 6).

The preload provided the most attractive resolution of the unanticipated settlement of the diesel generator building: it was technically feasible, it was capable of solving the settlement problem and because instrumentation could record its results, it was capable of producing physical proof of the results. Thus we would have demonstrable evidence to present the NRC Staff to prove that the soils underneath the diesel generator building were adequately compacted. More importantly, it did not preclude the other option -- removal and replacement -- if in fact the preload failed. Finally, it was somewhat less expensive in time and money than total replacement; and since the solution was technically adequate these considerations were significant.

Thus, after the Company hired the consultants, heard and considered their recommendations, the preload option was chosen and the work on the Diesel Generator Building continued. Contention 2(d) is in error: the work did not preclude consideration of the replacement option because it was commissioned only after all options were considered. Our consultants have concluded that the results of the preload program are in accordance with their predic-

tions of the expected behavior of the Diesel Generator Building. The consultants have concluded that the soil has now been adequately compacted so that excessive future settlements will not occur. Thus, the preload program does not represent any compromise of applicable health and safety criteria, as asserted by contention 2(d).

CONCLUSION

I believe that the actions taken or planned by Consumers Power Company management with respect to the Midland Project demonstrate a positive managerial attitude in that:

1. Top corporate management has been informed of matters affecting the Midland Project and has been involved in resolution of problems relating to the project.
2. The quality assurance organization has been improved, both in terms of programmatic changes, implementation and personnel and its relationship to Bechtel.
3. There has been prompt and effective investigation of the deviations from specification which led to the soil settlement issue.
4. There has been complete and timely communication with the NRC on soils settlement issues.
5. Remedial measures were chosen to comply with all applicable regulatory requirements on the

RESPONSE TO QUESTION 23, PART (3) [50.54(f)]

SECTION 5.0, ACTION ITEM FOLOW-UP

In this table, the action items which provide programmatic and generic corrective actions are arrayed chronologically by scheduled completion dates.

The following abbreviations are used in the table:

NA - Not Applicable
PE - Project Engineering
FE - Field Engineering
QC - Quality Control
QA - Quality Assurance
GT - Geotechnical Service

ACTION ITEMS

PROGRAMMATIC AND GENERIC CORRECTIVE ACTIONS COMMITTED TO IN THE RESPONSE TO QUESTION 1, PART (a) AND IN THE RESPONSE TO QUESTION 23, PARTS (1) AND (2)

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status
1	Consultant reports other than Dames & Moore were considered in accordance with the guidelines provided in NRC Regulatory Guide 1.70, Revision 2. Consultant reports were not attached to the FSAR, but portions of consultant reports were extracted and incorporated into the FSAR text itself. Those portions incorporated into the FSAR become commitments. Therefore, disposition of recommendations in consulting reports has been adequately accounted for in the preparation of the FSAR. Verification that those portions of consultant reports determined to be commitments and incorporated into the FSAR have been adequately reflected in project design documents is being accomplished via the FSAR rereview program described in the response to Question 23, Part (2).			
	The two Bechtel QA audit findings reported in our April 24, 1979, response (Paragraph D.1, Page I-8) have been closed out. The results of this audit are being utilized in the FSAR control system study committed to in Subsection 3.3 of this response to Part (1). (Question 1, Appendix I, Section D.1, Page I-8 Question 23, Subsection 3.1, Page 7)	PE	–	Complete

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
2	On April 3, 1979, Midland Project Engineering Group Supervisors in all disciplines were reinstructed that the only procedurally correct methods of implementing specification changes are through the use of specification revisions or Specification Change Notices. This was followed by an interoffice memorandum from the Project Engineer to all Engineering Group Supervisors on April 12, 1979. (Question 23, Subsection 3.2, Page 8; and Subsection 3.9, Page 24)	PE	-	Complete	
3	Engineering Department Project Instruction 4.49.1 was revised in Revision 2 to state, "Under no circumstances will interoffice memoranda, memoranda, telexes, TWXs, etc be used to change the requirements of a specification." (Question 1, Appendix I, Section 0.2.d, Page I-8 Question23, Subsection 3.2, Page 9, and Subsection 3.9,. Page 24)	PE	-	Complete	8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
4	A review of interoffice memoranda, memoranda, telexes, TWXs, and other correspondence relating to specifications for construction and selected procurements of Q-listed items will be initiated. The purpose of the review will be to identify any clarifications which might reasonably have been interpreted as modifying a specification requirement and for which the specification itself was not formally changed. An evaluation will be made to determine the effect on the technical acceptability, safety implications of the potential specification modification, and any work that has been or may be affected. If it is determined that the interpretation may have affected any completed work or future work, a formal change will be issued and remedial action necessary for product quality will be taken in accordance with approved procedures. The foregoing procedure will be followed for all specifications applying to construction of Q-Listed items. For specifications concerning the procurement of Q-Listed items, the foregoing procedure will be implemented on a random sampling basis. The sample size has been established and the specification selection has been made.	PE	-	Complete	8
(21)	Review and acceptance criteria for the specifications have been defined.	PE	-	Complete	8
					10
					10

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status
4 (cont'd)	The review of the initially selected procurement specifications indicated that the acceptance criteria were not met in one discipline. The review was expanded to 100% of the specifications in that discipline (both construction and procurement specifications), and for the other disciplines the sample of procurement specifications was increased to permit each discipline's review to be evaluated separately.			
(47)	This expanded review is scheduled to be completed by June 5, 1981.			
	(Question 23, Subsection 3.2, Page 9, and Subsection 3.9, Page 25)			
5	A study was completed which examined current procedures and practices for the preparation and control of the FSAR in view of these experiences. Procedural changes have been initiated by the revision of or addition to the Engineering Department Procedures.	PE	-	Complete
	(Question 23, Subsection 3.3, Page 11)			
6	An interoffice memorandum dated April 12, 1979, was issued by Geotechnical Services to alert personnel of the need to revise or annotate calculations to reflect current design status.	GT	-	Complete
	(Question 23, Subsection 3.4, Page 13)			

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status
7	Field Instruction FIC 1.100, "Q-Listed Soils Placement Job Responsibilities Matrix," has been prepared and establishes responsibilities for performing soils placement and compaction. (Question 23, Subsection 3.6, Page 18; Subsection 3.7, Page 20; and Subsection 3.11, Page 30)	FE	-	Complete

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
7A	Review Field Procedure FPG-3.000 to ensure clarity and completeness (Question 1, Appendix I, Section 0.2, Page I-11)	FE	-	Complete	8 8
8	Construction specifications, instructions, and procedures were reviewed to identify any other equipment requiring qualification which had not yet been qualified. No such equipment was identified (Question 1, Appendix I, Section D.1, Page I-11 Question 23, Subsection 3.6, Page 18)	FE	-	Complete	5
9	A dimensional tolerance study was completed using the reactor building spray pump and ancillary system as the study mechanism. (Question 1, Appendix I, Section D.2.b, Page I-8)	PE	-	Complete	
10	Engineering reviewed specifications not previously reviewed for the specificity or tolerance studies. (Question 1, Appendix I, Section D.2.c, Page I-8)	PE	-	Complete	
11	A specific review of the FSAR and specification requirements for the qualification of electrical and mechanical components has been made as part of the corrective action relating to CPCo's 50.55(e) report on component qualification. (Question 1, Appendix I, Section D.2.e, Page I-8)	PE	-	Complete	
12	Quality Assurance will schedule yearly audits of the design calculational process for techniques and actual analysis in each of the design disciplines. (Question 1, Appendix I, Section D.4, Page I-8)	QA	-	Complete	

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	8
13	Audits of ITT Grinnell hanger design and CPCo relay setting calculation have been conducted. (Question 1, Appendix I, Section D.4, Page I-8)	QA	-	Complete	
14	Bechtel Project Engineering will review design drawings for cases where ducts penetrate vertically through foundations. The possibility of the duct being enlarged over the design requirements and the effect this enlargement may have upon the structure's behavior will be evaluated by June 1, 1979. Proper remedial measures will be taken if the investigation shows potential problems. (Question 1, Appendix I, Section C.5.b, Page I-7)	PE	-	Complete	
15	An in-depth audit of U.S. Testing operations, covering testing and implementation of their QA program will be conducted in late April or early May 1979, by Bechtel Project QA and Engineering. (Question 1, Appendix I, Section C.4.b, Page I-18; and Section D.3.c, Page I-18)	QA	-	Complete	
16	An in-depth training session will be given to Midland QA Engineers covering the settlement problem and methods to identify similar conditions in the future. (Question 1, Appendix I, Section D.1.b, Page I-22)	QA	-	Complete	

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	8
17	An in-depth training session will be given to all CPCo and Bechtel QA Engineers and Auditors to increase their awareness of the settlement problem and to discuss auditing and monitoring techniques to increase audit effectiveness. (Question 1, Appendix I, Section D.2, Page I-22)	QA	-	Complete	
18	An in-depth review of the Bechtel trend program data will be undertaken by Bechtel QA management to ensure the identification of any other similar areas that were not analyzed in sufficient depth in the past reviews. (Question 1, Appendix I, Section D.1.a, Page I-22)	QA	-	Complete	
19	Quality Control Instructions have been evaluated to ensure that the documentation characteristics which are to be inspected (i.e., surveillance and review callouts) are clearly specified.	QC	-	Complete	10 8
19A	(This action modified to include necessary revision to QCIs resulting from evaluation of surveillance and review callouts.) (Question 1, Appendix I, Section D.3.a, Page I-18 and Section D.1, Page I-18)	QC	04/17/81		10
20	Field Instruction 1.100 has been supplemented by establishing requirements for demonstrating equipment capability, including responsibility for equipment approval, and providing records identifying this capability. (Question 23, Subsection 3.6, Page 18)	PE	-	Complete	8
21	See Action Item Number 4 (21)	PE	-	Complete	10

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
22	Guidelines for surveillance of testing operations have been developed and included in Field Instructions for the onsite Soils Engineer. Engineering/Geotechnical Services has developed the guidelines. (Question 23, Subsection 3.10, Page 27)	PE/GT	-	Complete	8
23	Engineering has revised Engineering Department Procedure 4.22 to clarify that Engineering personnel preparing the FSAR will follow the requirements of Regulatory Guide 1.70, Revision 2, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants" (September 1975). Specifically, Regulatory Guide 1.70 (Pages iv and v of the Introduction) requires that such consultant reports only be referenced with the applicable commitments and supporting information included in the test (third paragraph, Page v). Such a requirement precludes repetition of this circumstance. (Question 23, Subsection 3.1, Page 7 and Subsection 3.3d, Page 46)	PE	-	Complete	8
24	To preclude any future inconsistencies between the FSAR and specifications, Engineering Department Project Instruction 4.1.1 has been revised to state that all specification changes, rather than just "major changes," will be reviewed for consistency with the FSAR. (Question 23, Subsection 3.3, Page 11)	PE	-	Complete	8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
25	Quality Assurance has issued a Nuclear Quality Assurance Manual amendment to clarify the requirement that procedures include measures for qualifying equipment under specified conditions. (Question 23, Subsection 3.6, Page 18)	QA	-	Complete	8 10 8
26	In view of Action Item 6, Geotechnical Services has revised Procedure FP-6437 to require that calculations be annotated to reflect current design status. (Question 23, Subsection 3.4, Page 13)	GT	-	Complete	8
27	Engineering Department Procedure 4.37 has also been revised to require that calculations be annotated to reflect current design status. (Question 23, Subsection 3.4, Page 13)	PE	-	Complete	5 8
28	Civil/Structural Design Criteria 7220-C-501 has been modified to contain the requirements that a duct bank penetration shall be designed to eliminate the possibility of the nonspecific size duct interacting with the structures. (Question 23, Subsection 3.5, Page 15)	PE	-	Complete	5 10
29	The civil standard detail drawings have been revised to include a detail showing horizontal and vertical clearance requirements for duct bank penetrations. The detail addresses any mud mat restrictions. (Question 23, Subsection 3.5, Page 15)	PE	-	Complete	5 8 8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
30 (39)	Engineering clarified specifications and Construction prepared procedures (governing the soils compaction equipment) to implement the requirements of the Nuclear Quality Assurance Manual as stated in Action Item 25. (Question 23, Subsection 3.6, Page 18)	PE	-	Complete	10 8
31	Design documents, instructions, and procedures for those activities requiring inprocess controls have been reviewed to assess the adequacy of existing procedural controls and technical direction. Engineering review has been completed. (Question 1, Appendix I, Section D.2, Page I-11; and Question 23, Subsection 3.7, Page 20; and Subsection 3.11, Page 30)	PE	-	Complete	10 8 10 10 8
32	Guidelines for surveillance of testing operations have been developed and included in Field Instructions for the onsite Soils Engineer. Engineering/Geotechnical Services has developed the guidelines and Field Engineering has prepared the instructions. (Question 23, Subsection 3.10, Page 27)	FE	-	Complete	8
33	The Quality Assurance audit and monitoring program will be revised to emphasize and increase attention to the need for evaluating policy and procedural adequacy and assessment of product quality. A specialized audit training program will be developed and implemented to ensure guidance for this revised approach. (Question 23, Subsection 3.13, Page 35)	QA	9/12/80		8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
34	Control Document SF/PSP G-6.1 has been revised to provide requirements for inspection planning specificity and for the utilization of scientific sampling rather than percentage sampling. (Question 1, Appendix I, Section D.5.f, Page I-20; and Question 23, Subsection 3.8, Page 22; Subsection 3.9, Page 24; Subsection 4.2.2, Page 59)	QC	-	Complete	10 8 8
35	Control Documents SF/PSP G-3.2, "Control of Nonconforming Items," and	QC	-	Complete	10
36	QADP C-101, "Project Quality Assurance Trend Analysis" have been revised to provide an improved definition of implementing requirements for identifying repetitive nonconforming conditions. (Question 23, Subsection 3.12, Page 33)	QA	-	Complete	8 10 8
37	Consistent with the intent of Action Item Numbers 35 and 36, Quality Assurance will review nonconformance reports which were open as of November 13, 1979, or became open prior to implementation of the improved Project Quality Assurance Trend Analysis program as stated in Action Item 36. This review will be to identify any repetitive nonconforming conditions pertaining to product type or activity, or pertaining to nonconformance cause. (Question 23, Subsection 3.12, Page 33)	QA	12/31/80		8 8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	§
38	A study was completed which examined current procedures and practices for the preparation and control of the FSAR in view of these experiences. Procedural changes have been initiated by the revision of or addition to the Engineering Department Procedures. (Question 23, Subsection 3.3, Page 11)	PE	-	Complete	8 5 8
39 (30)	Engineering clarified specifications and Construction prepared procedures (governing the soils compaction equipment) to implement the requirements of the Nuclear Quality Assurance Manual as stated in Action Item 25. (Question 23, Subsection 3.6, Page 18)	FE	-	Complete	10 8
40 (31)	Design documents, instructions, and procedures for those activities requiring inprocess controls will be reviewed to assess the adequacy of existing procedural controls and technical direction. Engineering review has been completed, and Field Engineering and quality control review is scheduled for completion by February 27, 1981. (Question 1, Appendix I, Section D.2, Page I-11; Question 23, Subsection 3.7, Page 20, and Subsection 3.11, Page 30)	FE & QC	02/27/81		10

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	8
41	QCIs in use will be reviewed to ascertain that provisions have been included consistent with the revised control document, SF/PSP G-6.1, "Quality Control Inspection Plans." (Question 1, Appendix I, Section D.1, Page I-18; Question 23, Subsection 3.8, Page 22; and Subsection 3.9, Page 24)	QC	04/17/81		10 8 8
42 (31) (40)	Design documents, instructions, and procedures for those activities requiring inprocess controls will be reviewed to assess the adequacy of existing procedural controls and technical direction. Engineering review has been completed, and Field Engineering and quality control review is scheduled for completion by February 27, 1981. Any revisions required will be completed by April 17, 1981. (Question 1, Appendix I, Section D.2, Page I-11; Question 23, Subsection 3.7, Page 20; and Subsection 3.11, Page 30)	PE, FE & QC	04/17/81		10
43	The impact of Action Item 41 on completed work will be evaluated, and appropriate actions will be taken as necessary. (Question 23, Subsection 3.8, Page 22; and Subsection 3.9, Page 25)	QC	04/17/81		10
44	FSAR sections have been rereviewed as discussed in the Response to Question 23, Part (2). (Question 23, Subsection 3.1, Page 7; Subsection 3.3, Page 11; Subsection 3.2, Page 41; and Section 4.0, Page 47)	PE	-	Complete	10 10

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	
44A	The audit committed to in our response to Question 1, Part b, and described in Part (2), Section 5.0 was conducted once during the course of the FSAR rereview (commencing March 17, 1980) and again after completion of the rereview (commencing November 3, 1980). (Question 23, Part (2), Section 5.0, Page 48)	QA	12/31/80		8 10 8 10 8

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	8
45	U.S. Testing was required to demonstrate to cognizant Engineering Representatives that testing procedures, equipment, and personnel used for quality verification testing (for other than NDE and soils) were capable of providing accurate test results in accordance with the requirements of applicable design documents. (Question 1, Appendix I, Section D.3.b, Page I-18; Question 23, Subsection 3.10, Page 27; and Subsection 3.11, Page 31)	PE	-	Complete	10 8 10 8
46	A sampling of U.S. Testing's test reports (for other than NDE and soils) were reviewed by cognizant Engineering Representatives to ascertain that results evidence conformance to testing requirements and design document limits. (Question 23, Subsection 3.10, Page 28; and Subsection 3.11, Page 31)	PE	-	Complete	10
47	See Action Item Number 4 (47)	PE	06/05/81		10
48	CPCo performs overinspection for soils placement, utilizing a specific overinspection plan. (Question 1, Appendix I, Section C.2.b, Page I-11; and Section C.1.c, Page I-16)	CPCo-QA	-	Complete	
49	CPCo performs overinspection of the U.S. Testing soils testing activities and reports, utilizing a specific overinspection plan. (Question 1, Appendix I, Section C.3.c, Page I-17)	CPCo-QA	-	Complete	10

Action Item Number	Action Item Description and Reference	Responsible Organization	Scheduled Completion Date	Completion Status	8
50	CPCo Project Management and QA review field procedures (new and revised) and CPCo QA reviews QCIs (new and revised) in line with Bechtel before release. (Question 1, Appendix I, Section D.5.b, Page I-19)	QC	-	Complete	10
51	In 1978, CPCo implemented an overinspection plan to independently verify the adequacy of construction and the Bechtel inspection process, with the exception of civil activities. Reinforcing steel and embeds were covered in the overinspection. (Question 1, Appendix I, Section D.5.c, Page I-19)	CPCo-QA	-	Complete	10
52	CPCo reviews onsite subcontractor QA manuals and covers their work in the audit process. (Question 1, Appendix I, Section D.5.d, Page I-19)	CPCo-QA	-	Complete	10
53	An ongoing effort is improving the "surveillance" mode called for in the QCIs by causing more specific accountability as to what characteristics are inspected on what specific hardware and in some cases changing "surveillance" to "inspection." (Question 1, Appendix I, Section D.5.e, Page I-19)	QC	-	Complete	10

Gene
EW-359

G: let me know if you disagree - Bdp

	Issue	Hearing	Witness	Comment
Stamiris 1a	Candid mfs	July	Darl	
1b	Candid seismic	July	Jeff K	
1d	Candid Criteria	Aug	Darl	Not filed may settle
Supp to 1 item 1-6		Aug	"	filed in June
St. 2a	time schedule FSAR early	July	Darl	
2b	Choice of rem actions	Aug	Joe	not filed in June
2c	Commercial reasons	July	Gall.	
2d	can't work on DGB	July	Hood	
2e	BORINGS DROPPED BY STAMIRIS			in 6-1-81 document
Supp	12 examples	Aug	Hood + Kane	all filed in June
St 3	Q.A.	July	Gall	
Supp	"	"	"	
St. 4	DGB - DIKE Dewatering	Aug	JOE TONY + FRANK	not filed
St 5	BORINGS DROPPED 6-1-81			
WARREN 1	can't compact	Aug	Kane	not filed
" 2	Dewatering silt deposits	Aug	Kane	" "
" 3	D.G.B	Aug	Kane + Rinaldi	" "
SINCLAIR	material at DG.B	Aug	Kane	" "
MARSHALL	"	"	Kane	" "
BORINGS	DIKE + DGB	Aug	Kane	not filed
material False Statement		Aug	DARL + GENE G.	not filed

Deposition

by

Donald E. Horn

October 21-22, 1980

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Page	Line	
235	5	He's not aware of damage to rip rap at the dike within the past year.
235	12	There were problems around the dike in the last two years but he doesn't know what kind of problems.
235	14	Canoni built the dike around the cooling pond.
235	23	Discharge lines from the surface water to the emergency cooling pond are Category I listed.
236	3	It's not within his technical compentence to know whether dike failure would adversely affect those discharge lines.
236	8	Horn was responsible for that portion of the dike that was Q listed.
236	12	(Q listed to Horn means subject to Appendix B.)
236	16	The northeast part of the dike was Q listed; all of north plant and part of the west plant dike, too.
236	20	This refers to dikes throughout the site.
237	3	Other than part of the northeast dike around the cooling pond, he had no responsibility for the dike around the cooling pond.
237	17	Don Sibbald of Consumers would have overseen the Canoni work on the dike.

Page	Line	
4	13	Horn's been employed by Consumers for nine and a half years.
4	20	He has a B.S. in Civil Engineering.
5	7	He had no college course work in quality assurance or quality control.
5	20	He had two courses in soil engineering.
6	1	He graduated in 1971 from Michigan Technical College.
6	24	He began work for Consumers in July 1971.
7	3	His first job was as a soil engineer at the Ludnigron Pump Storage Project.
7	10	He was in charge of dikes.
7	21	He was the consumer representative for "soil placement for cost and schedule of the reservoir."
8	4	There was no formal QA program involved with this project.
8	16	The only QA work associated with the project was auditing the work for the compliance with specifications.
9	7	How compliance items were reported and fixed.
9	16	He was with the Pump Project a little over two years.
9	24	He was working on the Pump Project full time.
10	9	He stopped work on the project in December 1973.
13	16	After December 1973 he worked on the Midland Project.
13	23	He worked at Midland as a Field QA Engineer.
13	25	He was 24 years old at the time.
14	4	He had no one working for him in that capacity.
14	7	He worked as a Field QA Engineer four years.
14	13	He supervised one person at the end of this period.
18	23	Horn corrected record to say he worked at Midland approximately three years.

Page	Line	
19	2	These activities included concrete, reinforcing steel, coatings, soils.
19	13	For each of these areas, he reviewed the specifications, performed audits and walk-through surveillance of concrete work.
19	16	He did the same for soil work.
19	21	Specs he reviewed weren't supplied by Bechtel.
189	5	Horn gives qualifications for someone in his position.
189	10	He has all the qualifications except for not being a certified civil engineer.
189	13	He's not a registered or certified civil engineer (the terms are synonymous).
190	5	He did attend a QA/QC seminar in 1974 and training in nondestructive testing. He's also received training in regulatory guides and attended a concrete seminar.
190	24	In all, he's spent 100 hours in course work.

Page	Line	
64	13	In 1977 Horn became a QA group supervisor and then acting civil group supervisor.
65	10	After January 1977 his job changed in that some of his former responsibilities were given to someone from IE and TV.
66	5	He had fewer responsibilities because of an organization change--more people were added.
66	15	While in the QA engineering group, Horn reported to the QA superintendent.
67	19	His name is Jerry Corley.
68	8	Horn told Corley the status of QA program implementation at the site.
68	12	He told him about lack of compliance with QA implementation.
68	18	Most serious problem during that period in Horn's opinion was the missing rebar.
69	1	Most serious soils problem was implementation of soils specification, i.e., NRC and audit findings that specs weren't complied with per those spec requirements.
70	2	Basis of soil problem was insufficiently compacted material.
70	4	Horn doesn't know when that was determined.
70	12	Horn's not sure if QA deficiencies contributed to insufficient compaction.
71	11	Paton introduces Exhibit No. 2--cover letter of 8/12/80 to Mrs. Barbara Stameris.
73	3	Horn helped prepare an Audit Report 7732 of 11/4/77.
73	13	Horn defines difference between an audit report and a nonconformance report.
83	2	Bechtel didn't take retests or rework the area based on this audit finding report.
83	7	Construction and fill work were proceeding at this time.

Page	Line	
83	24	Horn speculates Bechtel didn't act because they didn't have a "tracking mechanism on failing tests to assure themselves that the retests were performed--the rework was performed. That is why we had examples of still having non-conforming material."
84	10	If Bechtel had properly implemented a QA program, they would have had this information revealed to them in 1974.
80/81		Horn was not aware of the results of some tests taken in 1974, even though they're within the scope of his responsibility.
80	14	He wasn't aware of these non-conformance tests because he didn't review all of them.
81	17	U.S. Testing had the results of these tests in 1974.
81	23	Bechtel knew about these test results too in 1974.
84	24	Horn didn't detect Bechtel's oversight until October 1977.
85	15	It was missed because the scope of audits vary and this problem fell outside the scope of audit in 1974.
86	21	Horn admits this QA approach is deficient.
88	5	It's deficient in that it's not picking up problems when they occur.
89	23	The problem was with Consumer's QA program.
90	3	Horn thinks that if Consumers had been doing more hands-on work, the program would be better.
90	19	Horn and Don Blumenthal were QA people for Consumers.
91	1	Blumenthal worked there approximately one year.
91	22	Horn has heard that $10 million would be required to fix soil problems at the site.
92	24	Horn says that reviewing these audit reports for specific items they were reviewing far earlier would have turned up the problem sooner.
93	6	The QA program left the frequency of review up to Horn.
95	2	Horn can't conclude that the non-conformances indicated on page 5 of 12 of Report F-7732 contributed to the insufficient compaction at the site.

Page	Line	
95	6	He can't recall any non-conformance that did contribute to the compaction problem.
95	16	He believes the problem was caused by reliance on testing as opposed to inspection.
95	25	He helped prepare the answer to staff Q23.
96	11	He doesn't recall disagreeing with anything in the document.
96	19	Answers to this Q23 addressed the causes of insufficient compaction at the site.
96	23	Approximately 25 root causes were identified.
103	21	Horn modifies his thinking about reasons why the QA problem missed the compaction problems. He now says lack of hands-on inspection was most important reason and not scope of audits.
104	8	Horn became aware of not enough hands-on inspection while preparing 50.54(f) in 4/79.
105	3	Horn also concluded the need for more hands-on inspections after the DGB settlement problem.
107	10	Hands-on inspections possibly would have revealed lift thickness problems, reliance on testing, lack of adequate QC inspection.
110	17	Horn determined the amount of QA hands-on inspection required.
111	1	Not enough was performed because Horn didn't have the time to spend on it for soils work.
111	18	Horn wasn't aware of the magnitude of the soils problem at that time or he would have spent more time on it.
115	11	When he began work at Midland in 1973 Horn considered himself a qualified QA person.
115	21	In period prior to DGB settlement, his two supervisors were Jerry Corley (1973-1977) and Walter Bird (since January 1977).
116	3	He didn't discuss with either of them how much hands-on inspection was needed.
116	16	Mr. Corley did not give him directions in this area.
117	6	Horn believes there was insufficient staffing in the soils area for adequate hands-on inspections.

Page	Line	
117	14	Horn recommended to his management that the problem be righted in late 1979 or early 1980.
117	19	He became aware of the DGB problem in August 1978.
118	19	In December 1979 Horn told Corley that he needed three or four QA people in the engineering section.
118	24	He had one person in the QA section at that time.
119	2	The three or four people would have been needed because of the merger of Consumers and Bechtel QA sections.
119	23	Paton asks Horn about the design criteria for settlement of the DGB. Horn says they're between 2.8 and 3.2 inches for a 40-year lifespan.
120	3	Horn was made Civil Group Supervisor (acting) in January 1977.
120	25	He remains in that position now.
121	9	He's now a Civil Group Supervisor in the QA engineering section.
121	13	His responsibilities involve soils.
122	1	In October 1980 the Consumer and Bechtel QA groups merged.
122	11	This new group is supervised by Bird of Consumers.
123	15	Horn expects to supervise two people in the near future.
143	7	When Horn's additional QA person gets on board, he'll evaluate the program again.
144	10	Horn lists qualifications for the new QA person: 5 years construction experience; 3 years in nuclear; degreed engineer; member of professional engineering groups.
144	20	A requirement that the person have a QA/QC background.
144	25	Approximately three years of QA/QC work.
146	2	Horn sees no similarity in situation that led to soils problem and the backlog of unresolved NRC items and non-compliances.
146	13	He is receiving sufficient support from management on the QA program.

Page	Line	
146	15	Yes answer based on acquisition of new people into QA, and access to management to resolve problems.
148	3	Horn distinguishes between walk-through surveillance, over inspection, and hands-on inspection. Over inspection began in 1977.
154	5	After work stopped because of insufficient compaction, they began testing to the D-1557, Method D. They then brought a geotech engineer on site full time.
154	14	There was a geotechnical engineer on site prior to that time on a part-time basis.
154	25	In 1973 there were two. After 1974, no permanent geotech engineers were there.
155	7	He was a Bechtel employee.
155	24	In Horn's opinion, the fact a geotech engineer wasn't there at all times meant that Bechtel design criteria C-501 wasn't being observed.
156	6	There wasn't compliance for 1975-1977 and part of 1978.
156	13	He recalls that fill work under the DGB was done from 1975-1979.
156	20	For three years of this work no geotech engineer was continually on site.
156	25	Horn first became aware of this fact in 1975.
157	4	He was not aware at the time of the requirement that there be one onsite continually.
157	22	He can't remember when he first became aware of the requirement.
158	4	He learned about the requirement while performing an audit.
158	11	The audit was performed in 1975 or 1976.
159	2	There were times when fills were being performed in non-dike areas that Horn was aware of the geotech engineer requirement.
160	1	When Horn first read C-501 he thought the geotech engineer requirement applied to someone less qualified than the geotech engineer they had onsite earlier and now have onsite.
161	3	Horn says that the geotech engineer onsite must take tests.

Page	Line	
161	19	Horn felt the testing requirement was being met by the continual presence of U.S. Testing personnel.
168	20	Horn believes that Bechtel's design criteria C-501 is applicable to the Midland project.
169	4	Complete compliance with those criteria did not take place at Midland.
169	7	Right now, the onsite geotech engineer directs but doesn't perform field tests.
169	13	That is, the site's not in compliance now.
170	19	Horn believes that they were never in complete complaince with this requirement.
171	25	Filling operations are going on now onsite.
173	2	Karl Kleinhart is the qualified soils engineer at the site full time.
173	5	He now supervises filling operations.
173	9	U.S. Testing is performing inplace density tests.
173	19	Kleinhart supervises U.S. Testing work.
174	1	Aside from fact that Kleinhart doesn't personally perform inplace density tests, the project is in compliance with criteria C-501.
178	2	Horn clarifies previous testimony after contacting his supervisor; based on their talk, Horn believes the guidance in the last paragraph of page 24 of C-501 is being complied with. The geotech engineer is directing actual testing and determining test frequency. He's reviewing and approving all soil test reports.
179	17	Consumers has been in compliance with this requirement since a little time after settlement of the DGB.
180	4	Prior to then (in 1973-74) they may have been in compliance with that requirement.
180	10	Horn has been in contact with Gene Gallagher of Region III I&E forty or fifty times when Gallagher was conducting inspections.
180	25	Horn didn't always provide Gallagher with requested information and/or documents.

Page	Line	
181	8	Horn checked with his supervision about whether to provide certain documents.
181	22	One instance was when follow-up documents to 50.54(f) Question 23 were requested.
182	15	The documents were to verify the corrective action completed on the action items stated in the response.
182	22	All items in Question 23 are not closed out.
182	24	Gallagher asked Horn to bring those documents to Midland for review.
183	9	The request was made in October 1980.
183	14	Horn checked with Bird on the request.
183	21	Bird refused the documents.
184	2	Bird said Gil Keeley refused to release them.
184	13	Horn asked if copies could be sent to the site and was told "no."
184	18	Horn has always been cooperative with Gallagher.
185	12	He did so because "it was Consumer's policy to help NRC as much as we could to provide the information."
186	25	Horn thinks NRC ought to be provided with the same information that he is.
187	6	Horn tried to give Gallagher as much information as possible and tried to answer the questions he felt were being asked.
187	16	He gave him more information than he specifically asked for.
191	6	Consumers is supportive of the QA program.
194	12	They have approximately forty QA people in the field to implement the program.
195	10	The QA program has both Bechtel and Consumers people in it.
195	18	Consumers also has approximately fifteen contractor people in the program.
195	21	Approximately eight are Consumers people and the remainder from Bechtel.

Page	Line	
196	10	The QA program had two organizations: (1) one this year removed the auditing section and (2) one in August was when Bechtel and Consumers were combined.
196	19	Before the reorganization there were approximately twenty people in Consumers QA organization.
196	22	Approximately the same number of Bechtel people were assigned to the Midland Project.
197	4	There were then approximately ten contractor people assigned to Midland.
197	21	Under both the old and the new QA program there were approximately forty QA people on Midland, i.e., manpower for both was the same.
197	25	This represents an improvement to Horn because previously there was duplication of effort.
198	8	Initially, Horn said one of the reasons the QA program was improved was because of more people.
200	9	Horn says the QA program experienced an increase in manpower of from one in 1973 to forty now.
200	19	Horn thinks that manpower is costing Consumers more after the reorganization than before.
200	21	He can't estimate these costs.
201	5	Procedure changes in QA since 1973 include increased procedures, more specific procedures, and more hands-on inspection.
201	14	Horn thinks that Consumers should have conducted more inspections in the soils area in the past.
201	21	Consumers is doing appropriate hands-on inspections of soils today.
202	1	Horn believes that backfill mainly around piping excavation and around piping currently underway.
202	4	It's being done by the IE and TV groups.
202	18	There are three people in the IE and TV soils group.
202	25	They are John Croy, Bob Sevo, and Bob Davis.

Page	Line	
203	12	Other organizations involved at the site on soils work are SAI and U.S. Testing and some others he can't recall.
204	5	The people from orgainizations other than Consumers or Bechtel are hired because of their QA/QC backgrounds.
204	15	They do short-term jobs.
205	21	The QA job has improved because of the new organization.
206	2	He defines quality control.
206	21	Paton reads two statements and asks Horn if the second one means that the QA people ought not to be hampered from making decisions by cost considerations.
207	2	Horn says yes.
207	6	It also means they should not be affected by schedule.
207	9	No one discussed schedule with him that he can recall.
208	5	Horn did consider cost when he thought about imposing a stop-work order.
208	7	It affected his thinking in that "By continuing work, I did not feel that there would be an additional high cost impact on continued work."
208	20	The schedule at Midland is to have Unit 2 done by 1984 and Unit 1 by 1985.
209	2	He doesn't recall when that schedule was established, but it changes.
209	17	They're under contract with Dow Chemical to provide steam to them from Unit 1.
209	20	Horn believes it is important for Unit 1 to go into commercial operation prior to December 1985.
210	1	This importance has never affected QA decisions.
231	20	Assessing the qualifications of Bechtel QA personnel was within his area of responsibility during the plant fill period in the non-dike area.
232	1	He did consider one person as unqualified and he was removed from soils inspection.

Page	Line	
232	25	The requirement this inspector was not familiar with involved fact that structural backfill be placed within three feet of a structure.
233	4	Horn has heard of Management Analysis Corporation.
233	9	They audit Consumers QA program.
233	13	He's not sure whether or not they've completed their work.

Page	Line	
20	13	Soils specs he reviewed were from Bechtel.
21	1	He did check the specs against the PSAR and FSAR.
21	9	He doesn't recall whether finding noncompliance in comparing soil specs from Bechtel with the PSAR.
21	13	He recalls a spec requiring 95% compaction of soils--that "means you have 95% of a standard compaction test."
21	20	Bechtel specs stated what a standard test was.
21	22	He doesn't recall if the PSAR specified what the standard test was.
22	2	The Bechtel spec specified two standard tests: (1) ASTM D-1552 (2) Bechtel Modified Proctor
22	15	There was confusion as to which of these tests was applicable.
22	22	He doesn't recall whether correspondence to clarify this matter went from Bechtel Ann Arbor to the site.
23	2	Horn used the Bechtel modified Proctor for compaction testing.
23	4	He used that test "because telecons had been written to state that was to be used."
23	25	The Bechtel project engineering people told the Bechtel QA people to use that test.
24	9	Horn didn't find in Consumer's PSAR a requirement for the Bechtel Modified Proctor.
24	18	Exhibit No. 1--"Investigation Report" of 3/22/79 and signed James G. Keppler.
25	1	Horn has seen Exhibit No. 1 and identifies it as an I&E report.
25	4	It's report of soils investigation Region 3 performed at the site, at Ann Arbor, and in Jackson.
26	19	The Bechtel specs that referred to the two compaction tests were C-208, C-210, and C-211.
27	25	Spec C-208 was for testing soils, concrete, steel.

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28	8	Spec C-210 covered soils placement.
28	12	Spec C-211 also covered soils placement.
28	14	C-210 was done under subcontract by Canoni and C-211 was more about structure backfill placement.
28	24	C-210 involved work in the power block area and to the cooling pond dikes.
29	24	Bechtel performed QA on soil placement in the power block area.
30	2	They used Spec C-211 in performing that work.
30	15	Difference between the ASTM and Proctor soil compaction tests is that with the ASTM test you obtain 6K foot pounds; with the Proctor you obtain 20K foot pounds.
30	21	The ASTM test would be more conservative.
31	2	Both were used by Bechtel.
31	9	Bechtel used the Proctor test for evaluation work and the ASTM test only for information.
32	1	ASTM test was not used to evaluate soils placement, only as information.
32	10	Paton gives Horn Exhibit No. 1 after quoting from it "The following is a summary of the documentation regarding the confusion of the compaction requirements for plant area fill" on pages 11, 12, 13.
32	20	Horn has read this document more than once.
33	14	The passage pertains to correspondence between Bechtel employees.
33	22	Horn would have seen the correspondence before it was summarized in this Exhibit.
34	18	Horn was aware of confusion in Bechtel about which compaction test ought to be used.
34	20	He doesn't recall when he first learned of this confusion.
35	18	In 1976 or 1977 Horn recalls a telecon between Jon Hook and Rao about confusion over which test to use.
36	11	Horn may have given Gallagher some or all of this correspondence.

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39	19	Horn interprets Item 1 on pages 11 and 12 of Exhibit 1 to mean that "Subcontracts was addressing field engineering on their concern on the soils and the backfill for the planter fill and berm to be compacted to 95% compaction and received four roller passes with the 50-ton rubber tire roller."
40	11	Subcontracts is the organization within Bechtel that arranges for subcontracts and they review documents from subcontractors.
40	21	The subcontractor involved in Item 1 was Canoni.
40	25	Item 1 specifies the Modified Proctor Method, ASTM 1557, Method D.
41	20	That test involves 20K foot pounds.
44	8	At the time he was field QA engineer at Midland, Horn wasn't aware of any confusion on the percent of compaction required.
44	19	Bechtel didn't always tell him there was confusion "in these letters and things like that."
44	24	Bechtel should have informed him of these matters.
46	10	It was Horn's responsibility to know whether Bechtel was complying with compaction requirements.
46	18	He knew in 1974 that Bechtel was confused on compaction requirements.
47	8	The confusion was clarified then.
47	17	Referencing the 10 items on pages 10, 11, 12, and 13, the last item is dated October 1977. The confusion in Item #1 was clarified then.
47	21	Further confusion is enumerated in Exhibit No. 1.
49	17	The confusion dealt with "whether the soils had to be compacted to 95% compaction and obtain or have four roller passes placed on it."
50	3	Horn has looked at the PSAR/FSAR since 1974 for what it said about proper compaction at Midland.
50	12	Horn can't recall the PSAR requirements for percent of compaction.

Page	Line	
51	20	He can't recall whether the PSAR references a Darnes and Moore report "Foundation Investigation and Preliminary Exploration for Borrow Materials."
52	8	He has read the report, however; it dealt with boring data and soil placement.
52	18	He believes the report contained tests for compaction requirements.
53	8	Eventually, Bechtel decided to use the solution Method D-1557, involving 56K foot pounds.
56	12	In 1979 Horn complained that Bechtel wasn't providing him with sufficient information for him to perform his duties regarding qualification test of compactions equipment.
57	4	Gene Gallagher has requested that Bechtel send a report on backup information for the qualification of equipment to be used at the site. Horn had to contact Afifi before the report was sent.
58	7	Horn complained to Afifi either in 1979 or 1980, he can't recall.
59	6	He first asked Afifi and a month later asked Jim Wanzeck for the report.
60	3	Mostly Bechtel provided Horn information in a timely manner.
60	13	In the course of placing fill in the power block area, they used the 20K pound compaction test.
60	18	This is the Bechtel Modified Proctor Test.
60	23	The word "Proctor" doesn't appear in the name of the other test.
61	2	The word "Proctor" sometimes appears in the title of the 56K pound test too.
61	10	When Horn hears "1557, I think of that Proctor Test."
61	14	During construction the 20K test was used.
61	25	This test failed, a fact reflected in Horn's reports.
62	7	Horn notes that it's not the standardized tests that fail, but the field tests.

Page	Line	
62	16	Frequency of field tests in power block area: 1 in 10 to 1 in 100. One test/cubic yard of material placed to one test in 100 cubic yards placed.
		In large areas, one test in every 500.
73	25	Audit report F-7732 contains nonconformance items.
74	3	It contains three closed and three open findings.
74	7	Open findings: (1) against Spec C-210 (2) same (3) against Spec C-211.
74	19	Horn cites moisture and compaction deficiencies.
76	5	Tests noted under "Plant Area Fill" are in the power block.
76	7	They don't represent QA deficiencies.
77	20	These tests don't show compliance with compaction requirements.
77	25	The QA program reveals a lack of compliance with the compaction requirements.
78	10	The audit report covers 1974-1977.
78	25	The tests in the report are examples of insufficiently compacted material.
79	10	Horn doesn't have an opinion about whether the nonconformance in this audit report contributed to insufficient compaction at the site.
79	17	Horn says test results show insufficient compaction because the spec requirement when these were taken was 80% of relative density and the tests in the report are below that requirement.
148	13	Lift thickness problem defined as putting in higher lifts than compaction equipment was capable of compacting.
149	10	Horn had the material cut down and compacted.
149	22	He didn't issue a formal stop-work order.
150	1	He did actually stop work until the problem was resolved.
150	13	This happened approximately twice a year.

Page	Line	
150	24	He seriously considered issuing a formal stop-work order after DGB settlement and after he performed an audit of soils in 1980.
152	9	Horn considered the stop-work order on the advice of Mr. Margulio, not on his own.
153	16	Stop work was imposed by Ben Margulio but it wasn't a format stop-work order. It was imposed on Consumers.
154	5	After work stopped, they began testing to the D-1557 Method D. They brought a geotechnical engineer on site.
210	6	U.S. Testing ran compaction tests for Bechtel and did not fail to report deviations from specified requirements.
210	10	Exhibit No. 3, letter of 2/1/78 from Bechtel to U.S. Testing.
211	8	The letter states that U.S. Testing did not identify deviations from specified compaction requirements. Horn disagrees with this and says, "I do agree that U.S. Testing had repeated erroneous selection of compaction standards, and therefore it did not indicate in the reports that the compaction requirements had been met or had not been met."
211	20	Horn thinks that the erroneous selection of compaction standards was significant to the lack of compaction of the fill at the site.
211	25	The accurate selection of compaction standards by U.S. Testing was within Horn's QA responsibility.
212	14	Horn has not heard of a law suit between Bechtel and U.S. Testing.
212	19	During construction of the administration building, settlement in excess of that expected was noticed.
212	21	He doesn't recall the cause.
213	1	He doesn't recall when he learned of it.
213	21	He learned of the problem about one year before learning about the DGB.
214	10	When he first learned about the administration building problem he didn't attempt to discover its cause because it was outside his area of responsibility.
214	18	Bechtel and Consumer's project management people tried to discover the cause.

Page	Line	
215	2	He's not aware that Consumers took any adverse actions against anyone at Consumers for this problem.
215	8	Ditto for Bechtel.
216	13	To solve the problem, material was removed. As it was being removed, it was compared to proctors taken previously. They took borings per the document Paton showed Horn and they had meetings with the test lab.
217	3	Bechtel determined the cause of the problem, though they may not have told Consumers.
217	13	Horn says it wasn't within his area of responsibility to find the cause.
217	24	Bechtel was concerned that the problem at the administration building might be more widespread.
218	4	He's not sure whether anybody at Consumers was similarly concerned.
219	9	The problem was caused by the erroneous selection of proctors by U.S. Testing.
219	18	Bechtel then took borings at other locations.
220	2	They learned that there wasn't insufficient compaction of backfill in those areas.
220	6	Borings were at admin building, south of DGB, one by chlorination building.
222	5	Horn can't answer as to whether those borings satisfactorily isolated the problem.
222	25	He does recall people at Consumers discuss the adequacy of these two tests but he can't recall specifically who said anything.
223	18	Hindsight observations were to the effect that these tests weren't enough.
224	5	Horn thinks the settlement problem at the DGB and that at the administration building are connected.
224	12	He says they're possibly caused by the same problem.
225	11	There was no QA applied to the administration building.
225	14	They did learn from the settlement problems at the admin building.

Page	Line	
225	25	He can't recall anyone linking sinking of the administration building with a more widespread problem at the site.
226	20	He can't recall anyone at Consumers responsible for communicating with Bechtel on this subject.
227	8	He then recalls that the Consumers contact would be Tom Cooke or Don Sibbald.
227	18	Don Sibbald said the results Bechtel obtained from the borings were adequate.
227	25	Paton asks Horn if he's familiar with Criterion 16 of 10 CFR, Part 50, Appendix B.
228	20	He says yes, that one of the purposes of Criterion 16 is prevention of repetition of nonconformances.
228	21	NRC Exhibit 1, Horn looks at list of five items on pages 2 and 3.
229	7	He doesn't agree with their wording.
229	16	Item 1: He disagrees to the extent of saying that it is possible lack of supervision of plant fill contributed to inadequate compaction of foundation material.
230	22	Item 2: He agrees with that statement that corrective actions related to plant fill were insufficient, as evidenced by deviations from spec requirements.
231	3	Item 3: Certain design basis and construction specs related to foundation type, material properties, and compaction requirements weren't followed--He agrees with this.
231	8	Item 4: He agrees that there was a clear lack of direction and support between contractors, engineering office, and construction site, as well as within the contractor's engineering office.
231	12	Item 5: He agrees that the FSAR contains inconsistent, incorrect, and unsupported statements about foundation type, soil properties, and settlement values.
233	14	Exhibit 1, page 12, paragraph 6.
235	2	In his opinion, the procedure of having a herd of mules walk over the fill to achieve 95% compaction would be unacceptable, a proposal suggested in Exhibit 1.

Page	Line	
242		Paton asked Mr. Hood, at Mr. Zamarin's request, to send a notice to NRC employees to refrain from asking Consumers employees to prepare information specifically for the purpose of this litigation.
242	23	Mr. Zamarin states that by putting the information on the record, they in no way are implying that Mr. Gallagher was doing anything improper.
243	18	Paton states that there is no specific agreement that Mr. Horn's deposition be left open. He suggests that if the attorneys cannot reach an agreement, that the matter be brought to the Board's attention.
244	1	Zamarin states for the record that the reasons for adjoining the depositions of NRC personnel sine die was because they weren't completed and to complete them then would cause a conflict with travel plans.

Page	Line	
126	6	At present he has one assistant and cannot get to a backlog of work until he gets more staff help. Some of the backlog involves unresolved NRC issues.
127	12	Horn answers it's appropriate for work at the Midland site to go forward despite a backlog of noncompliance, unresolved safety issues with NRC.
127	18	He doesn't believe this backlog will contribute to future soils problems.
129	5	Some of the non-compliance issues involve soils, one on structural steel, one on concrete, one on compaction equipment.
129	11	Horn says non-conformance issues are different from NRC unresolved safety items.
129	13	One unresolved safety item involves not having "qualifications requirements for grouting personnel for grouted anchors."
131	25	Horn refers to nine or ten noncompliance items in the Keppler report.
133	6	As to whether this backlog is acceptable, Horn says it's not.
133	23	Although his supervisor is aware of these items, Horn hasn't reported on them to him.
134	5	Both Horn and his supervisor are pushing to clear up the backlog.
136	11	He's never gone over his supervisor's head to get the backlog resolved.
137	15	If his supervisor went up the chain of command with this issue it'd be to Hank Leonard or Jerry Corley.
138	1	Mr. Bird is aware of the backlog too.
138	12	Bird's monthly report to the vice president of Midland carries these items--VP Jim Cooke.

Zamarin's Questions

Page	Line	
238	9	Relative to the Horn's thinking about issuing a stop-work order on soils placement, the cost impact from such an order would stem from going back and redoing work if it was later found that it's necessary.
238	19	Consumer Exhibit 1, "Oral Communications Record dated 12/2/80." Its record of a phone call Horn had with Mr. Gallagher in which Gallagher requested information from Spec C-210.
239	10	Gallagher wanted the information because it was missing from previous investigations.
239	15	The information was missing because one of the inspectors Gallagher was with had thrown out the information.
239	20	Gallagher wanted two kinds of information: (1) identify persons who prepared, checked, and approved Spec C-210 and identify the group they were affiliated with.
240	11	Consumer Exhibit 2--record of information provided to Gallagher, except for group they were with.
240	20	The information was requested for this hearing.
241	1	The second request from Gallagher was that the verification packages from Ann Arbor be sent to the site so it could be reviewed.
241	23	Consumer's Exhibit 1 is not verbatim; it's Horn's recollection of the conversation.