

TENNESSEE VALLEY AUTHORITY

KNOXVILLE, TENNESSEE 37902

400 West Summit Hill Drive, E3A8

November 7, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulator Commission
Washington, D.C. 20555

Dear Mr. Denton:

Your letter to W. F. Willis dated September 26, 1985, requested copies of investigation reports and related documents dealing with potentially safety-related employee concerns on TVA's nuclear plants. Copies of the requested information as outlined in TVA's October 7, 1985, letter are enclosed and cover the period of November 1, 1985 through November 7, 1985. TVA has previously submitted copies of the requested information through October 11, 1985. We are also enclosing computer summaries of the information which we have transmitted to date.

If you have questions concerning the material transmitted, please contact M. S. Kidd or B. F. Siefken at FTS No. 856-2289 or 856-6230, respectively.

Sincerely,

Bruce L. Siefken
for

K. W. Whitt
Director, Nuclear Safety
Review Staff

Enclosures

cc (Enclosures):

Mr. James M. Taylor, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. J. Nelson Grace
Regional Administrator
U. S. Nuclear Regulatory Commission, Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30323

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TENNESSEE VALLEY AUTHORITY
WATTS BAR EMPLOYEE CONCERN PROGRAM
NUCLEAR REGULATORY COMMISSION
WEEKLY K-FORM LISTING

QTC NUMBER	SUBJECT	KEY WORD	KEY WORD	MAY 16 LETTER	#
IN-85-085-001	POOR QUALITY WELDS	WELDING	WORKMANSHI	- -	1
IN-85-283-002	UNSTURDY PIPE	DESIGN	ADEQUACY	- -	1
IN-85-283-003	QUEST WELDER QUALIF	WELDING	WELDERS	- -	1
IN-85-283-004	DESIGN ERRORS	DESIGN	CONTROL	- -	1
IN-85-290-001	FCR NOT USED PROPERL	CONSTRUCTI	CONTROL	- -	1
IN-85-409-003	SCHD/QUALITY/SAFETY	QA	EFFECT	- -	1
IN-86-061-003	QUALITY PERFORMANCE	OPERATIONS	PERSONNEL	- -	1
IN-86-077-001	PRE-OP TEST CRITERIA	TESTING	PREOP	- -	1
IN-86-158-001	WATER IN CONDUITS	ELECTRICAL	CONDUITS	- -	1
IN-86-158-002	INTAKE LINES GROUTED	MECHANICAL	ERCW	- -	1
IN-86-168-002	INADQ QUAL INSP	WELDING	INSPECTORS	- -	1
IN-86-168-003	WELDS NOT STENCILED	WELDING	INSPECTION	- -	1
IN-86-168-004	HANGER NOT SUPPORTED	HANGERS	INSTALLATI	- -	1
IN-86-168-006	INACC COMPUTER LIST	WELDING	WELDERS	- -	1
IN-86-284-001	INCONS IMPL OF STDS	INSPECTION	INSPECTORS	- -	1
IN-86-284-002	INACCURATE VALVE TST	TESTING	CONSTRUCTI	- -	1
PH-85-050-001	WIRE PULLING DETAIL	ELECTRICAL	CABLES	- -	1
PH-85-051-001	INADQ ERCW LINE	WELDING	INSPECTION	- -	1
WI-85-084-001	WELDER CERTIFICATION	WELDING	WELDERS	- -	1
XX-85-033-014	SQN/QUAL TEST FALSIF	QA	VIOLATION	- -	1
XX-85-063-001	SQN/FAIL VERIF SYSTE	OPERATIONS	CONTROL	- -	1
XX-85-069-006	BFN/EMP NOT QUALIFIE	OPERATIONS	PERSONNEL	- -	1
XX-85-069-007	BLN/EMP NOT QUALIFIE	OPERATIONS	PERSONNEL	- -	1
XX-85-069-008	BFN/REJECT ITEMS ACC	INSPECTION	INSPECTORS	- -	1
XX-85-070-003	SQN/INACCURATE DATA	OPERATIONS	CONTROL	- -	1
XX-85-070-004	SQN/WORKPLAN FGD SGN	QA	VIOLATION	- -	1
XX-85-070-005	SQN/WORKPLAN MODIFIC	OPERATIONS	CONTROL	- -	1
XX-85-070-006	SQN/QUAL DOC FALSIFI	QA	VIOLATION	- -	1
XX-85-070-007	SQN/DESIGN DRAWINGS	HANGERS	INSTALLATI	- -	1
XX-85-108-001	SQN/RMS NEVER INSP	WELDING	INSPECTION	- -	1
XX-85-108-002	SQN/WELD INSP PROCES	WELDING	INSPECTION	- -	1
*** Total ***					

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
EMPLOYEE CONCERN PROGRAM
NUCLEAR REGULATORY COMMISSION LISTING

QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE CLOSED	KEY WORD
** MILESTONE:								
EX-85-034-001	MECH DISCREPAN VALVE	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
EX-85-053-005	FIRE EQUIP NEGLECTED	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-027-003	INCOMPLETE WALKDOWNS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-085-001	POOR QUALITY WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-160-001	UNREPORTED FIRE	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-283-002	UNSTURDY PIPE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-283-003	QUEST WELDER QUALIF	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-283-004	DESIGN ERRORS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-290-001	FCR NOT USED PROPERL	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-338-002	INTERCHG W/O COMPATA	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-339-006	ACCESS FOR WELDING	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-352-003	PIPE INST TO HGR PSI	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-401-001	QA DOCUMENTATION	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-409-003	SCHD/QUALITY/SAFETY	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-424-002	NO SUPPT TO WELD INS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-630-005	INADQ INSPEC ERCW LI	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-680-001	REBARS CUT	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-947-003	HARDWARE QUAL QUESTI	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-954-X04	EMPL FALSIF CHECKLIS	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-964-002	TEMP MAT FOR PERM SE	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-967-001	POOR QUAL SKETCHES	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-061-003	QUALITY PERFORMANCE	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-077-001	PRE-OP TEST CRITERIA	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
IN-86-155-003	PIPE UNACCEPT WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-158-001	WATER IN CONDUITS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-158-002	INTAKE LINES GROUTED	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-168-002	INADQ QUAL INSP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-168-003	WELDS NOT STENCILED	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-168-004	HANGER NOT SUPPORTED	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-168-006	INACC COMPUTER LIST	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-284-001	INCONS IMPL OF STDS	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-86-284-002	INACCURATE VALVE TST	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-86-296-001	CCW LINE MOVES	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-300-004	IMPROP HANGER ATTACH	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
PH-85-050-001	WIRE PULLING DETAIL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
PH-85-051-001	INADQ ERCW LINE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-064-006	WELD DOC "MANIPULATE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-067-001	EMP SUSPEND INADVERT	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-072-001	EMPLOYEE THREATENED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
WI-85-084-001	WELDER CERTIFICATION	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-033-014	SQN/QUAL TEST FALSIF	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
WI-85-063-001	SQN/FAIL VERIF SYSTE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-006	BFN/EMP NOT QUALIFIE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-007	BLN/EMP NOT QUALIFIE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-008	BFN/REJECT ITEMS ACC	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION

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QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE CLOSED	KEY WORD
XX-85-070-003	SQN/INACCURATE DATA	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-070-004	SQN/WORKPLAN FGD SGN	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
XX-85-070-005	SQN/WORKPLAN MODIFIC	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-070-006	SQN/QUAL DOC FALSIFI	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
XX-85-070-007	SQN/DESIGN DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
XX-85-108-001	SQN/RMS NEVER INSP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-108-002	SQN/WELD INSP PROCES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 1 FUEL LOAD								
EX-85-003-003	UNAUTH CHNG TO WDREC	ERT	07/09/85	.T.	07/24/85	.T.	07/24/85	WELDING
EX-85-003-X06	WELD RECORDS FALSIFI	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
EX-85-039-004	QA PROG INADQ ID NCR	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
EX-85-042-004	WELDER REQUALIF TEST	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-042-005	WELDER CERTIF UPDATE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-047-001	IMPROPER PIPE CLAMPS	ERT	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
EX-85-048-003	FOREMAN BYPASS PROCE	ERT	/ /	.F.	/ /	.F.	/ /	QA
EX-85-049-001	NO SECURITY BARRIER	NSRS	10/17/85	.T.	/ /	.F.	/ /	SECURITY
HI-85-024-001	SUPV HARAS INDIVIDUA	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-029-001	ADV JOB ACT FOR CONC	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-033-001	EMPL RELIEV OF RESPO	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-046-001	INSTRUCTIONS VIOLATI	NSRS	/ /	.F.	/ /	.F.	/ /	QA
HI-85-049-001	RUPTURE RESTRAIN FIT	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-067-001	EMP AFRAID REP DAMAG	NSRS	/ /	.F.	/ /	.F.	/ /	QA
HI-85-078-001	EMP REFUSED NCR	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-080-001	WELDER THREATENED	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-082-001	QUALITY CONCERN	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-083-001	CRAFT HARASSMENT	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-087-002	NONCONFORMING ITEMS	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-097-001	INSPECTOR THREATENED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-098-X01	HARDWRE DOES NOT CON	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-101-001	EMPLOYEE THREATENED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-105-001	BY-PASS QC HOLD POIN	ERT/OGC	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
HI-85-107-001	EMP EXP PRES AFT REP	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
HI-85-108-001	EMPLOYEE COERCED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-001-003	WELDS UNDER WATER	ERT	07/10/85	.T.	09/23/85	.T.	09/23/85	WELDING
IN-85-010-001	ELEC HANGER DOCUMENT	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-010-002	VIOLATION OF 050 NTS	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-012-001	MAT MANF TO ASTM SPC	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-012-X02	TENSILE STRNG OF FIT	NSRS	08/05/85	.T.	/ /	.F.	08/05/85	MATERIAL
IN-85-018-004	SUPV NOT FOLLOW PROC	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-021-X05	WELDER CERTIF FALSIF	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-024-001	DRWNS & 050 NOTES	NSRS	07/03/85	.T.	/ /	.F.	/ /	HANGERS
IN-85-031-001	ENBD PLTS NOT CORREC	ERT	08/20/85	.T.	/ /	.F.	/ /	DESIGN
IN-85-037-001	CONCRETE ANCHORS	ERT	07/09/85	.T.	09/11/85	.F.	/ /	CIVIL
IN-85-038-001	ANALYS OF LARGE PIPE	ERT	07/08/85	.T.	09/05/85	.T.	09/05/85	DESIGN
IN-85-039-001	THML STRS ON PIPING	ERT	07/09/85	.T.	09/05/85	.T.	09/05/85	DESIGN

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QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE CLOSED	KEY WORD
IN-85-039-002	STRES&SUPPRT LD PROB	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-052-001	DRWNGS & 050 NOTES	NSRS	07/03/85	.T.	07/30/85	.F.	/ /	HANGERS
IN-85-055-001	WORK EFFECT BY HARAS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-055-002	CUT/WELD ANCHOR BOLT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-055-003	UNCORRECTED WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-088-001	VACUM TEST ON DOORS	ERT	07/09/85	.F.	/ /	.F.	07/09/85	TESTING
IN-85-091-X02	NO NCR FOR LOST DOCU	ERT	08/26/85	.T.	/ /	.F.	10/03/85	DOCUMENT
IN-85-115-005	SUPV ATTITUDE	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-119-006	SUPPT TESTS NOT DONE	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-130-002	FIRE SEALS BREACHED	ERT	07/05/85	.T.	09/13/85	.T.	09/13/85	CONSTRUCTI
IN-85-134-001	CRIT NOT MET/IDSS WL	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-160-002	UNQUALIFIED PERSONNE	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-169-001	SYS 62 VALVE CLASS	ERT	07/10/85	.T.	07/26/85	.T.	07/26/85	MATERIAL
IN-85-202-001	CRACK IN WELD	ERT	07/10/85	.T.	/ /	.F.	07/09/85	WELDING
IN-85-207-001	DAMAGE CALBLE JACKET	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-207-002	USE OF FISH TAPE	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-241-007	CHANG OF INFO CAB SL	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-251-002	MAINT WITHOUT NCR	NSRS	10/31/85	.F.	/ /	.F.	11/05/85	QA
IN-85-260-002	NO INSPECT ON WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-260-003	WELD DOCUMNTATION	ERT	10/07/85	.F.	/ /	.F.	/ /	WELDING
IN-85-260-X05	INSPECT DOC FALSIFIE	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-274-004	"PENCIL WHIPPING"	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-279-002	FCR & NCR APPROVALS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-285-001	IMPROP INSTAL PLATES	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-285-002	PULL TEST NOT 100%	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-285-003	NGRS INT ONLY PRODUC	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-293-001	NCR 4412	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-311-008	CR ENTRANCE FIREDOOR	ERT	08/19/85	.T.	09/24/85	.T.	10/10/85	OPERATIONS
IN-85-325-006	VALV CONT/OPER TRAN	NSRS	10/01/85	.F.	/ /	.F.	10/04/85	OPERATIONS
IN-85-339-001	REDHEAD ANCR INSTAL	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-339-002	INSTALL ACCOUTABILIT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-339-003	BYPASS PROC REQUIRMT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-339-004	FALS PULL TEST RECRD	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-339-X06	FALSI ANCHOR PUL TST	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-393-003	FSAR REQ FOR SUPERV	NSRS	07/03/85	.T.	08/30/85	.F.	/ /	OPERATIONS
IN-85-393-004	FALSIFY TEST DATA	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-393-X06	FIASIF TEST DATA	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-406-001	UNAUTH CHNG TO WDREC	NSRS	07/09/85	.T.	07/24/85	.T.	07/24/85	WELDING
IN-85-410-003	EMBED PLATE "HOLLOW"	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-413-001	"050"NOTES	NSRS	08/09/85	.T.	/ /	.F.	08/04/85	HANGERS
IN-85-424-009	UNQUALIFIED WELDER	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-424-010	INADEQ SUPV CONTROL	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-424-011	INADEQ UPDT WELD CER	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-424-X13	FALSIF WELDER CERTIF	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-439-001	ANCHORS IMPROP ALTER	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-439-002	"HOLLOW". EMBED PLATE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL

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IN-85-439-003	INADEQ CRAFT SUPV	NSRS	10/30/85	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-442-X13	UNDR DAM NOT TO SPEC	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-445-004	INCORR INSPEC REQUIR	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-445-008	PROC DIFFICULT TO KN	NSRS	10/23/85	.F.	/ /	.F.	10/30/85	CRAFT
IN-85-445-009	UNQUAL QC INSPECTORS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-445-010	EYE TEST INADEQUATE	NSRS	10/28/85	.T.	/ /	.F.	/ /	INSPECTION
IN-85-445-013	47-050 HARD TO USE	NSRS	10/10/85	.T.	/ /	.F.	10/16/85	HANGERS
IN-85-445-X15	INSP REQ FALSIFIED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-445-X16	VOID/IN-85-445-002	ERT/OGC	/ /	.F.	/ /	.F.	09/30/85	QA
IN-85-457-001	INADQ REVIEW BY PORC	NSRS	10/17/85	.T.	/ /	.F.	/ /	OPERATIONS
IN-85-458-006	MGT VOIDED IRN'S	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-465-002	LOOSE CONDUIT	NSRS	09/09/85	.F.	/ /	.F.	/ /	HANGERS
IN-85-469-002	COR DRIL W/O CUT REL	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-472-002	NO NCRS ON ERCW LINS	NSRS	10/03/85	.F.	/ /	.F.	/ /	QA
IN-85-472-005	VIOL OF QA REQUIRMNT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-527-001	CABLE PULL W/O FUSE	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-533-009	GF WELD CERT W/O WEL	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-533-X11	WELD CERT FALSIFIED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-534-005	FIRE PROTEC HYDRO TE	NSRS	10/02/85	.F.	/ /	.F.	/ /	TESTING
IN-85-544-001	WORK W/O WORKPLAN	ERT	10/22/85	.F.	/ /	.F.	/ /	QA
IN-85-544-002	VIOLATION OF PROCEDU	ERT	10/23/85	.T.	/ /	.F.	/ /	QA
IN-85-581-002	WLDRS NOT QUAL ELEC	NSRS	10/17/85	.T.	/ /	.F.	10/17/85	CONSTRUCTI
IN-85-593-001	WELD REPAIR VIOLATIO	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-600-006	WELD CERTIFICATION	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-612-X07	WELDER CERTIF FALSIF	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-639-X04	FALSIF QUAL/CERT REC	ERT/OGC	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-641-002	VESSELS EXHIBIT CRAC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-641-005	WELDS NOT IN ACC PRO	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-671-002	NOT ISSUING IRN/WRN	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-676-001	DISAGREE W/TVA POLIC	NSRS	10/31/85	.T.	/ /	.F.	11/05/85	QA
IN-85-676-002	VIOLATE TECH. SPECTS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-682-005	MGT ALLOW INSP HARAS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-682-X07	FALSIF INSPECT CARD	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-684-001	DEFECTIVE TUBE STEEO	NSRS	09/16/85	.F.	/ /	.F.	09/16/85	MATERIAL
IN-85-688-002	INADEQUATE TVA PROCE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-688-004	PREVENT OF CORRECTIV	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-725-011	IMPROP WELD CONSUMAB	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-767-006	INADQ TRAIN OPERATOR	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-768-X07	FALSIF ROD CONTRL RE	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-770-002	PROC FOR CER NOT PER	ERT	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-770-003	UNCERTIFIED WELDERS	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-770-X07	WELDERS CERT FALSIFI	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-778-X07	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-785-006	MGS SLEEP THRU TRG	ERT/OGC	/ /	.F.	/ /	.F.	/ /	CRAFT
IN-85-795-001	COMPRESS FITTING	ERT	08/07/85	.T.	10/07/85	.T.	10/30/85	INSTRUMENT
IN-85-795-002	COMPRESS FITTING	ERT	08/07/85	.T.	10/07/85	.F.	10/30/85	INSTRUMENT

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IN-85-845-001	SYS43 UNIS NOT ACHD	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-847-002	PERSONNEL THREATENED	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-847-003	EMPL UNABLE EXPR CON	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-847-006	CRFT SUP ALW UNAP PL	NSRS	10/29/85	.T.	/ /	.F.	11/04/85	QA
IN-85-850-002	QUANTITY VS. QUALITY	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-853-X02	VIOLAT TVA PROCEDURE	ERT	10/12/85	.F.	/ /	.F.	10/18/85	QA
IN-85-858-001	QUANTITY VS QUALITY	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-897-001	INEXP CRAFTSMEN	NSRS	/ /	.F.	/ /	.F.	/ /	CRAFT
IN-85-913-004	CONSTRUCT VIOLATIONS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-915-003	DRAWING CONTROL	NSRS	10/22/85	.T.	/ /	.F.	10/22/85	DOCUMENT
IN-85-915-X04	INVEST RESULTS FALSI	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-923-002	WELDER ID FALSIFICAT	NSRS/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-954-001	EMP NOT PER WORK REQ	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-954-X03	VOID IN-85-954-X04	ERT/OGC	/ /	.F.	/ /	.F.	10/10/85	QA
IN-85-965-001	WELDOR CER BACKDATED	ERT	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-85-977-001	TAPE NOT REPL ON RCS	NSRS	10/10/85	.F.	/ /	.F.	/ /	QA
IN-85-977-002	DOCUMENT OF TCS/SIS	NSRS	10/03/85	.T.	/ /	.F.	/ /	DOCUMENT
IN-85-995-002	PSAR COMMITMENTS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-86-004-001	CONTROL OF DOCUMENTS	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-004-X03	FALSIF VALUTED DOCUM	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-86-022-X03	FALSIFICATION OF DOC	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-86-032-001	DEFECTIVE WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-032-002	DEFECTIVE MATERIAL	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-055-003	HYDRAZINE SPILL	NSRS	10/17/85	.T.	/ /	.F.	/ /	OPERATIONS
IN-86-068-002	RETUBIN OF HEAT EXCH	ERT	/ /	.F.	/ /	.F.	/ /	MAINTENANC
IN-86-076-001	PROG VER STARTUP TST	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-86-081-001	INADEQ PLANT SYS STA	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-086-001	INADQ DOC ON REPAIR	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-087-003	DELAY IN CARS/DRS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-087-004	DIFFERENCE IN Q-LIST	NSRS	10/04/85	.T.	/ /	.F.	/ /	QA
IN-86-090-001	DIFFERENCE IN Q-LIST	NSRS	10/04/85	.T.	/ /	.F.	/ /	QA
IN-86-090-002	DELAY IN CARS/DRS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-090-003	SIS APPROVAL W/O REV	NSRS	10/17/85	.T.	/ /	.F.	/ /	OPERATIONS
IN-86-091-001	UNQUAL TECH PERSONNE	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-098-001	DELAY IN CAR/DR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-102-001	REQ FOR CONDUIT INSU	NSRS	10/11/85	.T.	/ /	.F.	/ /	HANGERS
IN-86-102-002	NO ATTACH D/CONDUIT	NSRS	10/14/85	.F.	/ /	.F.	10/16/85	CONSTRUCTI
IN-86-103-001	NO ATTACH D/CONDUIT	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-103-002	REMOVAL OF INSULATIO	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-112-001	USE OF TOOLS NOT DOC	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-114-001	UNQA PERS OPER MOVAT	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-135-003	LINES NOT INSPECTED	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-143-002	WELDER CERT BACKDATE	ERT	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-86-155-004	WELDS MAY NOT INSPEC	NSRS	10/22/85	.F.	/ /	.F.	10/22/85	WELDING
IN-86-167-004	UNQUALIFIED WELDER	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-167-005	WELDER REQUAL BACKDT	ERT	10/24/85	.T.	/ /	.F.	11/04/85	WELDING

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IN-86-167-X06	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
IN-86-210-001	HEAT EXCH TUBES INAD	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-219-001	GRINDOWN OF ANCHORS	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-221-004	CLEANERS NOT APPVD	NSRS	10/10/85	.T.	/ /	.F.	/ /	MATERIAL
IN-86-226-001	HARAS FOR REP QC	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-259-004	INADEQ CABLE PULL	NSRS	10/31/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-276-001	IMPROPER PLUGS INSTA	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-316-002	INCOMPLETE WORK PKG	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-316-005	WORK PKG INCOMPLETE	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-316-006	WORK PKGS INCOMPLETE	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-316-007	ENG INCOMP WORK PKGS	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-316-X09	ENG DISREGARD MANUAL	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
NS-85-001-001	INACCUR WELD INSPECT	ERT	08/13/85	.T.	09/27/85	.F.	/ /	WELDING
NS-85-004-001	INADEQ ORIFICE PLATE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
PH-85-001-003	INSPECTOR NOT INSPEC	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-001-010	TAMPERED INSPE RESUL	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
PH-85-001-012	FALSIF INSPECT RECOR	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
PH-85-002-018	HYDRO TEST NOT COMPL	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
PH-85-002-027	IMPROPER INSTAL TUBE	ERT	/ /	.F.	/ /	.F.	/ /	INSTURMENT
PH-85-002-X23	FALSI SETNG VALV/GAU	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
PH-85-002-X24	FALSIF OF WORK	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
PH-85-003-021	ENG EVAL NOT CONDUCT	NSRS	10/10/85	.T.	/ /	.F.	10/16/85	QA
PH-85-006-001	CHANGES TO 050 NOTES	NSRS	08/09/85	.F.	/ /	.F.	08/09/85	HANGERS
PH-85-012-001	INSPECT OF WELDS	ERT	07/19/85	.T.	/ /	.F.	07/19/85	WELDING
PH-85-014-002	INSPECT NOT PERFORMD	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
PH-85-018-001	AUDIT FINDS WITHHELD	ERT	07/10/85	.F.	/ /	.F.	07/10/85	QA
PH-85-022-001	ORIFICE PLATES ERROR	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
WI-85-003-001	FALSE WELD CERTF CRD	ERT	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
WI-85-003-X02	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /	.F.	11/04/85	WELDING
WI-85-013-001	UNQUALIF WELD EMPLOY	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
WI-85-013-003	INVALID TREND ANALYS	ERT	11/06/85	.T.	/ /	.F.	11/06/85	INSPECTION
WI-85-016-001	PROCEDURE VIOLATIONS	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
WI-85-030-002	UNQUAL WELDING PERS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-030-004	INSPECTOR ACPT WELDS	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-035-002	INADEQUATE INSPECTIO	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-035-004	BOX ANCHOR WELDING	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-035-007	UNCERTIFIED WELDER	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-041-003	DOC WELD SAMP FALSIF	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-046-003	BACKDATED TRAIN RECO	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
WI-85-046-X18	FALSIF TRAIN REPORTS	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
WI-85-050-001	BAD WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-053-001	OVERLOOKED NCRS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-053-008	CI QUESTION RE: 4NCR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-055-001	WELDER RECERTIFICATI	ERT	09/24/85	.T.	/ /	.F.	10/02/85	WELDING
WI-85-056-001	NOT FOLLOW CODE REQU	ERT	09/24/85	.T.	/ /	.F.	10/02/85	WELDING
WI-85-058-001	PERS NOT DOCU QA PRO	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA

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WI-85-059-001	INSP NOT DOCU QA PRO	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
WI-85-064-X04	WELD CARDS FALSIFIED	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 2 CRITICALITY								
IN-85-016-003	TUBING NOT CLAMPED	NSRS	09/03/85	.T.	/ /	.F.	/ /	HANGERS
IN-85-021-X04	VAVLES W/CARBON STUD	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-025-001	INCORE THERMO TEST	NSRS	07/03/85	.F.	/ /	.F.	/ /	TESTING
IN-85-064-002	SHUTDN BDS TOP OPEN	NSRS	06/28/85	.T.	07/22/85	.T.	07/22/85	ELECTRICAL
IN-85-069-001	INADEQUATE INSPECTS	ERT	07/10/85	.T.	10/10/85	.F.	/ /	HANGERS
IN-85-080-001	UNREPAIR ARC STRIKE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-106-001	MN STM LOADS SUPPORT	ERT	07/11/85	.F.	/ /	.F.	07/11/85	DESIGN
IN-85-109-002	BOLTS REPLAC BY WELD	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-120-001	NONSUPPORT CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-137-001	QUALITY OF WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-142-006	FALSE READINGS	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-186-002	INSL ON CONDT & CABL	ERT	07/10/85	.F.	09/24/85	.T.	10/10/85	ELECTRICAL
IN-85-197-001	SENSING LINES NEG SL	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-216-001	WELDING SEQUENCE	ERT	07/10/85	.T.	08/05/85	.F.	/ /	WELDING
IN-85-217-001	CONDENS POTS, #1	ERT	07/15/85	.T.	/ /	.F.	07/14/85	DESIGN
IN-85-241-001	ANCHOR BOLT HOLES	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-246-001	INSUFFNT MOVEMT/NVR	NSRS	08/09/85	.F.	/ /	.F.	08/09/85	DESIGN
IN-85-281-001	DIFFUSER FLOW	ERT	07/05/85	.T.	08/02/85	.F.	07/05/85	DESIGN
IN-85-281-003	TRNSM NOT READ SAME	NSRS	08/15/85	.T.	09/17/85	.T.	09/17/85	DESIGN
IN-85-288-001	INPROP INSTAL HANGER	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-305-001	YIELD POINT OF CLAMP	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-415-002	CONCRETE ERCW LINES	NSRS	07/11/85	.F.	/ /	.F.	07/11/85	MECHANICAL
IN-85-437-002	WRONG HGERS INSTALLED	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-439-006	SUBSTD WEAK CONCRETE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-460-003	GOUGE IN LINE, 1#	ERT	08/29/85	.T.	09/24/85	.T.	10/17/85	MECHANICAL
IN-85-460-X05	EXCAV ARC STRK SYS72	ERT	10/21/85	.T.	/ /	.F.	10/21/85	WELDING
IN-85-472-007	EROSION IN TRENCH AR	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-485-X01	SOFT CONCRETE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-496-001	ERCW LIQUEFACTION	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-523-001	ELEC SHOCK FM HANGER	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-534-001	FIRE PROTECT SYSTEM	NSRS	10/08/85	.F.	/ /	.F.	/ /	DESIGN
IN-85-601-001	INADEQ SURVL INSTRUC	NSRS	10/09/85	.T.	/ /	.F.	10/09/85	QA
IN-85-616-001	RO NOT AVAILABLE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-640-001	ANNULUS VACUUM FANS	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-802-001	TARGET ROCK VALVES	NSRS	10/25/85	.T.	/ /	.F.	/ /	DESIGN
IN-85-824-001	INSTALLA OF VALVES	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-845-002	SYS43 HANGER DESIGN	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-064-001	INAPT AIR FLOW SWITC	NSRS	/ /	.F.	/ /	.F.	/ /	EQUIPMENT
IN-85-122-001	CRACKS IN WF 33 BEAM	NSRS	10/10/85	.T.	/ /	.F.	10/16/85	MATERIAL
IN-86-259-003	PVC CONDUITS BROKEN	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-262-005	INADEQ BOLTS FOR TRA	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-297-001	INADEQUATE WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING

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WI-85-027-002	PIPING INSPECTION	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
WI-85-040-003	ERCW TRENCH B	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
WI-85-064-002	TRUSSES IMPROP WELD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-020-001	SQN/ECNS APPLICABILI	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
** MILESTONE: 3 5% POWER								
EX-85-039-001	NO PORTABLE OVENS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
HI-85-045-001	OBSOLETE HAND SWITCH	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-001-002	WELD ROD CONTROL	ERT	07/10/85	.F.	/ /	.F.	07/06/85	WELDING
IN-85-001-004	NO VIS WELD TRAINING	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-001-006	CODE WELDS VS REQUIR	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-008-002	IMPROP INSTAL INSULA	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-016-001	BROKN CONCRE AT PLAT	NSRS/ERT	08/05/85	.F.	/ /	.F.	08/04/85	CIVIL
IN-85-021-003	BACKDATE CERTF CARDS	ERT	08/19/85	.T.	/ /	.F.	/ /	WELDING
IN-85-027-002	COMPUTER ANALYSIS	ERT	08/01/85	.T.	10/08/85	.T.	10/04/85	DESIGN
IN-85-033-001	EP 4.03	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-039-003	NO CRIT FOR CALCULAT	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-052-008	PROCED FOR WELD RODS	ERT	07/10/85	.T.	09/24/85	.F.	/ /	WELDING
IN-85-064-001	SPRAY ON SHUTDN BDS	NSRS	06/28/85	.T.	/ /	.F.	06/28/85	ELECTRICAL
IN-85-086-001	STM GEN MATERIALS	ERT	07/10/85	.F.	/ /	.F.	07/10/85	MATERIAL
IN-85-108-001	SYS 68 PIPING	ERT	07/12/85	.F.	/ /	.F.	07/12/85	MATERIAL
IN-85-113-003	WELDER CERTIFICATION	ERT	07/10/85	.T.	10/07/85	.F.	/ /	WELDING
IN-85-119-002	DAMAGED INST TUBING	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-140-001	OPER WATCH VS PAPER	NSRS	08/30/85	.T.	10/16/85	.T.	10/16/85	OPERATIONS
IN-85-142-003	UNFOLLOWED WORK PLAN	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-183-002	PROCED NOT FOLLOWED	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-186-004	BOARDS IN ELEC PANEL	ERT	07/05/85	.F.	09/23/85	.F.	09/23/85	ELECTRICAL
IN-85-211-001	ERCW LINE LEAK	NSRS	06/27/85	.F.	/ /	.F.	06/27/85	MECHANICAL
IN-85-215-001	OUTSTANDING OWIL	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-221-001	IMPROPER VALVE OPER	ERT	07/05/85	.T.	09/23/85	.T.	09/23/85	OPERATIONS
IN-85-243-001	MIXING OF PAINTS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-244-001	WRONG PIPE ATTACHMNT	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-246-002	EXCAVATION ARC STRIK	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-276-002	UNSPEC INST ON DRWGS	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-284-001	QUALITY OF WELD RODS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-286-004	RECORDS ACCESS/VAULT	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-316-005	INADQ PIPE SUP DESIG	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-332-001	LIMITORQUE VALVES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-335-002	MAINT WLD CERTIFICAT	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-337-002	WELD ROD CONTTROL	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-346-003	WELD CERTIFICATIONS	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-352-001	UPDATE WELD CERTIFIC	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-358-001	INADEQ RADIOGRAPHIC	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-388-006	HEAT CODE TRACEABILI	NSRS	07/03/85	.T.	07/26/85	.T.	07/26/85	MATERIAL
IN-85-398-001	UNISTRUT CLAMP BOLTS	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-398-002	HANGER TORQUING	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS

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IN-85-398-003	TORQUING BOLTS	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-406-002	WELD INSPCT CRITERIA	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-410-006	GRPS ADHERE PROCEDUR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-424-004	STMFIT PERFM WELDING	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-424-006	ACCOUNT OF WELD RODS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-437-005	PROCEDURES FOR INSPEC	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-442-008	DOCUMNT ACCOUNTABILI	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-443-004	NO HEAT # ON PIPE	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-453-007	INADEQ CERTF OF WELD	ERT	08/19/85	.T.	/ /	.F.	/ /	WELDING
IN-85-463-007	DELAY IN DOCUMT DRWS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-465-001	LINES CLOSE TO HANGR	NSRS	07/30/85	.T.	08/09/85	.T.	09/08/85	MECHANICAL
IN-85-480-004	INADEQ WELD CERTIFIC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-493-004	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-501-001	UNUSED WLD RDS DISPO	ERT	09/03/85	.T.	/ /	.F.	/ /	WELDING
IN-85-520-004	REBAR DAMAGE INDETER	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-532-004	WELDER RECERTIFICATE	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-532-005	RECERT W/O VERIFICAT	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-534-002	FIRE PROT LINES	NSRS	10/22/85	.F.	/ /	.F.	10/22/85	DESIGN
IN-85-540-001	INADE WELD CERTIFICA	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-543-002	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-545-002	INCOMP HEAT # LOG	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-554-001	INCOMP STAIN STEL LN	NSRS	09/03/85	.F.	/ /	.T.	09/03/85	CONSTRUCTI
IN-85-579-001	INCOMPLETE WELD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-581-001	CABLE PULL NOT PROPE	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-594-001	VALVES W/90% REJECT	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-612-006	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-613-001	THERMAL STRESS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-641-003	CONCRETE "CHIPPING"	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-671-004	WELDS NOT PROP INSPE	NSRS	10/22/85	.T.	/ /	.F.	10/22/85	WELDING
IN-85-681-001	EQUIPMENT MEASUREMEN	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-705-001	UNQUALIFIED PERSONNE	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-725-x14	INADQ RECERT PROG	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-725-x15	TEST PLATES INADQ	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-725-x16	EQU UNAVAIL RECERTI	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-774-002	MISSING DOC ELEC INS	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-778-001	WELDER CERTIFICATION	ERT	09/26/85	.T.	/ /	.F.	10/15/85	WELDING
IN-85-824-002	UNAPPROV BEND PROCED	ERT	08/23/85	.T.	10/18/85	.T.	10/30/85	QA
IN-85-845-004	IMPROPER WELDING	ERT	10/10/85	.F.	/ /	.F.	10/16/85	WELDING
IN-85-850-004	WORK W/O OFFC APPROV	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-880-001	INOPERABLE WELD MACH	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-886-001	INADQ DESIGNS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-973-003	INSTAL/PLASTIC CONDU	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-982-001	REBAR LOCATERS UNUSE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-029-001	ITEM SPEC NOT SUPPOR	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-055-002	LEAKING PIPE	NSRS	/ /	.F.	/ /	.F.	/ /	MAINTENANC
IN-86-083-003	PRODUCTION VS QUALIT	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING

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IN-86-088-001	HIRE PERS TO QUAL PO	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-86-115-001	ANCH BEING OVERTORQU	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-119-001	INADEQUATE CONDUITS	NSRS	10/09/85	.T.	/ /	.F.	/ /	ELECTRICAL
IN-86-122-X02	UNCERTIFIED WELDER	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-133-001	GOUGE IN 10" PIPE	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-158-007	CUTS CLOSE TO CONDUI	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-169-001	CONDUIT HEAT DAMAGED	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-173-001	DESIGN CALCULATIONS	NSRS	10/28/85	.T.	/ /	.F.	/ /	DESIGN
IN-86-205-001	ERCW UNSUITABLE	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-259-006	INADQ SEPAR OF CABLE	NSRS	11/01/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-262-003	EXCEED MAX PULL TENS	NSRS	10/31/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-268-003	IMPROPER INSTAL CABL	NSRS	11/01/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-291-007	SECURITY CLEAR PERS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-291-008	EMERG HELP NOT AVAIL	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
OW-85-002-002	DAMAGE TO WEATERSTRI	ERT	/ /	.F.	/ /	.F.	/ /	FIRE
OW-85-003-001	ANCHORS OVER-ENGINEE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
OW-85-001-002	INST LNS SLOPE PROB	ERT	07/06/85	.T.	09/20/85	.T.	09/23/85	INSTRUMENT
PH-85-001-005	IMPROPR FIT ON LINES	ERT	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
PH-85-001-011	INST HAS NO DOCUMENT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
PH-85-008-001	DOCUMENT FOR ASME CD	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
PH-85-027-001	CORRECT ACT TO WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-027-002	REPAIR OF MSRV REST	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-027-005	NDE EXAM	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-038-002	OEP-17 NOT FOLLOWED	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-042-001	INADEQ USE OF BOLTS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
WI-85-013-004	NO CRIT/DAMAGE REBAR	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
WI-85-029-002	INADEQ WELD INSPECT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-030-001	VOID/WI-85-030-010	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-041-002	UNQUAL/TRG OF INSPEC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-053-002	IMPROP WELDING DOCUM	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-053-003	IMPORP WELDING DOCUM	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
WI-85-053-006	TEST DIR NOT QUAL	NSRS	10/25/85	.F.	/ /	.F.	/ /	CONSTRUCTI
WI-85-053-010	ANSI INSUF MANPOWER	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-054-003	DRAINS PLUGGED UP	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
WI-85-064-001	WELD CARDS INCORRECT	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-064-005	FIRE SYS PIPE IMPROP	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-077-001	INAPPROP EPOXY USED	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI

** MILESTONE: 5 100% POWER

IN-85-001-001	WELD INSPCT NOT CODE	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-007-001	WELD INSPECT TOOLS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-010-004	FIRE PROT PIPNG DESN	ERT	09/16/85	.F.	/ /	.F.	09/24/85	DESIGN
IN-85-021-002	SYS77 DRAINS IN FLR	ERT	08/23/85	.T.	/ /	.F.	08/30/85	DESIGN
IN-85-026-001	FITUP INSPECTS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-052-007	FITUP INSPECTIONS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-109-001	STRUCTURAL SUPPORT	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS

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IN-85-138-001	DEBRI LEFT IN CONDUIT	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-218-001	APPROVAL OF AS-BUILT	ERT	07/29/85	.T.	08/22/85	.T.	08/22/85	INSTRUMENT
IN-85-289-002	DEFECT PIPING	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-325-003	CYCLICAL STRESS FAIL	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-406-003	WELD INSPECT TOOLS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-407-001	INACCURATE Q-LIST	NSRS	10/04/85	.T.	/ /	.F.	/ /	DESIGN
IN-85-469-003	ENTRAP OF CONTAMINANTS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-490-004	UNCORRECTED PIPES	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-584-001	FIT-UP INSPECT REQUIR	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-634-001	STRESS ANCHOR PLATES	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-671-001	FITUP INSPECTION	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-672-001	EXTEND PERIOD OF HEAT	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-688-003	VALIDITY OF CRIT SYS	NSRS	10/04/85	.T.	/ /	.F.	/ /	DESIGN
IN-85-945-001	ELEC MANHOLES DISORG	NSRS	10/22/85	.T.	/ /	.F.	10/22/85	ELECTRICAL
IN-85-973-002	INADEQUATE SUPPORTS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-998-002	IRN PROG NEEDS IMPROV	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-087-002	EFFECT OF QA DEPT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-183-001	BOLTS INSTAL STL CON	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-86-200-006	INSTR TUBING UNPROTEC	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
WI-85-013-002	INADEQ WELD INSPECT	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
WI-85-030-003	STOP WK OR NOT ISSUE	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-035-001	HEAT # SIGN-OFFS	NSRS	/ /	.F.	/ /	.F.	/ /	QA

** MILESTONE: 6

IN-86-199-001	CAB PULL/REQ PER QCI	NSRS	10/31/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-201-001	CAB PULL LIMIT EXCEE	NSRS	10/31/85	.T.	/ /	.F.	11/04/85	ELECTRICAL

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EX-85-002-002	ACCUMULATORS/UNIT 2	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
EX-85-012-001	UNQUALIFIED PERSONNE	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
EX-85-023-001	NUC PR HEAT CODE PRO	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
HI-85-040-001	VOID/HI-85-040-002	ERT	/ /	.F.	/ /	.F.	09/28/85	QA
HI-85-041-001	DISP FOR REPT VIOLAT	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-044-001	DISCIPL FOR REPORT	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-055-001	INTIM FOR DAMAG REPR	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-066-001	REPORTING VIOLATIONS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-052-002	INTIMID FOR IRN'S	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-052-003	INCORRECT INSTALLATI	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-052-004	HANGER CRITERIA	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-052-006	FIT-UP INSPECTIONS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-066-001	SEISMIC TRENCH CONC	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-070-001	CRACKED SLEEVE	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-078-001	UO/SAFTY RELATE SYST	NSRS	10/14/85	.F.	/ /	.F.	10/16/85	OPERATIONS
IN-85-079-001	UNQUAL WELD INSPECTO	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-089-001	INADEQ WELD INSPECTO	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-089-002	HANGER REVISIONS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS

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IN-85-107-001	CEILING EMBEDDED PLA	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-109-005	AXIAL LOADS	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-110-002	INADEQ HANDLING NCRS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-134-005	REJ WORK 'BUY-OFFS'	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-143-001	WELD PROCEDURES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-152-001	OUT/OF/DATE DRWNGS	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-155-001	'POOR APPEARNC' WELD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-186-005	UNTRAINED INSPECTORS	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-196-003	VALVE OPER INADEQ	ERT	08/24/85	.T.	/ /	.F.	/ /	OPERATIONS
IN-85-210-002	UNTRAINED ENGRS/INSP	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-247-X03	NCR REPORTING CODE	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-259-001	UNTRAIN TEST PERSONL	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-259-002	EVALUATE W/NO QA/QC	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-260-001	WELDS WITHOUT DOCUMN	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-263-001	FAB NOT GETTING FCRS	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-272-004	FIREPROOFING CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-280-001	WELD MACHN VOLT/AMP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-282-001	QA/QC CLEAR OF MATER	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-291-001	SCRAP MATERIAL USED	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-303-001	TUNGSTEN IN WELD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-343-002	CONTL OF HNGR MATERL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-347-002	LOSS OF INSPC DOCUMN	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-348-003	RADIOACTIVE WATER	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-348-004	DWNGS WITHOUT FCR'S	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-352-002	NO PORT WELD OVENS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-365-003	QULIFC OF WELD INSPE	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-367-001	CABLE PULL PRACTICES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-369-001	UNTRAIN CLERKS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-374-001	UNPROTECTED CABLE	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-375-001	DELETED REQUIREMENTS	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-375-002	CHANG QCP/AGREE W/IN	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-375-003	UNQUALIFIED INSPECTO	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-380-001	UNQUAL INSPECT/ENGRS	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-388-003	UNLABELED MATERIALS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-405-001	METAL FATIFUE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-424-001	NO PORT OVENS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-425-003	PLACEMENT OF HANDSWI	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-435-003	VALUE OF OC RECORDS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-442-006	UNTRAIN CLERK PERSNL	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-442-007	NO SECURITY ON PRINT	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-450-001	FLUX BURNS OF WLD RD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-453-006	MAINT TO WELD MACHNS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-453-009	PASS OF WELD ROD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-454-001	INADQ TRAIN WEL INSP	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-454-004	PASS OF WELD ROD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-463-003	CONT W/ENERGZ CONDCT	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL

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IN-85-470-001	FAILURE OF SWTCHGEAR	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-471-001	INEXP OPERATORS	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-474-001	UNQUALF WORK PERFORM	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-476-004	UNTRAIN WELD INSPECT	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-478-001	NO`CRITIQUE PROCESS'	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-496-002	LINER OF ERCW PIPING	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-497-001	COVERUP QA VIOLATION	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-510-001	NO OJT FOR WELD INSP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-513-001	QA INSP UNQUALIFIED	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-517-001	DISC FOR IRN BY SUPE	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-519-001	OVERLOADED CABL TRAY	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-525-001	`SALT' CONCRETE	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-529-005	INADEQ WELD INSPECTR	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-547-001	`FORGET' QA PROCEDUR	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-564-001	CARBON CONTAMINATION	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-595-002	REQUIR FOR EMBD/REDH	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-600-002	INADEQ WELD MACHINES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-600-004	CONTAMINATED WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-600-005	REQUIR FOR STM GENER	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-601-002	PROBLMS NOT CORRECTD	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-606-001	INADEQ REC INSPECTIO	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-606-003	VIOL OF QCP 1.2	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-612-002	WORN OUT WELD MACHNS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-618-004	DAMAGED INST TUBING	NSRS	08/12/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-621-001	MATERIAL NONCONFORMA	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-638-001	VOLUME OF PARTICLES	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-640-003	LOAD CELL INCORRECT	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-658-002	WELDING PROCEDURES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-661-001	NCR 5612	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-667-002	HVAC DUCT/NO HEAT #	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-685-002	DIRT/DUST ACCUMULATI	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-686-001	UNQUALIFIED WELDERS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-688-001	OVERFILL CABLE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-706-002	UNTRAIN WELD INSPECT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-719-001	VALVE LEAKAGE	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-762-002	SQN INT DRAW AT WBN	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-825-001	HEAT CODE PROGRAM	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-825-002	CLAIRTY IN PROCEDURE	NSRS	10/22/85	.F.	/ /	.F.	10/22/85	OPERATIONS
IN-85-830-X01	NCR/DESIGN CHANGE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-842-001	CONTROL ON DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-844-001	UNTRAINED OPERATORS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-846-001	WELD ACCEPT CRITERIA	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-846-003	UNRESPONS TO SAFETY	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-855-001	NCR PROGRAM	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-864-002	MODIFI TO RHR MOTORS	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-867-001	PRODUCTION VS QUALIT	ERT	/ /	.F.	/ /	.F.	/ /	QA

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IN-85-911-001	LACK OF HEAT NUMBERS	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-913-001	ELECT JUNCTION BOXES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-913-002	ELECT JUNCTION BOXES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-926-001	PRODUCTION ACCOUNTAB	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-927-X01	STORAGE REQUIREMENTS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-932-001	NUMERIOUS 050 NOTES	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-935-001	BAD CABLES/70-75% 0	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
PH-85-012-X03	INSPECT OF HVAC WORK	NSRS	/ /	.F.	/ /	.F.	/ /	QA
PH-85-016-001	QAULIF OF WELD INSPE	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
PH-85-018-X02	QC/QA AUDIT PROGRAM	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-030-001	OE EXPRESS OF CONCER	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-028-001	UNTRAINED ELECTRICIA	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
** MILESTONE: 6 09/02/85								
IN-85-020-001	IMPROP INSTAL REDHDS	NSRS/ERT	08/15/85	.T.	/ /	.F.	/ /	CIVIL
* MILESTONE: 6 10/01/85								
IN-85-512-003	DAMAGED CONDUIT	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
** MILESTONE: 6 12/01/85								
IN-85-457-002	NCRS FOR SPT FUL RCK	NSRS	/ /	.F.	/ /	.F.	/ /	QA
** MILESTONE: 6 1ST REFUEL								
EX-85-002-005	MARKS ON PIPING	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-016-002	NO DATA ON HNGR PLAT	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-109-X04	GE IN ALLOOWABLES	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-192-002	LACK OF WELD COATING	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-211-002	ERCW LINE NOT STAINL	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-234-001	REQUIRE FOR WELD ROD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-247-001	QUALITY OF RODS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-400-002	GASKET FAILURE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-454-006	VALVE W/RUST ON BODY	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
** MILESTONE: 6 EX85-003003								
IN-85-890-001	COMPUTER TAMPERING	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
** MILESTONE: 6 I85-06WBN								
IN-85-295-003	CABLE PULLING	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-325-005	OVERSTRESS CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-425-004	CABL WITHOUT SWABBIN	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-432-001	OVERFILLED CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-432-002	OVERFILLED CABLE TRY	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-433-002	INSUL BREAK ON CABLE	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-733-001	QUALITY VS QUANTITY	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-856-005	BREAK ROPE W/CABLE P	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-028-001	CABLE PULL LIMITS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL

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** MILESTONE: 6 I85-101WBN								
PH-85-003-003	REEVAL OF QUAL CONST	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
** MILESTONE: 6 I85-111WBN								
IN-85-110-001	CONCRETE ANCHOR FAIL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-110-004	CAPABIL OF PIPE SUPP	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
** MILESTONE: 6 I85-159WBN								
WI-85-008-002	REVERIFI HT NUM REPT	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
** MILESTONE: 6 I85-166WBN								
IN-86-145-002	CONCRETE LINING APAR	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
** MILESTONE: 6 I85-233WBN								
IN-85-743-008	OVERFILLED CONDUITS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-832-001	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-856-003	OVERFILL CABLE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-919-001	OVERFILL CABLE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-034-001	OVERLOAD CONDUITS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-310-001	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
** MILESTONE: 6 IN85-024001								
IN-85-461-001	ACCEPT CRIT OF DRWNS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
** MILESTONE: 6 IN85-037001								
WI-85-011-001	INTER W/INSTL OF HNG	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
** MILESTONE: 6 IN85-052008								
EX-85-021-001	INADEQUAT ACCOUNTABI	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 6 IN85-092001								
IN-85-451-001	RUSTY WELDS IN RBI	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
** MILESTONE: 6 IN85-113003								
EX-85-021-002	VERIFI PROCESS/WELD	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-426-002	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-815-001	CERTIFICATI OF WELDR	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
IN-85-835-002	WELDING CERTIFICATIO	ERT	09/26/85	.T.	/ /	.F.	10/03/85	WELDING
** MILESTONE: 6 IN85-130002								
IN-85-017-001	BYPASSING PERMITS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
** MILESTONE: 6 IN85-140001								
IN-86-208-001	SI REQ TO MUCH TIME	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS

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** MILESTONE: 6 IN85-150001								
IN-86-167-001	NO TRACEABIL OF RODS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 6 IN85-213001								
IN-85-255-001	CABLE PULL VIOLATION	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-300-002	IMPROP ROUTED CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
** MILESTONE: 6 IN85-255001								
IN-85-685-001	OVERFILLED CONDUITS	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-734-001	OVERFILLED CONDUITS	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
** MILESTONE: 6 IN85-352002								
IN-85-435-001	OLD WELD MACHINES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-441-003	NO PORT WELD OVENS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 6 IN85-406001								
IN-85-445-002	UNAUT ACCS TO WLD SY	ERT	08/27/85	.T.	/ /	.F.	08/27/85	WELDING
IN-85-446-001	WELD CHNG W/O AUTHOR	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-458-007	CHNG OF WELD STATUS	ERT	08/27/85	.T.	/ /	.F.	08/27/85	WELDING
IN-85-576-001	USE OF INSPEC ID	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-025-001	ILLEG COMPUTER ACCES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 6 IN85-415002								
IN-85-196-004	INPROP INSTAL PIPING	NSRS	10/11/85	.F.	/ /	.F.	10/16/85	MATERIAL
IN-85-442-X12	LINING LOSS IN PIPE	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-589-001	LINER ON ERCW LINE	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-713-004	CONCRETE LIN IN PIPE	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-846-002	GOUT LINER/SAFTY HAZ	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
** MILESTONE: 6 IN85-517001								
HI-85-065-001	THREATS FOR IRNS	ERT	/ /	.F.	/ /	.F.	/ /	QA
** MILESTONE: 6 IN86-316006								
IN-86-316-003	WORK PKG VS MANUAL	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
** MILESTONE: 6 NO DATE								
EX-85-002-001	SUPPORT ANALYSIS 1&2	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
EX-85-027-001	HVAC DAMPER TEST	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
EX-85-037-003	INADEQ WELDS IN UN 1	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-037-004	UNQUALIF WELD INSPEC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-039-003	DESIGN DEFICIENCY	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
EX-85-042-003	WELDERS REQUALIFICAT	ERT	10/23/85	.T.	/ /	.F.	10/30/85	WELDING
EX-85-046-001	IMPRP FIRE DAMPERS	NSRS	/ /	.F.	/ /	.F.	/ /	MEHCANICAL
EX-85-048-004	SUBJOUR WELD PIPE FL	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-052-003	INADQ WORK PKG PREPA	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
EX-85-052-005	INSP NOT KNOWLEDGEAB	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION

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EX-85-052-006	CONDUIT TORN OUT	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
EX-85-053-006	INADQ ENGINEERS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
HI-85-047-001	PUNISHMENT FOR MISTK	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-001-005	"SHODDY WORKMANSHIP"	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-001-007	FAILURE FOLLOW PROCE	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-001-008	INSP FAILED TEST	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-007-003	VENDOR WELDS INSPECT	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-019-001	OVERLOADED STRUCTURE	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-022-001	UNPERF INSP PIPE SUP	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-057-001	INSP INCONSIS RE:PRO	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-089-005	UNWERVICABLE COILS	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-103-001	IEB 79-02	NSRS	08/09/85	.T.	/ /	.F.	08/09/85	DESIGN
IN-85-109-003	VIOLAT WELD CRITERIA	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-112-001	BEND RAD/PULL TENS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-118-001	STORAGE OF PIPING	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-127-001	INCONSIS IN WELD INS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-141-001	UNQUAL SUPV MECH MAI	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-144-001	LACK OF ROD EQUIPMEN	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-153-002	DESIGN FEATURES INCO	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-156-002	INADQ WELDS ON PLATF	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-170-001	UNAUTH RELEASE CABLE	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIALS
IN-85-174-X02	SUSPENS/QA VIOLATION	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-186-003	CABLE TRAYS IN SROOM	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-186-010	INSUL OVER CUT WIRE	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-192-001	RUST IN COOLING ROOM	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-198-001	UNCOVERED CABLE TRAY	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-201-003	CONDUIT HAS NO FITTI	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-212-001	INSP OF WELD SUPPORT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-213-001	CHNG CABLE PULL PROC	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-220-002	SUPV IGNORES EMP CON	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-220-003	EXCESS NOS OF HGRS	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-223-001	AS CONST DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-232-001	INSTAL OF RED HEADS	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-242-002	INSUFF DOC PIPE SUPP	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-246-003	INADQ INSTAL HANGERS	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-247-002	UNSUIT WELD MACHINES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-273-001	UNPAINTED PIPE SUPPO	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-276-003	LACK OF DOCUMENTATIO	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-278-001	INADQ EMP FOR RECORD	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-278-003	INADQ QA RECORDS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-279-003	FCRS MISINCORP DRWGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-279-004	PROCEDURE VIOLATIONS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-279-005	NO TRACKING SYSTEM	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-282-002	PIPING WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-284-005	PLANT CLEAN IS POOR	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-289-001	ERRORS DURING TESTIN	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS

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IN-85-289-003	INADQ CABL TRAY SUPP	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-289-004	USE OF BUTT WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-289-006	VERMASCO APPL PREMAT	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-301-003	VALVES INFERIOR	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-316-006	PLANT UNCLEAN	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-321-001	UNQUAL ENG PERSONS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-328-001	FLUSHING/NO HOSE	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-337-001	ERCW LN W/CEMENT LIN	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-347-004	IMPLEMT OF QA PROGRM	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-366-003	INADQ CONTROL DRWGS	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-369-004	NUC STORAGE LEVELS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-373-001	DAMAGED CABLE	NSRS	06/28/85	.T.	07/25/85	.T.	07/25/85	ELECTRICAL
IN-85-374-002	ALUMN ERICKSON CONNC	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-388-004	QA LEVEL MATERIALS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-388-007	PIPE LABELING RESPON	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-396-001	PROTECT OF WELD CABL	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-400-001	FLOW VALVES, #1&2	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-404-001	REWORKED WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-409-001	NO NCR FOR DOCUMENTA	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-411-002	DEFECTIVE WELD RODS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-412-001	MATERIAL AUTHORIZATN	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-413-002	HNGR NOT TO DRW SPEC	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-424-007	LACK OF WELD ROD CON	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-426-001	UNREQ PORT OVENS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-435-005	INADEQ WELD EQUIPMEN	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-436-004	MONITNG OF PULL TENS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-440-001	CFT REQ INSP NEW ARE	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-442-014	UNIT 1 WALKDOWN	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-443-002	SEGREGATE OF MATERLS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-445-003	HANGERS LACK ID NOS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-445-014	INADEQ QUAL ENGINEER	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-453-005	WRONG HEAT # ON PIPE	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-458-002	UNQUAL/TRAIN INSPECT	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-458-004	HANGERS REMOV SYS 68	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-458-005	ELEC BOX TEST UNPERF	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-460-002	MATRL W/O HEAT #'S	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-460-X04	ARC STRIKE ON SYS 78	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-463-006	PROBL INSTRU INSTALL	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-472-006	INTERFER W/INSPECT	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-472-008	NO INSPECT DOCUMENTA	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-476-003	UNINSPECTED WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-511-002	PIPE WELDS NOT PRIME	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-511-004	INSPECT ALLOW DEVIAT	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-532-006	OVERSIZED WELDS	NSRS	08/16/85	.T.	/ /	.F.	/ /	HANGERS
IN-85-534-004	SPRINKLER BLOCKAGE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-543-004	DETERORATE STEEL	NSRS	07/29/85	.F.	09/26/85	.T.	07/29/85	CONSTRUCTI

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IN-85-545-001	INCONSIST IN WALL	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-570-001	UNTRAIN WARHSE PERSO	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-595-005	SEP OF CARBON/SS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-630-002	SEAL LEAKS INTO BLDG	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-630-003	ERCW LINE IMPROP INS	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-630-004	INADQ DOC FOR ERCW	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-642-001	CONDUIT TOO FULL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-657-001	WELDS NOT MEET SPECI	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-662-001	REVISED ADM. INSTRUC	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-671-003	PREHEAT TEMPERATURE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-677-001	QUALITY VS. SCHEDULE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-682-003	QUAL PROG WEAK AREAS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-693-003	EXP/TRAIN OF LABORER	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-707-003	EXPERIENCED WELDERS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-710-002	VIOL OF WORK PERFORM	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-713-001	UNQUAL INSTRUCTORS	ERT	/ /	.F.	/ /	.F.	/ /	TRAINING
IN-85-725-007	UNQUALIFIED FORMEN	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-754-001	INADQ PLATE & STEEL	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-767-001	INADQ MANAGEMENT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-767-003	INSP OF PAINTED WELD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-767-005	MGMT LACK KNOWLEDGE	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-768-X06	INADQ PROC ROD CONTR	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-771-001	INOPERABLE VALVE	ERT	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-798-004	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-798-005	QUANTITY VS QUALITY	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
IN-85-839-001	ERCW MOTOR PROBLEM	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-845-003	IMPROP INST&MTL STOR	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-865-002	SUPPORTS VIOL OF PRO	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-877-001	LIN ACPT WITH DEFAULT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-886-X02	INADQ QA PROGRAM	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-894-001	INADQ TRAINED OPERAT	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-900-X01	UNQUALIFIED PERSONNE	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-900-X02	METHOD FOR NONCONFOR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-915-002	DRAWING CONTROL	NSRS	10/17/85	.F.	/ /	.F.	10/17/85	DOCUMENT
IN-85-933-001	INEXP ENGINEERS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-937-001	UNCERTIF SUPERVISORS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-947-002	VERIF METHOD UNDEFIN	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-947-006	MECH DENTS/GOUGES	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-955-001	PWR LOST SYST INOPER	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-960-001	UNACCEP WELD ON TANK	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-964-003	IMPROP MAT/EQUIUP USE	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-964-X06	WUSE OF "SUPERGLUE"	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-973-001	LEVEL INDICATOR INAC	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-973-005	NO DOCUM OF EVALUATI	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-974-001	PROCEDURE CHANGES	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-976-001	UNREP MISTAKE DUE TO	ERT	/ /	.F.	/ /	.F.	/ /	MANAGEMENT

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IN-85-979-002	SUBJOUR PER JOUR TSK	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-981-001	INADEQ WELD INSPECTO	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-981-002	NO PROG FOR DOC CONT	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-982-002	SLOPE REQUIREMENTS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-984-001	INADEQUATE DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-984-002	LAX INSPECTION CRITE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-985-001	INCORRECT LINE SLOPE	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-986-X02	CONDUIT DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-987-001	ADMINIS UPDATE	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-995-003	UNQUALIF `SIGN-OFFS'	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-014-001	EXCESS SI ON EQUIPME	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-022-002	UNSKILLED EMPLOYEE	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-028-002	OVERFILL CABLE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-033-003	QUAL REQ RESP ON CFT	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-86-068-001	POOR DESIGN HEAT EXC	ERT	/ /	.F.	/ /	.F.	/ /	MAINTENANC
IN-86-070-002	UNDERSTAIND SI'S	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-86-079-002	INADEQ SAF REL EQUIP	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-093-001	INSUFF WELD ON PIPE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-103-003	WORK PERF WITHOUT MR	ERT	/ /	.F.	/ /	.F.	/ /	MAINTENANC
IN-86-108-001	DRAWINGS NOT CURRENT	NSRS	11/01/85	.F.	/ /	.F.	11/04/85	DOCUMENT
IN-86-110-001	INADQ ICE LOADING	NSRS	10/25/85	.T.	/ /	.F.	10/30/85	DESIGN
IN-86-112-003	FAIL TO RESOLVE PROB	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-86-124-001	LOW GRADE STEEL	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-86-127-001	QUOTA SYS VS. QUALIT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-134-001	PROC UNAVAIL IN FIEL	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-134-002	NO POLICY ISSU IRN	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-148-001	QC INEXPERIENCE	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-86-150-001	TRACEABILITY NOT ATT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-158-005	CONDUITS NOT PLUGGED	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-164-001	REINSP PREV INST HGR	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-167-002	NO REQ STAMP ID WELD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-167-003	WELDING RODS INADEQU	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-184-001	CLASSIF OF PIPING	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-190-003	ANCHOR NOT TEST INDI	NSRS/ERT	10/24/85	.T.	/ /	.F.	10/30/85	CIVIL
IN-86-200-003	SUPPORT NOT SAFE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-205-007	FAVOR/WELDING TESTS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-205-009	TECH USED INADQ FILM	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-211-001	INADEQ WELD ID	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-217-001	UNCERT CONCRE FINISH	NSRS	/ /	.F.	/ /	.F.	/ /	CRAFT
IN-86-221-001	RED HEADS NOT REMOVE	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-232-001	REPAIR ERCW VIOLAT	NSRS	10/03/85	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-232-002	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-232-X03	FCRS NOT APPROVED	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-238-003	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-243-001	PROB WITH PROC VIOLA	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-243-002	SAMPLING INADEQUATE	NSRS	/ /	.F.	/ /	.F.	/ /	QA

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IN-86-246-011	LINE LEAKING FLUID	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-252-X03	CALBE TERM SLIPS TES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-255-X07	NO COMPREH QA PROGRA	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-259-001	FAILURE USE FUSE LIN	NSRS	10/31/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-259-005	OVERFILLED CABLE TRA	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-259-X11	TVA PROC NO IEEE STD	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-259-X13	FOREIGN OBJS IN CONC	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-262-001	OVERFILL CABLE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-262-002	OVERCROWDING CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-263-001	QA DOCU NOT MEET STD	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-264-001	INDEPENDENT QA DEPT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-266-X08	MGMT NOT COMPLY PROC	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-266-X09	LACK OF COVERAGE	NSRS	10/31/85	.F.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-266-X10	PROCE REQ FOR CABLES	NSRS	11/01/85	.T.	/ /	.F.	11/04/85	ELECTRICAL
IN-86-269-002	INEXP PERS FOR PROCE	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-270-003	UNQUAL QC INSPECTORS	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-86-271-003	UNCONTROLLED DOCUMEN	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-279-002	NONSPECIFIC PROCEDUR	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-281-001	WELDER PERF INADQ WK	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-290-001	IRNS NOT QUAL RECORD	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-291-005	EMP REQ TO WORK OT	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-86-294-002	INADQ WELD BASE PLAT	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-299-001	DOC DOES NOT DET INF	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-299-002	"WEAK LINK" HGR DESI	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-86-303-002	HOUSEKEEP NEEDS IMPR	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-303-003	PROCED SHOULD BE EXP	ERT	/ /	.F.	/ /	.F.	/ /	CRAFT
IN-86-303-004	WELDER UPDATING	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-304-001	UNQUAL WELD INSPECTO	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-305-001	LACK OF CONCRETE BON	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-305-002	NO FIRE DAMPERS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-305-004	WELD ROD NOT EXACT	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-306-001	INACCESS EMERG EQUIP	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-314-004	INADQ CABLE SEPARATI	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
OW-85-003-002	IMPROPER WELD MACHIN	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-001-007	UNAUTHOR REWORK CLAM	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-001-008	DRAIN LINES NOT INSP	ERT	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
PH-85-001-009	INST LINES NOT INSPE	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
PH-85-002-009	USAGE OF UNSUIT BOLT	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
PH-85-002-026	ANCHORS IMPROP INSTA	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
PH-85-002-029	UNQUALIFIED CRAFTSMA	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-002-030	INADQ TRG/TEST WELDE	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-003-007	INSTAL REC DESTORYED	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
PH-85-003-009	SCRAPPED VALVES USED	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
PH-85-003-010	RUSTY BEARINGS	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
PH-85-003-023	CABLE TRAYS OVERFILL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
PH-85-013-001	'OFF-BRAND' WELD ROD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING

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PH-85-032-001	SAMPL PROG QUESTIONA	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
PH-85-038-001	OE PROCEDURE REVISIO	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
WI-85-004-001	NCR PROGRAM	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-030-005	ASME PROB NOT REPORT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-036-001	MATERIAL CONTROLS	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
WI-85-040-001	NCR FOR ERCW LINE	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
WI-85-040-002	INADQ PROC/INSP PLAN	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
WI-85-040-004	LINES INADQ CONSTRUC	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
WI-85-041-001	WELD MAT INADEQUATE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-046-002	INADEQ QA PERSONNEL	NSRS	/ /	.F.	/ /	.F.	/ /	INSPECTION
WI-85-046-016	QA MGT "IMAGE CONSC"	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-053-004	WELD ROD NOT CODE RE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-053-005	CODE ITMS NOT CONTRO	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
WI-85-053-007	ORIG DOCUMENT LOST	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
WI-85-053-009	N5 PKGS NOT REVIEWED	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-053-011	MATERIALS CONTROL	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
WI-85-053-012	WELDS NOT INSPECTED	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
WI-85-060-001	INADQ TRAINED ENGINE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
WI-85-061-001	EQUIPMENT REMOVED	ERT	/ /	.F.	/ /	.F.	/ /	QA
WI-85-064-003	INADQ WELDS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-006-001	SQN/DESIGN ERRORS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
** MILESTONE: 6 NS85-001001								
IN-85-458-001	IMPROPER INSP WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
** MILESTONE: 6 PH85-001002								
IN-85-119-001	IMPROPER LINE INSTAL	ERT	09/18/85	.T.	10/22/85	.T.	10/30/85	INSTRUMENT
** MILESTONE: 6 SER APP D								
IN-85-102-001	CNTL ROOM MODIFICATE	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
** MILESTONE: 6 U2 FUEL LD								
EX-85-026-001	CRACKS IN CONTAIN WA	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
EX-85-059-002	INADQ INSTAL HANGERS	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-009-001	SCHEDULE VS. QUALITY	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-050-002	NO GAUGES AVAILABLE	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-062-002	CONDUIT SUP NOT INSP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-089-004	UNDERSZ PIPE WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-147-001	INSPEC/TEST VALVES	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-149-002	RUSTING WELDS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-173-001	LEAK IN SPRINK SYS	ERT	08/13/85	.F.	/ /	.F.	08/13/85	MATERIAL
IN-85-189-001	ACCESS TO VALVES	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-189-002	ACCESS TO VALVES/#2	NSRS	10/04/85	.F.	/ /	.F.	10/04/85	DESIGN
IN-85-231-002	CONCRETE SOFT/BRITTL	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-246-005	RUSTED WELDS/#2/RB	ERT	10/24/85	.T.	/ /	.F.	/ /	WELDING
IN-85-250-001	INSP PERF W/O WK REL	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS

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IN-85-272-003	VOIDS IN VALVES	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-286-006	EQUIPMENT DOCUMENTAT	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-286-007	WORK RELEASE AUTHORI	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-316-007	IRONWORKERS WELD SUP	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-346-002	DAMAGED PENETRATIONS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-380-003	DEFECTIVE WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-425-001	OVERCROWDED JB	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-428-002	SAW DRW FOR SNUBBER	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-463-008	INACCUR DOCUMENTATN	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-481-001	NO QCP FOR CONC INSP	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-506-001	OVERFILLED CABLE	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-511-003	IMPRORER SURF PREPAR	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-512-002	INFERIOR ERICKSONS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-515-002	UNQUALIFIED CRAFT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-524-002	HANGRS NOT WELDED	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-530-001	WLDS NOT ACCRD PROCD	NSRS	08/15/85	.F.	/ /	.F.	08/15/85	WELDING
IN-85-584-002	NO INSPEC ON WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-615-001	OBSTRUCTED ACCESS	NSRS	10/04/85	.F.	/ /	.F.	10/04/85	DESIGN
IN-85-625-001	BROKEN MATERL ON HNG	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-634-002	UHI SAFETY INJECTION	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-670-001	HANGR/PIPE SUPPORTS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-678-001	HOLLOW UNDER CONCRET	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-707-001	WELD APPEARANCE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-719-002	BEND OF ELEC CABLES	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-730-001	NO RIT-UP INSPECTION	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-814-001	DEBRIS IN DRAINS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-828-001	UNCERCUT CALBE TRAYS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-834-002	TEMPERATURE OF WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-852-001	VENDOR WELDS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-852-002	ADEQ OF WELD INSPECT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-856-004	BENDS IN CONDUIT	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-947-001	DESIGN OF PIPE SUPPO	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-947-004	INADQ ANCHOR PUL TST	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-947-007	IMPROP INSTAL HANGER	NSRS	/ /	.F.	/ /	.F.	/ /	HANGER
IN-86-003-001	INADQ INSTAL HANGER	ERT	/ /	.F.	/ /	.F.	/ /	HANGER
IN-86-017-001	WELDS WRONG PROFILE	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-043-001	DUCT HGERS LOOSE BOLT	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-047-002	WRONG WELD PROFILE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-140-002	BOLTS CUT/WELD PLATE	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-144-002	SHAV NOT CLEANED UP	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-155-002	HANGER UNACCEP WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-189-001	BENT TUBES INSTALLED	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-027-004	UNAUTHORIZED REPAIRS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
WI-85-065-001	INADQ INSTAL HANGERS	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS

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** MILESTONE: 7 N/A								
EX-85-008-001	UNQUAL SUBJOURNEYMEN	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
EX-85-008-002	ALCOHOLIC CRFT SUPER	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
EX-85-009-001	SUBSTN WK BY SUBJRMN	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
EX-85-010-002	UNQAUL SUBJOURNEYMEN	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
EX-85-037-002	HGRS WELDED BY APPRE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-042-002	WELDERS CERTIFICATIO	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
EX-85-048-001	UNWRITTEN HOLD ORDER	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
EX-85-054-002	SUBJOURN AS JOURNEYM	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
HI-85-006-001	EMPLOYEE HARRASSMENT	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-020-001	REP VIOL & REC DISPL	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-040-002	THREATS OF DISP ACTI	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-060-001	EMP HARAS FOR REP QC	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-071-001	REP QC & EMP THREATE	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-073-001	REP QC & EMP THREATE	ERT	/ /	.F.	/ /	.F.	/ /	QA
HI-85-112-001	SQN/ORD TO VIOL PROC	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
-021-001	TUBE BENDERS	ERT	07/27/85	.T.	10/22/85	.T.	10/30/85	CONSTRUCTI
IN-85-027-001	IEB 79-14	ERT	/ /	.F.	/ /	.F.	/ /	HANGER
IN-85-029-002	INEFFEC DESIGN PROCS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-032-001	PIPING CALCULATIONS	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-046-001	COME/A/LONG PUL CABL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-049-002	RAD CONT WATER	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCT
IN-85-049-004	NO PROT CLOTHING	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-054-001	MISMAT OF HANGR PART	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-057-003	INTEGRITY DEGRADED	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-079-003	UNADEQ PRE-HEAT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-089-003	UNQUALIFIED WELDERS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-091-001	LOST DOCUMENTATION	ERT	09/16/85	.T.	/ /	.F.	/ /	DOCUMENT
IN-85-108-X02	DISCREP FIELD CONDT	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-113-001	NO INDOCT OF STEAMPFI	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-119-003	RADIAT MONITOR LINES	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-130-001	UNQUILIFIED PERSONNE	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-134-002	NO INSPECT TOOLS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-143-002	UNCORRECT FITTINGS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-148-001	DES CHCKS PER BY TEC	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-156-001	POOR WORKMANSHIP	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-171-001	QUAL CONT PROCEDURES	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-197-002	INSTRUMENT DRAIN LIN	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-201-001	DIFFICULT CABLE PULL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-203-001	HYDRAZINE SPILLS	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-220-001	EXCESSIVE HANGERS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
-231-003	INADEQUATE CAULKING	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
-243-002	UNPAINT HANG & STEEL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-258-002	OVERALL PLANT SAFETY	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-270-001	ARC STRIKE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-271-001	GROUND DOWN WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI

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IN-85-277-001	INSTAL PIPE W/O DRWG	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-278-002	INADQ DOCUMENT CONTR	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-278-004	INADQ RECORDS MGMT	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-295-002	VIOL INTRPS TEMP REQ	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-298-002	INADEQ WELD MACHINES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-299-001	MAINT ON WELD MACHNS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-300-X04	WELDING QUESTIONABLE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-325-004	INSUFFIC BUTT WELD	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-338-001	VALV REMOV W/O AUTH	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCT
IN-85-348-002	INSUFFNT AIR SYSTEM	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-368-001	POOR QUALITY PIPES	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-388-005	TECH REVIEW QUALIFIC	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-389-001	INSTAL BEFOR DSGN CG	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-393-002	UNNECESSARY MAINTENA	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-397-003	REQ UNIT 2 DIF FR 1	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-410-005	REV PROC TO COR EROR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-411-001	SAFTY HAZ ON PLATFRM	NSRS	07/23/85	.T.	08/09/85	.T.	09/08/85	
IN-85-435-002	INADEQ WELD PROGRAM	NSRS	/ /	.F.	/ /	.F.	/ /	COST
IN-85-441-001	NO DATA ON TUBE STEL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-442-002	INADEQ TRAINING	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-442-003	QCP GIVEN WITH ANSWR	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-442-005	UNSUPERV ENGRN AIDES	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-443-003	NO HEAT # ON PIPE	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-447-003	INST AS-BUILT IN FLD	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-455-001	POOR QUAL WELD RODS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-472-003	INADEQ DIR BY INSPEC	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-472-004	SITE PROC REQUIREMNT	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-475-001	POOR QUAL WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-508-001	NO QA PROCED TRAIN	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-514-001	CONTAM DURING CUTTIN	ERT	08/22/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-520-002	BAD WELD ROD	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-520-003	CRAFT DSGN NOT CONST	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-524-001	CRACKS IN FLUX	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-532-001	NO CRIT FOR SOCK WEL	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-532-003	SCHUELE VS. SAFETY	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-541-001	REQ WELD ON 2 SIDES	NSRS	08/15/85	.F.	/ /	.F.	08/15/85	DESIGN
IN-85-544-005	WORK NOT ON DRAWINGS	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-545-003	INSUFFIC FINL DOC RE	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-545-005	WBN CODE REQUIRMENTS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-556-001	SUBJ DOING JOUR WORK	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-563-007	UNQUAL PERS ON SITE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-570-002	N-5 NO DEGREED ENGR	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-581-004	UNTRAIN JOURN ELEC	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-588-002	WBN PROCE REVISIONS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-589-002	SUBJ DOING JOURN WRK	ERT	09/28/85	.T.	/ /	.F.	/ /	CONSTRUCTI
IN-85-595-003	DRWNG AFTER INSTALL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN

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IN-85-596-004	ERRONEOUS IRN'S	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-600-001	POOR QUAL WELD ELECT	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-600-003	NONTRAIN/HANGR INSTA	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-617-001	ACCESS TO HANG/PIPE	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-622-001	OVERFILLED CONDUIT	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-85-624-003	USED SCRAP MATERIAL	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-625-002	ABAN/REP REDHEADS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-628-001	INADEQ TRACK OF EQUIP	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-629-001	MGMT DIRECTIONS/ORDE	ERT/OGC	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-636-001	OVERBAKED WELD RODS	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-640-002	CALIBRA OF LOAD CELL	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATION
IN-85-644-002	DRAW/DES CHANGES	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-650-001	SPLIT TUBE STEEL	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-664-001	ANCHOR VILLATIONS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-85-670-002	HANGER INSTALLATION	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
IN-85-670-004	PROCEDURAL REVISIONS	NSRS	/ /	.F.	/ /	.F.	/ /	CRAFT
IN-85-672-002	QUANTITY VS. QUALITY	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-673-002	VERIFICATION OF DESN	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-681-002	WORN OUT EQUIPMENT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-682-002	AWS WELD INSP QUESTI	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
IN-85-682-004	PROMO BASED ON QTY	ERT	/ /	.F.	/ /	.F.	/ /	MANAGEMENT
IN-85-691-001	SECURITY BETW #1	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCT
IN-85-704-001	DRAWING REPRODUCTION	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-705-002	UNQUALIFIED PERSONNE	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCT
IN-85-706-001	INSUF TRAIN OF WELDE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-707-002	CRACKED TUBING	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCT
IN-85-712-X01	DATA ENTRY OPERATION	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-85-720-002	SQN WASTE AT WBN	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-733-002	CABLE PENETRATION	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-743-010	INCOMP DOCUMENTATION	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-748-001	TIE-IN OF SEAL DRAIN	ERT	08/16/85	.F.	/ /	.T.	08/16/85	DESIGN
IN-85-749-X04	REPORTING PROBLEMS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-772-003	DESIGN OF AIR HANDLE	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-773-002	COPPER TUBING BREAKS	ERT	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-781-001	SAFETY RELATED QUEST	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-793-002	HOLE IN FLOOR	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-85-824-005	INTIMID/SHORT-CUTS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-831-001	COPPER TUBING BREAKS	ERT	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
IN-85-833-001	PAINT DELETED	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-841-001	REPLACEMENT PARTS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-848-002	CRAFT REVIEW WK PACK	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-849-001	REINSTALLED BOARDS	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-851-001	WELD NONCONFORMANCE	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-852-003	WELDING PROCEDURES	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-869-001	INADQ DESIGN OF DOOR	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-878-X01	CABLE PULL PROCEDURE	ERT	/ /	.F.	/ /	.F.	/ /	ELECTRICAL

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IN-85-879-001	DUCTS BLOCKED	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
IN-85-894-003	WELDS IMPROPER MANNE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-915-001	`FOR INFO ONLY' DRAW	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-85-930-001	PIPE LEAKING	ERT	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-85-939-001	PERS NOT TRAINED	NSRS	/ /	.F.	/ /	.F.	/ /	PERSONNEL
IN-85-947-X08	WELDERS FAILED TEST	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-948-004	OPEN VALV BEFORE CHE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
IN-85-952-001	SYS DRAIN OP FLR DRA	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-982-003	INADEQ WELD FITTINGS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-85-983-001	RBI&2 DRAIN INTO FLR	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-85-988-001	INADW REV OF MATERIA	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
IN-85-995-001	QAULTY VS COST/SCH	ERT	/ /	.F.	/ /	.F.	/ /	QA
IN-85-996-002	UNAUTH/DOC OF REWELD	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-007-002	NO TRG FOR NEW PERS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
IN-86-027-001	PIPES MOVE DUR TEST	ERT	/ /	.F.	/ /	.F.	/ /	MATERIALS
IN-86-028-003	CUT TIE-WRAPPS	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-038-001	CORRECT ACTION DOCUM	NSRS	/ /	.F.	/ /	.F.	/ /	MANAGEMENT
IN-86-047-001	SYS FOR RET WELD ROD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-070-004	SECURITY EQUIP MALFU	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	SECURITY
IN-86-070-005	SEC SYS POWERED DOWN	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	SECURITY
IN-86-070-006	MAINT OF SEC EQUIP	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	SECURITY
IN-86-070-007	IMPROP FUNC SEC EQUI	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	SECURITY
IN-86-080-001	INADQ DESIGN/AMS	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
IN-86-108-002	INADEQUATE DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-112-002	INADQ WELD RODS USED	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-118-001	QC SPECS FIELD USE	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
IN-86-131-002	VOID/IN-86-131-005		/ /	.F.	/ /	.F.	10/24/85	
IN-86-131-005	INCOMPLETE WELDS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-158-004	FLR DRAIN STOPPED UP	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-158-008	BUTT WELD SUBSTITUTE	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-177-001	ANCHORS BEEN CUT OFF	ERT	/ /	.F.	/ /	.F.	/ /	CIVIL
IN-86-205-002	POOR MANAGEMENT	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-205-003	INSTRU AIR UNSUITABL	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-246-006	LEAKS ON SEAL DRAIN	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-246-007	DRAINS PLUGGED OFF	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-246-008	PUMP MOTOR LEAKING	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-246-009	PUMP LEAKING	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-246-010	AIR SHUTOFF VALV LEA	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
IN-86-249-X02	INADQ QUALITY PROGRA	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
IN-86-262-004	CONDUITS TOO FULL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
IN-86-271-002	INADQ SECURITY	NSRS	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-293-001	SUSPECT USE OF DRUGS	ERT/OGC	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
IN-86-295-001	INEFFEC DETECTORS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
NS-85-002-001	BFN/SUPTS ON RHR SYS	ERT	10/12/85	.T.	/ /	.F.	/ /	OPERATIONS
PH-85-001-004	JR. ENG AUTHO DRWG	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-002-019	VOID/PH-85-002-029		/ /	.F.	/ /	.F.	10/24/85	

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PH-85-002-021	UNQUALIF PERSONNEL	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
PH-85-003-004	NO INSULA BETW PUMPS	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
PH-85-003-005	IMPROP DESIGN SUPPOR	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
PH-85-003-006	WBN INSTRUMENT UNACC	ERT	/ /	.F.	/ /	.F.	/ /	DESIGN
PH-85-003-011	INADEQ WELDING	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-003-020	INEXP WELDERS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
PH-85-003-024	VALVES ARE REUSED	ERT	/ /	.F.	/ /	.F.	/ /	QA
PH-85-008-002	"LOST" PAPERWORK	ERT	/ /	.F.	/ /	.F.	/ /	DOCUMENT
WI-85-013-006	INACCURATE ANAL PROG	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
WI-85-021-001	ENG & INSPEC REQUIRE	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
WI-85-042-001	OQA INCOMPL PROCEDUR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
WI-85-042-002	OQA LEAD AUD QUESTIO	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-001-001	SQN/D-G BATTERIES	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-002-001	BFN/EXPOSURE DOSES	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-003-001	BLN/PRODUCT VS QUALI	NSRS	/ /	.F.	/ /	.F.	/ /	CIVIL
XX-85-007-002	SQN/LEAK DUE TO MGMT	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-008-001	BLN/CABLE PULLING	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
XX-85-009-001	SQN/OPERATING SAFETY	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATION
XX-85-010-001	SQN/VOIDED HANGERS	ERT	/ /	.F.	/ /	.F.	/ /	HANGERS
XX-85-013-001	SQN/WRONG WELD ROD	ERT	08/22/85	.F.	/ /	.F.	08/27/85	
XX-85-016-001	BFN/UNTRN CRAFT PERS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-019-001	BLN/AUDIT FINDINGS	ERT	07/10/85	.F.	/ /	.F.	07/10/85	QA
XX-85-019-X02	BLN/QC-QA AUDIT PROG	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-022-001	SQN/TAGGING VALVES	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	OPERATION
XX-85-023-001	SQN/PUL TEST NOT DON	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-023-X02	SQN/FALSIF ANCH TEST	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-027-001	SQN/CONCERN INADQ AD	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-027-X02	SQN/HEAT CODE PROCED	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-027-X03	SQN/CABLE FROM SITE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-027-X04	SQN/DEFECTIVE MATERI	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-027-X07	SQN/VIOLATION SIGNOF	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-028-001	SQN/INCREASE IN RWP	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-028-X02	SQN/FALSIFED SIGNAT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-028-X03	SQN/RADIA WORK PERMI	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-034-001	BLN/VIOLAT SIGN-OFFS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-034-X02	BLN/FALSFI WELD RECO	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
XX-85-038-001	SQN/SEP OF CARBON/SS	ERT	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-039-001	SQN/WORKING IN TEAMS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATION
XX-85-041-001	SQN/WRONG TYPE ROD	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-044-001	BFN/CAMS NOT FUNCTIO	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-045-001	BLN/WELD CERTIFICATI	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-046-001	SQN/INST SENSING LIN	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
XX-85-049-X03	SQN/WELDER CERT FALS	NSRS/ERT	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-050-001	SQN/INADEQ QA CONTRO	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
XX-85-050-002	BFN/INADEQ QA CONTRO	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
XX-85-050-003	BLN/INADQ QA CONTROL	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT

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XX-85-051-001	SQN/RADIATION MONITO	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-052-001	SQN/INADQ DESIGN DOO	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-053-001	SQN/IADQ DOCUMENTATI	NSRS	/ /	.F.	/ /	.F.	/ /	HANGERS
XX-85-053-002	SQN/MISSING EVAL DOC	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-053-X03	SQN/INEXP MANAGERS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-054-001	SQN/VIOLAT SIGN-OFFS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-062-001	BFN/SQN/BLN/DRAWINGS	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
XX-85-062-002	BFN/BLN/INADQ FILING	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
XX-85-062-003	BFN/SQN/DRAW VS INST	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
XX-85-065-001	SQN/IMPROPER INSPECT	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-068-001	BLN/PRESSURE GAGES	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
XX-85-068-002	BLN/HYDRO TEST	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
XX-85-068-003	BLN/ASME VIOLATIONS	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-068-004	BLN/VERIF MATERI DIS	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-068-005	BLN/HEAT NUMBERS	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-068-006	BLN/WELD ROD CONTROL	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-068-007	SQN/REPLAC SPOOL PIE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-068-008	BLN/BOTTLED GAS CONC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-069-001	SQN/UNQUAL EMPL	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-002	BFN/UNQUAL EMPL	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-003	SQN/UNQUAL EMPLOYEES	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-069-009	BLN/REJECT ITEMS ACC	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-069-X05	SQN/FALSIF EMP OJT	ERT/OGC	/ /	.F.	/ /	.F.	/ /	QA
XX-85-070-001	SQN/ERRORS ON DRAWIN	NSRS	/ /	.F.	/ /	.F.	/ /	DOCUMENT
XX-85-070-002	SQN/CLOSING QA PROBL	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-071-002	SQN/VIOLAT PROJ REQU	ERT	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-071-003	SQN/HARDWARE REPAIR	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-071-004	SQN/GEN HARDWARE CON	ERT	/ /	.F.	/ /	.F.	/ /	QA
XX-85-074-001	BFN/INSPEC CERTIFICA	ERT	/ /	.F.	/ /	.F.	/ /	INSPECTION
XX-85-074-003	BFN/FALSIF INSP CERT	ERT/OGC	/ /	.F.	/ /	.F.	/ /	INSPECTION
XX-85-079-001	BLN/TEMPORARY HANGER	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
XX-85-080-001	BLN/INADQ EXIT INTVW	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-083-001	SQN/WELD INSPECTIONS	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-086-001	BLN/INADQ SIZE LINES	NSRS	/ /	.F.	/ /	.F.	/ /	INSTRUMENT
XX-85-086-002	BLN/DESIGN DEFICIENC	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-086-003	SQN/DESIGN DEFICIENC	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-086-004	BFN/DESIGN DEFICIENC	NSRS	/ /	.F.	/ /	.F.	/ /	DESIGN
XX-85-088-001	SQN/WELD CERT ALTERE	ERT/OGC	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-089-001	BLN/PROCEDURE VIOLAT	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-089-002	BLN/DELETION OF QCIR	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-093-001	SQN/INADQ TRAIN ENGI	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-093-002	BLN/INADQ TRAIN ENGI	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-093-003	BFN/INADQ TRAIN ENGI	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-094-003	BLN/OVERCROWDNG CABL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
XX-85-094-004	BLN/PULL TENSION	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL
XX-85-094-005	BLN/"ILLEGAL" TOOL	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
EMPLOYEE CONCERN PROGRAM
NUCLEAR REGULATORY COMMISSION LISTING

QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE CLOSED	KEY WORD
XX-85-094-006	BLN/ELEC TERMINATION	NSRS	/ /	.F.	/ /	.F.	/ /	TESTING
XX-85-094-007	BLN/VALVES WRG ALTIT	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIAL
XX-85-094-008	BLN/MAINTE PROGRAM	NSRS	/ /	.F.	/ /	.F.	/ /	MATERIALS
XX-85-094-009	BLN/MGR QC & ENGINEE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-096-004	VOID/XX-85-096-005	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-096-005	SQN/MONITOR TUBE PRO	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-098-002	SQN/RADIATION AREAS	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-099-001	SQN/SECURITY AT PLAN	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-100-001	SQN/WELD IMPRP REPAI	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-101-002	SQN/IMPRP INSTALLATI	ERT	/ /	.F.	/ /	.F.	/ /	CONSTRUCTI
XX-85-101-003	SQN/RADIOACTIVE SPIL	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-101-004	SQN/MIN. RADIAT EXPO	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-101-006	SQN/UNQUALIF WELDER	ERT	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-102-005	BFN/HARDWAR IMPRO ID	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-102-006	BFN/VISUAL EXAM PROC	NSRS	/ /	.F.	/ /	.F.	/ /	WELDING
XX-85-102-007	BFN/DEFECTS REQUEST	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-102-009	BFN/UNTRAINED PERSON	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-102-010	BFN/LIM DOC&RPR DEFE	NSRS	/ /	.F.	/ /	.F.	/ /	QA
XX-85-102-011	SQN/DEFECTS ID BY MA	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-102-012	SQN/UNTRAIN PERSONNE	NSRS	/ /	.F.	/ /	.F.	/ /	OPERATIONS
XX-85-104-x01	BLN/ERCW LINING WORK	NSRS	/ /	.F.	/ /	.F.	/ /	MECHANICAL
** MILESTONE: NO DATE								
IN-86-314-002	CABLE PROCEDUR INADQ	NSRS	/ /	.F.	/ /	.F.	/ /	ELECTRICAL

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50175

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-85-085-001

Category: 33

Confidentiality: YES NO (I&H)

Supervisor Notified: XYES NO

NUCLEAR SAFETY RELATED YES

Concern: POOR QUALITY OF WELDS ON HANGER INSTALLED 2 WEEK PRIOR TO HOT FUNCTIONAL TEST IN UNTI 1 REACTOR BLDG, SOUTH VALVE ROOM. WELDS ON THIS HANGER HAD MANY UNACCEPTABLE WELD PROFILES WHICH REQUIRE REPAIR. C/I DOES NOT KNOW IF WELDS HAVE BEEN REPLACED. CONSTRUCTION DEPARTMENT CONCERN. ADDITIONAL INFORMATION KNOWN TO QTC, WITHHELD DUE TO CONFIDENTIALITY. C/I HAS NO FURTHER INFORMATION.

William B. Schu
MANAGER, ERT NOV 02 1985
DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ -----

OTHERS (SPECIFY) -----

*Welding
Workmanship*

Bruce L. Pfeiffer
NSRS 11/6/85
DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 3

Concern # IN-85-283-002

Category: 10

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Pipe at Watts Bar rides on Uniastut which is not sturdy during heat changes. No specific examples could be provided by CI. Construction dept. concern. Unit 1 & 2. CI could provide no additional information.

William B. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ -----

OTHERS (SPECIFY) -----

*Have
Design
adequacy*

Bruce L. Dyer 11/5/85
NSRS DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-85-283-003

Category: 33

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Welder qualifications are questionable as only visual inspection is required on hanger welds. These can be and are made to look good. CI could provide no additional information. Construction concern. Unit 2.

William S. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ EG+G

OTHERS (SPECIFY) -----

*welding
welders*

Bruce S. Sigler
NSRS DATE

BSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-85-283-004

Category: 10

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X NO

NUCLEAR SAFETY RELATED YES

Concern: Design errors which were made at Sequoyah were also carried over to Watts Bar. CI could provide no additional information. Construction concern. Unit 1 & 2.

William A. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS ✓

OTHERS (SPECIFY) -----

Design Control

Bruce J. Duffin 11/5/85
NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 2

Concern # IN-85-290-001

Category: 12

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X NO

NUCLEAR SAFETY RELATED YES

Concern: CI feels that the Field Change Request (FCR) system is not being utilized properly; whereas an item will be installed and a "FCR" will be generated. Since the installed item did not meet the design requirements as stated in the drawing, this concern should be a non-conforming condition (NCR). Construction dept. concern. CI has no further information.

William S. Scher NOV 01 1985

MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ -----

OTHERS (SPECIFY) -----

Construct Control

Bruce P. Deffen 11/5/85

NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50175

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-85-409-003

Category: 85

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X NO

NUCLEAR SAFETY RELATED YES

Concern: MANAGEMENT PUSHES SCHEDULE AHEAD OF QUALITY AND SAFETY. UNIT 1 AND 2. EXAMPLE: CREW WAS SENT TO CUT FLAMASTIC OFF OF ENERGIZED 6.9KV CABLES BY A SUPT. THE SUPT. FALSELY TOLD THE CREW THAT THE CABLES WERE DE-ENERGIZED. DETAILS KNOWN TO QTC, WITHHELD DUE TO CONFIDENTIALITY. C/I DECLINED TO PROVIDE FURTHER INFORMATION. CONST. DEPT. CONCERN.

William D. Schu NOV 02 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS

OTHERS (SPECIFY) _____

Bruce A. Pugh 11/1/85
NSRS DATE

75R

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-061-003

Category: 07

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Activities affecting quality improperly performed, partially due to indeterminately qualified personnel. Details known to QTC, withheld due to confidentiality. Nuclear Power concern. CI will not provide further information.

William P. Schum NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ✓

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

Operations Personnel

Bruce J. Sefton 11/5/85
NSRS DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-077-001

Category: 43

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Deviations to pre-op test acceptance criteria were accepted by ENDES without written justification. It cannot be determined by the documentation in the test package whether or not a detailed evaluation of the deviation was performed by ENDES. This concern applies to all pre-op tests. [Unit 1] Details known to QTC, withheld due to confidentiality. CI has no further information. Nuc Power concern.

William D. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ✓

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

*Testers
Preop*

Bruce L. Diefen 11/5/85
NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-158-001

Category: 52

Confidentiality: _YES _NO (I&H)

Supervisor Notified: _X_YES ___NO

NUCLEAR SAFETY RELATED YES

Concern: CONDUITS IN BOTH UNITS HAVE WATER RUNNING THROUGH THEM, INCLUDING CONTROL PANELS. WATER THAT IS RELEASED ON THE FLOOR DURING FLUSHING, CLEANING ETC. WILL ENTER CONDUITS THAT ARE EVEN WITH FLOORS SURFACE. MANY CONDUITS ARE NOT PLUGGED. C/I STATES THE WATER WILL FLOW THROUGH THE CONDUITS TO THE CONTROL PANELS. (CONSTRUCTION DEPT. CONCERN) UNITS #1 AND 2. C/I HAS NO FURTHER INFORMATION.

William A. Schu

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

*Electrical
Conduits*

Bruce L. Deffen

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-158-002

Category: 54

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: THE INTAKE LINES FROM THE PUMPING STATION WERE GROUTED BACK IN 1981/1982. SOME OF THIS GROUT IS FALLING LOOSE, WHICH COULD DAMAGE OR STOP THE PUMPS. (CONSTRUCTION CONCERN). C/I STATED THAT "HUNKS OF CONCRETE 6" OR 8" IN DIAMETER ARE IN THE INTAKE LINE FROM THE PUMP STATION". CONCRETE DEBRIS HAS BEEN ENTERING AUX BUILDING @ 737' AND DAMAGING THE BUTTERFLY VALVES. CONST. DEPT. CONCERN. C/I HAS NO FURTHER INFORMATION.

William S. Schu

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS ✓

OTHERS (SPECIFY) _____

*mechanical
E RCW*

Bruce L. Diefen

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-168-002

Category: 7

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: SOME QC INSPECTORS ARE NOT ADEQUATELY QUALIFIED. WELDING INSPECTORS ARE TOO INEXPERIENCED. THEY REJECT WELDS DUE TO COSMETIC APPEARANCE RATHER THAN TO THE GOVERNING ACCEPTANCE CRITERIA.

William P. Schu
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS E646

OTHERS (SPECIFY) _____

Welding Inspectors

Bruce P. Siegler 4/6/85
NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-168-003

Category: 33

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED

Concern: SOME WELDS ARE NOT STENCILED. CONSTRUCTION CONCERN. UNIT 2. C/I HAS NO ADDITIONAL INFORMATION.

William S. Schum

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS EGGC

OTHERS (SPECIFY) _____

Bruce J. Siefer

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-168-004

Category: 52

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X_NO

NUCLEAR SAFETY RELATED YES

Concern: HANGER OFF OF THE MAIN STEAM BY-PASS LINE IS NOT SUPPORTED PROPERLY. HANGER IS LOCATED AT NORTH SIDE OF TURBINE BUILDING. I-BEAM AND ALL-THREAD ROD IS SUPPORTING THE MAIN STEAM LINES. UNIT 1 AND UNIT 2. CONSTRUCTION CONCERN.

William A. Schum

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS ✓

OTHERS (SPECIFY)

*Hangers
Install*

Bruce L. Luffman

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-168-006

Category: 57

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: COMPUTER LIST EXISTS THAT RECORDS THE WELDER ID NUMBERS OF WELDERS ASSOCIATED WITH A JOB EVEN THOUGH THE WELDERS SPECIFIED DID NOT WELD ON THE LISTED JOB. IE THEY MAY HAVE ONLY TALKED TO ENGINEERING. C/I HAS NO MORE INFORMATION. CONSTRUCTION CONCERN. UNIT 2.

William D. Schen

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS EG+G

OTHERS (SPECIFY) _____

*Welding
Welding*

Bruce J. Pugh
NSRS

11/4/85
DATE

pslc

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-284-001

Category: 58

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Inconsistent implementation of acceptance criteria for inspection procedures and standards. To prove this point CI stated that different inspectors have different levels of inspection. This is a generic concern. CI has no further information. Construction dept concern.

William B. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ -----

OTHERS (SPECIFY) -----

*Inspectors
Inspectors*

Bruce L. Trapp 11/5/85
NSRS DATE

SR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # IN-86-284-002

Category: 42

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: Valves V329 & V330 in the in-core instrument building were pressure-tested by air in 1980, but these valves should have been hydro-tested. CI stated that the valves were replaced (possibly after testing). CI has no further information. Construction dept concern.

William J. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ----- ✓

OTHERS (SPECIFY) -----

Construction Testers

Bruce J. Pfeiffer 11/5/85
NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # PH-85-050-001

Category: 52

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: ERT & NRC would be interested in a wire pulling detail occurring in the vicinity of the power production loading ramp, manhole #22. CI has no further information. Dept unknown.

William J. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓

OTHERS (SPECIFY) -----

*Electrical
Cables*

Bruce L. Dapkin 11/5/85
NSRS DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # PH-85-051-001

Category: 16

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: Emergency Raw Cooling Water line, 36" diameter (vendor supplied - DRAVO), required the long seam of the pipe to be ground for installation of pipe saddles (Unit 2 pipe tunnel). The grinding revealed pin holes in the weld, which were ground out through the weld root pass. The ground areas were weld repaired without X-ray inspection after repair. The pipe in question is ASME Class 3, TVA Class C, and the long seam required X-ray inspection at initial fabrication. Construction dept concern. CI has no further information.

William S. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ---

NSRS/ERT -----

NSRS ✓ EG+G

OTHERS (SPECIFY) -----

*welding
inspection*

Bruce L. Felder 11/5/85
NSRS DATE

BR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50178

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # WI-85-084-001

Category: 07

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X NO

NUCLEAR SAFETY RELATED YES

Concern: CI reported that a welder, whose certifications had expired, was allowed to check out rod from the rod shack. CI expressed that this indicates that the "new" welder recertification program still does not work. Names known. Construction dept concern. CI has no further information. Incident occurred 10/85.

William B. Schu NOV 01 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ✓ Assigned to ERT 10/25/85 by M.A. Hanson

NSRS/ERT _____

NSRS ✓ EGTB BRS 11/5/85

OTHERS (SPECIFY) _____

Bruce J. Saffern 11/5/85
NSRS DATE

Welder's

Welder

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 2

Concern # XX-85-033-014

Category: 88

Confidentiality: _YES _NO (I&H)

Supervisor Notified: ___YES _X_NO

NUCLEAR SAFETY RELATED _NO

Concern: SEQUOYAH: ENVIRONMENTAL TEST RESULTS FOR AIR QUALITY WERE FALSIFIED. DETAILS KNOWN TO QTC, WITHHELD DUE TO CONFIDENTIALITY. CONST. DEPT. CONCERN. C/I HAS NO FURTHER INFORMATION.

William S. Schu

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ____

NSRS/ERT _____

NSRS

OTHERS (SPECIFY) *OGC*

QA Violation

Bruce J. Lipton
NSRS

11/1/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50175

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-063-001

Category: 93

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH OPERATORS AND HEALTH PHYSICS: FAILURE TO KNOW AND VERIFY THE CONTENTS OF SYSTEM. EXAMPLE: HEALTH PHYSICS GAVE GO AHEAD TO OPEN A LINE IN TURBINE BUILDING, UNIT 2, SAYING EVERYTHING WAS O.K. AND CLEAN. AFTER OPENING THE LINE, THE NEXT NIGHT, THE ENTIRE AREA WAS ROPED OFF FOR CONTAMINATION. THIS OCCURRED IN JAN/FEB 84. C/I HAS NO FURTHER INFORMATION. NUC. POWER CONCERN.

William J. Schu
MANAGER, ERT NOV 02 1985
DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS ✓

OTHERS (SPECIFY) _____

operations control

Bruce S. Deffen
NSRS 11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-069-006

Category: 7

Confidentiality: _YES _NO (I&H)

Supervisor Notified: _X_YES ___NO

NUCLEAR SAFETY RELATED YES

Concern: BROWNS FERRY: MANY EMPLOYEES ARE CERTIFIED BUT ARE NOT QUALIFIED. THEY DO NOT HAVE ENOUGH ON THE JOB TRAINING (OJT) EVEN THOUGH IT IS DOCUMENTED THAT THEY DO HAVE ENOUGH OJT. DETAILS KNOWN TO QTC, WITHHELD DUE TO CONFIDENTIALITY. NUC POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William A. Schu
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ____

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

Operations Personnel

Bruce L. Daffern 11/6/85
NSRS DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-069-007

Category: 7

Confidentiality: YES NO (I&H)

Supervisor Notified: X YES NO

NUCLEAR SAFETY RELATED YES

Concern: BELLEFONTE: MANY EMPLOYEES ARE CERTIFIED BUT ARE NOT QUALIFIED. THEY DO NOT HAVE ENOUGH ON THE JOB TRAINING (OJT) EVEN THOUGH IT IS DOCUMENTED THAT THEY DO HAVE ENOUGH OJT. DETAILS KNOWN TO QTC, WITHHELD DUE TO CONFIDENTIALITY. NUC POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William J. Schu

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS ✓

OTHERS (SPECIFY) _____

*Operators
Personnel*

Bruce J. Griffin

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-069-008

Category: 53

Confidentiality: _YES _NO (I&H)

Supervisor Notified: _X_YES ___NO

NUCLEAR SAFETY RELATED YES

Concern: BROWNS FERRY: VERY OFTEN, REJECTED ITEMS ARE ACCEPTED BY SOME ONE OTHER THAN A SUPERVISOR OR A HIGHER LEVEL (GRADE). TO ILLUSTRATE THE POINT, C/I STATED THAT THE SUPERVISOR WILL SEND ANOTHER EXAMINER/INSPECTOR WITH LESS QUALIFICATION AND EXPERIENCE TO RE-EXAMINE THE ONCE REJECTED ITEMS AND WILL GET ACCEPTANCE. C/I HAS NO FURTHER INFORMATION. NUC. POWER CONCERN.

William B. Schen

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ____

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

*Inspector
Inspector*

Bruce L. Saffers
NSRS

1/1/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-070-003

Category: 58

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH: WORK PLANS CONTAIN INACCURATE DATA. MAJORITY OF THE DCR'S TAKEN CARE BUT NOT DOCUMENTED RIGHT AND DRAWINGS DO NOT REFLECT THE AS-BUILT CONDITIONS. DETAILS WITHHELD TO MAINTAIN CONFIDENTIALITY. NUC POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William J. Schen

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS

OTHERS (SPECIFY) _____

Operations control

Bruce L. Hoffman

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-070-004

Category: 58

Confidentiality: _YES _NO (I&H)

Supervisor Notified: _X_YES ___NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH: WORK PLAN CONTAINS A FORGED SIGNATURE. DETAILS ARE WITHHELD TO MAINTAIN CONFIDENTIALITY. NUC POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William D. Schen

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) OGC

Bruce L. Diefen

NSRS

11/6/85

DATE

QA Violation

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-070-005

Category: 58

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH: WORK PLAN (NUMBER KNOWN) TO TAKE EQUIPMENT OUT OF SERVICE FOR REPAIR/MODIFICATION WAS NEVER AUTHORIZED BY ENGINEERING BUT WORK PLAN MODIFICATIONS HAVE BEEN COMPLETED. (NAMES/DETAILS TO THE SPECIFIC CASE ARE KNOWN TO QTC AND WITHHELD TO MAINTAIN CONFIDENTIALITY). NUCLEAR POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William S. Schum

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT _____

NSRS/ERT _____

NSRS _____

OTHERS (SPECIFY) _____

Bruce A. Pierson

NSRS

11/6/85

DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-070-006

Category: 5

Confidentiality: YES NO (I&H)

Supervisor Notified: YES X NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH, UNIT 1 AND 2: CLOSURE OF SPECIFIC QUALITY DOCUMENTATION IS BEING FALSIFIED IN ORDER TO CLOSE THESE PROBLEMS OUT BEFORE THE NRC BECOMES AWARE OF THEM. (NAMES/DETAILS TO THE SPECIFIC CASE ARE KNOWN TO QTC AND WITHHELD TO MAINTAIN CONFIDENTIALITY). NUCLEAR POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William A. Schen

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT *11/1/85*

NSRS/ERT

NSRS *✓*

OTHERS (SPECIFY) OGC

QA Violation

Bruce J. Seifler

NSRS

11/6/85
DATE

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50180

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-070-007

Category: 52

Confidentiality: _YES _NO (I&H)

Supervisor Notified: ___YES _X_NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH, SEPT. 1984 UNIT 2: INSTALLED SNUBBERS ARE NOT PER DESIGN DRAWINGS (115 DRAWINGS INVOLVED) AND NO REWORK HAS BEEN SCHEDULED EXCEPT A REQUEST TO INCLUDE THIS IN 1986'S BUDGET. NUCLEAR POWER CONCERN. C/I HAS NO FURTHER INFORMATION.

William S. Schu

MANAGER, ERT

DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT ____

NSRS/ERT _____

NSRS ____

OTHERS (SPECIFY) _____

*Hangar
Install*

Bruce J. Proffers

NSRS

11/6/85
DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50175

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-108-001

Category: 33

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH: C/I STATES WELDS IN UNIT #1 ACCUMULATOR ROOMS AND/OR FAN ROOMS WERE NEVER INSPECTED. TIME FRAME IS NINE OR TEN YEARS AGO. WELDS ON 2" STAINLESS STEEL (SOCKET WELDS) AND HANGERS ON THE RADIUS PIPE IN THOSE AREAS. CONST. DEPT. CONCERN. C/I HAS NO ADDITIONAL INFO.

William B. Schu NOV 02 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS

OTHERS (SPECIFY) _____

*welding
Inspection*

Bruce J. Soffler 4/6/85
NSRS DATE

PSR

EMPLOYEE CONCERN ASSIGNMENT REQUEST

TO: Director - NSRS

TRANSMITTAL NUMBER T50175

ERT has received the Employee concern identified below, and has assigned the indicated category and priority:

Priority: 1

Concern # XX-85-108-002

Category: 33

Confidentiality: YES NO (I&H)

Supervisor Notified: YES NO

NUCLEAR SAFETY RELATED YES

Concern: SEQUOYAH: PROGRAMATIC BREAKDOWN ON THE WELD INSPECTION PROCESS. NINE OR TEN YEARS AGO C/I STATES THAT SOME WELDS ON 2'' STAINLESS STEEL SOCKET WELDS WERE NOT INSPECTED AS REQUIRED. CONST. DEPT. CONCERN. C/I HAS NO ADDITIONAL INFO.

William A. Saba NOV 02 1985
MANAGER, ERT DATE

NSRS has assigned responsibility for investigation of the above concern to:

ERT

NSRS/ERT

NSRS

OTHERS (SPECIFY) _____

*welding
Inspection*

Bruce L. Proffers 11/6/85
NSRS DATE

NRC

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE : **NOV 6 1985**

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. WI-85-013-003

Subject Structural Welding

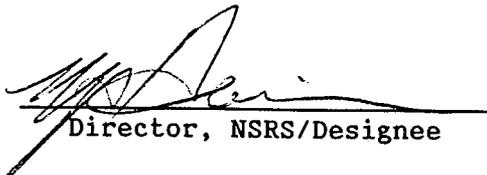
Concern No. WI-85-013-003

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by December 4, 1985. Should you have any

questions, please contact J. T. Nation at telephone 365-7134.

Recommend Reportability Determination: Yes X No



Director, NSRS/Designee

JTN:MAH:JTH

Attachment

cc (Attachment):

- H. N. Culver, W12A19 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

From: _____

Date: _____

I hereby acknowledge receipt of NSRS Report No. WI-85-013-003
Subject Structural Welding for action/disposition.

Signature

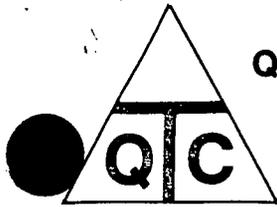
Date



NSRS Recommendations: WI-85-013-003

Q-85-013-003-01 "AWS/G-29C"

The Office of Engineering should determine, define, and document the AWS D1.1 Code(s) of record for WBN. Perform a comparison between the defined applicable D1.1 codes and the applicable or corresponding revisions of GCS-G29C to identify any and all variations and exceptions. Assure that each variation and exception allowed by G-29C has a corresponding documented technical justification.



**QUALITY
TECHNOLOGY
COMPANY**

P.O. BOX 600
Sweetwater, TN
37874

ERT INVESTIGATION REPORT

Page 1 of 13

CONCERN NO.: WI-85-013-003 (Milestone 1)

CONCERN: G-29C (Construction Specification) allowed welds to be inspected after painting from 1981 through the end of the Welding Sampling Program. This is in violation of AWS D1.1.

INVESTIGATION
PERFORMED BY: J. T. Nation

Details:

PERSONNEL CONTACTED: Confidential

REFERENCES:

1. AWS D1.1, "Structural Welding Code".
2. WBNP Final Safety Analysis Report (FSAR), Chapter 3, section 3.8, "Design of Category I Structures".
3. TVA General Construction Specification G-29C (Welding), including:
 - A. Process Specification 1.C.1.2, "General Welding Procedure Specification".
 - B. Process Specification 3.C.5.4, "WBNP Final Visual Weld Examination".
4. TVA Memorandums and Reports:
 - A. ENDES (R. W. Cantrell) to CONST (J. E. Wilkins), 11-2-81, "WBNP-Visual Inspection of Welds in Accordance with G-29C - Coated with Carbo Zinc." (SWP 81 1102 056)
 - B. ENDES (R. W. Cantrell) to CONST (J. E. Wilkins), 1-11-82, "WBNP Units 1 & 2 - Visual Inspection of Carbo Zinc-Coated Welds in Accordance with General Construction Specification G-29C." (NEB 82 0114 253)
 - C. NSRS ((H. N. Culver) to (G. H. Kimmons), 6-3-82, "Major Management Review of WBNP-NSRS Report No. R-82-02-WBN." (GNS 82 0603 051)
 - D. NSRS (H. N. Culver) to OEDC (G. H. Kimmons), 6-23-82, "WBNP - Inspection Practices of Structural Steel Welds - Special Report - Nuclear Safety Review Staff Report No. R-82-07-WBN." (GNS 82 0623 050)

CONCERN NO: WI-85-013-003

-
- E. OEDC (G. H. Kimmons) to NSRS (H. N. Culver), 12-15-82, "WBNP - Technical Justification of Contrasts of AWS D1.1 and General Construction Specification G-29C." (EDC 82 1215 004)
 - F. NSRS (H. N. Culver) to OQA (J. W. Anderson), 8-10-83, "WBNP - Closure of NSRS Item R-82-02-WBN-24 - Comparison of G-29C to AWS D1.1." (GNS 83 0811 050)
 - G. OQA/SEB (J. R. Lyons II) to SEB files, 1-16-84, "AWS Welding Notes of Information Meeting with NRC - January 12, 1984." (OQA 84 0116 401)
 - H. OQA (J. W. Anderson) to OEDC (G. H. Kimmons), 1-17-84, "AWS Welding Program." (OQA 84 0117 002)
 - I. GM (W. F. Willis) to General Manager's File, 1-18-84, "Summary of Briefing - WBNP, AWS Welding Program - January 18, 1984." (EDC 84 0213 003)
- 5. USNRC (T. J. Kenyon) letter to TVA, 3-1-84, "Summary of Meeting to Discuss Welding Codes Used at WBNP, Units 1 & 2." (A02 84 0305 019)
 - 6. ERT Investigation Report for Concern No. NS-85-001-001, dated 8-13-85.

SUMMARY OF INVESTIGATION:

This concern is substantiated.

This investigation was conducted on September 16/17, 1985.

The ERT Investigation Report for Concern No. NS-85-001-001, dated 8-13-85, was used as the primary source of information for conducting this investigation. No additional personnel contacts were performed, however, some additional documents were reviewed as appropriate. The NS-85-001-001 report addresses the above concern and other aspects of the "Carbo Zinc issue."

For the above concern, it was found that the AWS D1.1 Structural Welding Code does not permit painting of welds until after the work has been completed and accepted, however, TVA General Construction Specification G-29C did permit inspection of welds through "carbozinc primer" from January 1982 to January 1984 for welds made prior to November 1981.

CONCERN NO: WI-85-013-003

Based on a review of TVA Memorandums and Reports for the 1981 to 1984 period, a documented technical justification or corrective action regarding "inspection of welds through carbozinc primer," as a "contrast" or exception to the AWS D1.1 code, was not identified. Therefore, it is concluded that the TVA specification allowed a practice that is an apparent violation of the AWS D1.1 code.

An "Observation" regarding the WBNP FSAR and references to various versions of AWS D1.1, is included in the applicable section of this Investigation Report.

FINDINGS:

1. General Construction Specification G-29C.

The following Process Specifications of General Construction Specification G-29C are the only portions of the specification that were found to contain references to inspection of welds after coating (paint/primer):

- A. G-29C Process Specification 1.C.1.2 does not allow inspection of welds after "painting".

Paragraph 15.0, "Cleaning of Welds", subparagraph 15.1 states (in part):

"Welded joints shall not be painted until after the welding has been examined and accepted."

- B. G-29C Process Specification 3.C.5.4 does not presently allow inspection of welds after coating (paint/primer), but did previously (1982 to 1984) permit final visual examination of welds after coating with "carbozinc primer".

Following are the historical changes to the applicable paragraphs of the Process Specification, paragraph 5.0, "Procedure":

- (1) P.S.3.C.5.4(a), dated 1-25-82, states:

"5.2 The weld area to be inspected is cleaned of all slag, scale, grease, paint, primer, or other material detrimental to visual examination.

5.2.1 Welds made prior to November 2, 1981, which are coated with carbozinc primer may be visually examined in accordance with this process specification without removing the primer provided:

CONCERN NO: WI-85-013-003

- (a) The carbozinc was sprayed in accordance with the applicable coating application specification.
- (b) The carbozinc thickness is not greater than 5 mils as documented in coating inspection records and/or books or as measured adjacent to the weld. Coating thickness measurement techniques shall be in accordance with the specification for coating application.

5.2.2 Welds inspected for weld quality (defects other than size and location) as part of an EN DES-directed sampling program shall be inspected without primer coating unless exempted by EN DES."

- (2) P.S.3.C.5.4(R1), dated 3-9-83, reads the same as P.S.3.C.5.4(a), above.
- (3) Addendum 2 to P.S.3.C.5.4(a) and Addendum 1 to P.S.3.C.5.4(R1), both dated 8-13-83 (on the same form), revised paragraph 5.2.1 to read:

"5.2.1 Welds made prior to November 2, 1981, which are coated with carbozinc primer may be visually examined for weld size, undercut, overlap, and arc strikes in accordance with this process specification without removing the primer provided:

- (a) The carbozinc was sprayed in accordance with the applicable coating application specification.
- (b) The carbozinc thickness is not greater than 5 mils as documented in coating inspection records and/or books or as measured adjacent to the weld. Coating thickness measurement techniques shall be in accordance with the specification for coating application."

- (4) Addendum 2(R1) to P.S.3.C.5.4(R1), dated 1-23-84, deleted paragraphs 5.2.1 and 5.2.2, as stated in (1) and (3) above.

- (5) Process Specification 3.C.5.4(R2), dated 1-28-85, states:

"5.1 The weld area to be inspected is cleaned of all slag, scale, grease, paint, primer, or other material detrimental to visual examination."

CONCERN NO: WI-85-013-003

2. AWS D1.1 and the WBNP FSAR.

Following are excerpts from AWS D1.1 and the WBNP FSAR, which are applicable to the concern:

- A. The Structural Welding Code AWS D1.1, section 3.10, "Cleaning and Protective coatings", subsection 3.10.1 states (in part):

"Welded joints shall not be painted until after the work has been completed and accepted."

The same statement is also contained in TVA General Construction Specification G-29C, Process Specification 1.C.1.2, except that the word "examined" is used in lieu of "completed."

- B. The WBNP Final Safety Analysis Report (FSAR), Chapter 3.0, section 3.8, "Design of Category I Structures", contains the following commitments:

- (1) FSAR section 3.8.1.2, "Applicable Codes, Standards, and Specifications", lists the following for "American Welding Society (AWS)", on page 3.8-4 for item 4:

"Structural Welding Code, AWS D1.1-72 as modified by TVA General Construction Specification G-29C.

1973 Revision to Structural Welding Code, AWS D1.1-Rev. 1-73 as modified by TVA General Construction Specification G-29C."

1974 Revision to Structural Welding Code, AWS D1.1-Rev. 2-74 as modified by TVA General Construction Specification G-29C.

- (2) FSAR section 3.8.3.2, "Applicable Codes, Standards and Specifications", contains the following:

- a) Page 3.8.3-8c, Amendment 38, states:

"TVA Construction Specification G-29 Process Specification for Welding is a specification that has been developed for welding, nondestructive examinations, heat treatment and allied field fabrication procedures to be used during construction. G-29C conforms to the criteria in AWS D1.1-72 and G-29M conforms to the criteria in the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code. TVA referenced these codes in this section of the FSAR, item 3 and 5."

CONCERN NO: WI-85-013-003

The above statement that "G-29C conforms to the criteria in AWS D1.1-72" was added to the FSAR, Amendment 38, in response to the following US NRC Question 130.25:

"The TVA construction Specifications G-2, G-29, G-30 and G-32 listed in Section 3.8.3.2 are not nationally recognized documents. Provide a comparative study to show that these specifications are equivalent to other generally known similar specifications in the public domain."

b) Item 5, page 3.8.3-9, Amendment 47, states:

"`Structural Welding Code', AWS D1.1-72 as modified by TVA General Construction Specification G-29C; Recommended Practice for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Connections, AWS D12.1-61."

- (3) FSAR section 3.8.4.2, "Applicable Codes, Standards, and Specifications", contains the following:

Section 3.8.4.2.1, "List of Documents", page 3.8.4-15, Amendment 47, item 5 for AWS states:

"Code for Welding in Building Construction, AWS D1.0-69 as modified by TVA General Construction Specification G-29C

Structural Welding Code, AWS D1.1-72 as modified by TVA General Construction Specification G-29C."

The "as modified by TVA General Construction Specification G-29C" portion of the above FSAR statements was added by Amendment 47, dated 1-4-83.

3. TVA Memorandums and Reports, and USNRC Letter.

The following TVA Memorandums and Reports, and the USNRC Letter, were found to be applicable to the concern:

- A. EN DES Memorandum to CONST, dated 11-2-81, states:

CONCERN NO: WI-85-013-003

"This is in response to your verbal request that EN DES consider allowing visual examination of welds in accordance with G-29C after coating with carbo zinc.

Based on inspection of sample welds and production welds presented for evaluation, this is acceptable provided:

1. Carbon zinc thickness is 5 mils maximum.
2. All work after this date is examined prior to priming with carbo zinc.
3. Welds inspected for weld quality as part of an EN DES directed sampling program are to be cleaned."

B. EN DES Memorandum to CONST, dated 1-14-82, states (in part):

"This memorandum supersedes my memorandum of November 2, 1981 (SWP 811102 056)

This is in response to your verbal request that EN DES consider allowing visual inspection of welds in accordance with G-29C after coating with carbo zinc primer.

Based on the above evaluation, it is acceptable to visually inspect carbo zinc-coated welds provided:

1. The acceptance criteria for weld defects is in accordance with G-29C.
2. The carbo zinc was sprayed in accordance with the applicable coating application specification.
3. The carbo zinc thickness is not greater than 5 mils as documented in coating inspection records and/or log books or as measured adjacent to the weld. Coating thickness measurement techniques shall be in accordance with the specification for coating application.

All work performed after this date shall be examined before it is primed.

CONCERN NO: WI-85-013-003

Welds inspected for weld quality (defects other than size and location) as part of an EN DES-directed sampling program shall be inspected without primer coating unless exempted by EN DES."

- C. NSRS Report No. R-82-02-WBN, dated 6-3-82, contains the following for NSRS item R-82-02-WBN-24, "Control of Welding Processes":

- 1) Section IV, "Conclusions and Recommendations", IV.B.10.a states:

"Structural welding (cable tray supports, conduit supports, instrument tubing supports, piping supports, etc.) had not been accomplished in accordance with all the requirements of the AWS-D1.1-1972 structural welding code.

Recommendation

EN DES should provide technical justification for all of the specific AWS-D1.1 code deviations and should obtain written approval from the Nuclear Regulatory Commission to allow for these less stringent requirements."

- 2) Section V, "Details", subsection V.B.10.a states (in part):

"Contrary to the requirements, the G-29C Process specification 3.C.5.2(b) had been modified, a new process specification 3.C.5.4(a) had been issued, and addendums had been added to WBN procedure QCP 4.13. All of these documents reflect less stringent inspection requirements than those specified in AWS D1.1-1972.

Some examples of the less stringent requirements are: (l) minimum fillet weld size, (b) maximum fillet weld size, (c) fillet weld configuration, (d) fillet weld undercut, (e) weld splatter, (f) arc strikes, (g) final visual inspection after carbo zinc primer had been applied, and (h) no documented inspections by certified visual examination personnel prior to final visual examination. NSRS has concluded that examples (g) and (h) could be the more significant of these less stringent requirements."

CONCERN NO: WI-85-013-003

- D. NSRS Report No. R-82-07-WBN, dated 6-9-82, section II, "Background", states (in part):

"Inspection of welds after being primed with carbo zinc is not in accordance with procedure G-29C, Revision 4, or AWS D1.1, Structural Welding Code, both of which apply to the work at Watts Bar."

- E. OEDC Memorandum to NSRS dated 12-15-82, states:

"Attached are the technical justifications of the contrasts of AWS D1.1 Structural Welding Code and General Construction Specification G-29C Process Specifications. The justifications were requested by your staff in an October 13, 1982, meeting with EN DES personnel and were coordinated with them on December 4, 1982."

"Attachment A", "Contrast No. 1", states

"AWS-D1.1-72

1. Section 3.10.1 states, "Welded joints shall not be painted until after the work has been completed and accepted."

TVA General Construction Specification G-29C, P.S.-3.C.5.4(a)

1. Paragraph 5.2.1 - Welds made prior to November 21, 1981, which are coated with carbo-zinc primer may be visually examined in accordance with this process specification without removing the primer.

Technical Justification

This item is being handled separately. It is not discussed here per the request of [NSRS]."

- F. NSRS Memorandum to OQA, dated 8-10-83 and regarding NSRS item R-82-02-WBN-24, states that NSRS is concerned that some of the OEDC transmitted (memorandum dated December 15, 1982) technical justifications (for AWS D1.1-72 code deviations) are not adequate, and deserve further consideration. The Memorandum states:

CONCERN NO: WI-85-013-003

"Contrast 1, Carbo-Zinc Primer - This contrast deals with inspection of welds through primer. G. H. Kimmons' memorandum to you dated June 21, 1983, "Watts Bar Nuclear Plant - Resolution of NSRS Recommendation R-82-07-WBN-06" (EDC 830621 004), states that weld quality could not be visually inspected through primer. Process Specification (PS) 3.C.5.4(a) in use at WBN and PS 3.C.5.2(b) in G-29C both contain visual inspection criteria which state that welds shall be free of cracks. Section 5.2.1 of PS 3.C.5.4(a) states that welds may be visually inspected through carbo-zinc primer. Thus, the procedure and the acceptance criteria appear to be inconsistent. The Kimmons' memorandum of June 21, 1983, indicates that cracks cannot be visually detected through primer. We recognize that the general problem of the application of carbo-zinc prior to weld inspection is being handled by OQA as a separate issue and may have influenced the decision to close this item."

- G. OQA/SEB Memorandum to SEB Files, dated 1-16-84 and regarding the TVA meeting with US NRC Region II at the Atlanta Office on 1-12-84, states:

"The discussion included an address of the original NSRS concerns relative to AWS welding, TVA weld requirements as specified in G-29C, TVA's commitment to the NRC relative to AWS D1.1-1972, the TVA welding program controls relative to filler materials, and the records provided by that program. The OQA and NSRS conclusions that the TVA program satisfies regulatory requirements and TVA commitments to the NRC and provides adequate confidence in the integrity of structural welds made at WBN were presented."

"Attachment 2" of the memorandum states:

"Region II questioned the nature of the TVA commitment contained in the FSAR, and informally recommended that specific exceptions to AWS D1.1-1972 be documented."

CONCERN NO: WI-85-013-003

H. OQA Memorandum to OEDC, dated 1-17-84, states:

"As a result of additional reviews by OQA regarding the AWS welding program and our interaction with NRC Region II, we recommend that the following improvement actions be taken:

1. Revise G-29C to delete the current latitude provided in P.S.3.C.5.4 for inspection through carbo-zinc primer. These provisions are no longer needed since the sample programs for which they were added have been completed. All future weld inspections should be made without primer.
2. Modify the FSAR commitments for WBN and BLN to identify the specific exceptions taken by TVA to AWS D1.1-72. A technical justification should be provided for each exception.

We feel that these actions will improve the effectiveness of the current AWS welding program and more accurately define the extent to which TVA complies with AWS D1.1-72. Please provide a response to these recommendations by February 10, 1984, including a schedule for implementation of each item."

- I. General Manager Memorandum to GM Files, dated 1-18-84, is a summary of a briefing to the TVA Board. The memorandum states that the "TVA Board requested that OQA present the resolution of NSRS concerns with the AWS Welding Program" at WBNP. The memorandum addresses the subjects of (1) filler metal records, (2) inspection records, (3) inspection through Carbo Zinc and (4) additional concerns.

As "Additional Concerns", the memorandum states:

"In the general discussion of the above items, a statement was made that the NRC-NRR had not been informed of the specific exceptions to AWS D1.1-1972 that were made in the welding program at the Watts Bar Nuclear Plant nor had justifications for the exceptions been provided to the NRC-NRR. A concern was expressed that, if the NRC-NRR did an in-depth evaluation of the exceptions to this code, they might have significant questions that could seriously affect the licensing of the Watts Bar Nuclear Plant. To satisfy this concern, a detailed exception will be presented to NRC-NRR."

CONCERN NO: WI-85-013-003

As an "Action Item", for the "Additional Concerns" the memorandum states (in part) that OEDC is to:

"present the detailed expectation to AWS D1.1-1972, with technical justification, to the NRC-NRR and determine if they have any concerns regarding the TVA program."

J. USNRC letter to TVA, dated 3-1-84 states:

"On February 10, 1984, representatives of TVA and NRC staff met in Bethesda to discuss welding codes used at the Watts Bar Nuclear Plant, Units 1 and 2. Attendees are listed in Enclosure (1).

The meeting was requested by TVA to explain how the TVA General Construction Specification G-29C modified the structural welding Code AWS D1.1. TVA explained that GCS G-29C was developed to ensure that the welding and welding inspections at the plant site were performed consistently. The applicant further stated that there was no technical difference between GCS G-29C and the requirements established by AISC. Because AWS D1.1 did not specify tolerances, TVA used those established by NF.

At the end of the meeting, NRC staff told TVA that, after a cursory review of GCS G-29C and the presentation made by TVA, the staff had no concerns with regard to TVA's commitment to AWS D1.1 as it is clarified by GCS G-29C.

The staff stated that it does not, at this time, see a need to review GCS G-29C any further."

CONCLUSIONS:

The concern is substantiated.

CONCERN NO: WI-85-013-003

General Construction Specification G-29C, specifically Process Specification 3.C.5.4, allowed visual examination of welds after coating with "carbozinc primer" from January 1982 to January 1984 for welds made prior to November 1981. The January 1984 date corresponds with the reported "end of the Welding Sampling Program." Since the Structural Welding Code AWS D1.1 does not permit "painting" until after the welds are accepted, and since there appears to be no documented technical justification or corrective action regarding the G-29C "contrast" or exception to the code, the 1982 to 1984 allowance for inspection of welds through "carbozinc primer" is an apparent violation of AWS D1.1.

ERT Investigation Report for Concern No. NS-85-001-001 also addresses this concern as part of TVA's closure of the "carbozinc issue" in February 1984.

OBSERVATION:

The WBNP FSAR, Chapter 3, section 3.8, contains references to the 1972, 1973 and 1974 versions of the AWS D1.1 "Structural Welding Code", and to the 1969 version of AWS D1.0 "Code for Welding in Building Construction". Section 3.8, as revised in Amendment 47, also states:

"Where date of edition, copyright, or addendum is specified, earlier versions of the listed documents were not used. In some instances, later revisions of the listed documents were used where design safety was not compromised."

The FSAR does not clearly identify which version of the welding code(s) applies to all or specific Category I structures. It appears that any version from 1969 to present may be applied to any structure. This unclear commitment to a welding code(s) is further complicated by the statement "as modified by TVA General Construction Specification G-29C."

Report Reviewed & Accepted:
[Signature] 11/12/85
NSRS

Prepared by J.T. Nation 10-9-85
date
Reviewed by D.A. Thew 10/10/85
date

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. WI-85-013-003 (ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: Structural Steel Weldments
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)
General Construction Specification G-29C, from 1982 to 1984, permitted inspection of welds after coating (Carbo Zinc primer), contrary to the FSAR commitment to conformance to the AWS D 1.1 Structural Welding Code.

4. Reason for Reportability: (Use supplemental sheets if necessary)

- A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.

NO YES If Yes, Explain: Weldments inspected after coating may contain undetected defects (cracks, porosity, etc) that would adversely affect the integrity of the welds and associated Category I structures.

AND

- B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.

No Yes If Yes, Explain: Failure to maintain a program for inspection of activities affecting quality under suitably controlled conditions.

OR

- C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.

No Yes If Yes, Explain: Specification G-29C permitted inspection of welds after coating (carbo zinc primer), contrary to the FSAR, section 3.8.3.2, commitment that "G-29C conforms to the criteria in AWS D1.1-72".

OR

NRC

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE : NOV 5 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-654-WBN

Subject SUPERVISOR DISAGREES WITH TVA SAFETY AND TRAINING POLICY

Concern No. IN-85-676-001

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached
 recommendations by 12/2/85. Should you have any questions, please
 contact J. L. Croes at telephone 3734-WBN.

Recommend Reportability Determination: Yes No

*Original Signed By
M. A. Harrison*

Director, NSRS/Designee

JLC:LAO

Attachment

cc (Attachment):

- H. N. Culver, W12A19 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- W. H. Thompson, E12B15 C-K--To handle I-85-654-WBN-03.
- W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

From: _____

Date: _____

I hereby acknowledge receipt of NSRS Report No. I-85-654-WBN
 Subject SUPERVISOR DISAGREES WITH TVA POLICY for action/disposition.

Signature

Date

0080U



TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-654-WBN
EMPLOYEE CONCERN IN-85-676-001
MILESTONE 1

SUBJECT: SUPERVISOR DISAGREES WITH TVA SAFETY AND TRAINING
POLICY

DATES OF INVESTIGATION: September 20-October 22, 1985

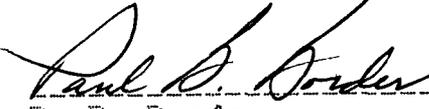
INVESTIGATOR:



J. L. Croes

10/31/85
Date

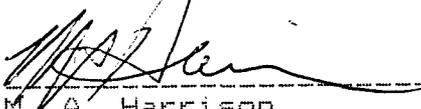
REVIEWED BY:



P. B. Border

10/31/85
Date

APPROVED BY:



M. A. Harrison

10/31/85
Date

BACKGROUND

A concern was received by Quality Technology Company Employee Response Team that stated:

Supervision has made several comments which indicate personal disagreement with TVA policy. Examples follow: (1) The job comes before safety. (2) TVA safety regulations are overkill. (3) Training is for times when there is nothing else to do. (4) At times, in order to get things done, you have to go outside procedures, then plead ignorance.

II. SCOPE

Once the area of concern was identified, interviews were conducted with the supervisor identified as the subject of the concern, his immediate supervisor, and ten persons who work in the organization under the subject supervisor.

III. SUMMARY OF FINDINGS

A. Applicable Requirements

Industrial Safety Program Manual, Program Area 7, Volumes 1, 2, and 3, Revision 9

Personnel Administration Manual, Program Area 9

Nuclear Training Program, Program Area 2, Procedure No. 02.02.11, Industrial Safety Training Program

A1-5.1, Material Procurement and Control, Revision 16

B. Findings

1. Contributing Factors

The information on the employee concern was insufficient for a comprehensive investigation, so more information was requested and obtained from QTC ERT.

After receiving more information the concern was broken into three segments for questions directed to persons interviewed: (1) attitude of supervisor regarding the safety of his employees; (2) attitude of supervisor regarding training for his employees; (3) possible misuse of the TVA procurement system.

The subject supervisor was promoted to the position of M-5 Unit Supervisor (elevated one grade due to reorganization) which displaced a supervisor who was very popular with the employees in the group. The displaced supervisor who had held the position of M-4 was moved to supervise another group, also an M-4 position.

The displacement of their supervisor with no promotion and appointment of a new one at the M-5 level (based on interviews) was very unpopular with the employees in the unit, with hard feelings existing to this date.

The problem was compounded by differences in personality between the old and new supervisor and by the general feeling that the former supervisor had been pushed aside in order to bring in another person less qualified but more suitable to upper management.

The fact that the former supervisor had an overall "superior" performance rating (stated by those interviewed) on his most recent Management Performance Goals and Appraisal Summary only contributed to the dissatisfaction of the unit employees regarding this change.

Problems between the new supervisor and people in the unit surfaced and continued to worsen during the following months. Finally the problems in the unit were brought to the attention of the Superintendent of Operations and Engineering who called a meeting with the engineering group supervisor, the (subject) Supervisor, and employees in the unit to address and resolve the issues and differences. This meeting occurred in August 1985, and conditions (according to interviews) have continued to improve since that time.

2. Findings Relative to the Specifically Expressed Concerns

The examples stated in the expressed concern all took place before the August 1985 meeting and are summarized below.

Examples 1 and 2 - Safety - "The job comes before safety;" and, "TVA safety regulations are overkill." This concern is substantiated by interviews with the subject supervisor and the employees in the unit. Based on interviews, the previous supervisor of the section was perceived by the employees as a very safety conscious supervisor who would hold up a job regardless of schedule rather than violate safety rules. The issue of safety most often used by employees being interviewed was the use of safety belts or scaffolding while working at heights. The new supervisor conveyed to the employees in the unit that the use of safety belts is a judgement call, and climbing on pipes and cable trays is okay and may be necessary to accomplish the job contrary to TVA safety rules.

This philosophy was discussed with the subject supervisor in an interview and he in fact did state that the use of safety belts when climbing around on pipes and cable trays was a judgement call and sometimes you just could not get a safety belt hooked up. The question of climbing was restated to the supervisor concerning the practice of climbing on pipes and cable trays and again he stated: ". . . climbing on pipes and cable trays may be necessary." (An unauthorized practice.)

Prior to the change in supervision, the employees in the unit were accustomed to the supervisor arranging for and insisting on scaffolds, etc., for working above floor level.

Employees in the unit stated that the subject supervisor had stated that some TVA safety regulations were overkill.

When the supervisor was asked in an interview if he thought "TVA safety regulations were adequate for getting the job done or are they lax," he stated that he has worked at places such as Westinghouse that did not have nearly as many safety requirements as TVA but had equal or better safety records. He also stated that some TVA safety regulations were too strict.

Comments by unit employees on the safety issue included, "Needs improvement." ". . . management preaches safety but there is not much enforcement;" "More talk than action . . .;" "Employees climb on pipes and generally do not observe safety rules during tight schedule testing." "We have safety meetings which are followed by an . . . chewing session."

Example 3 - "Training is for times when there is nothing else to do." This was not substantiated, however it is an example of how better communications would have prevented the misunderstandings that exist between the subject supervisor and his employees.

During interviews, several employees expressed concern over the supervisor's attitude toward training. Comments by the supervisor, such as telling an engineering aide that the Plant Systems Course is for engineers and that he did not need it, without explanation as to why he could not attend the training course.

The instances that surfaced during the interview process involved training that would have conflicted with a major test. The supervisor did not explain to his employees why no training would be scheduled until after the necessary testing required prior to fuel loading was completed. Employees who discussed with the supervisor their need of training said they received supervisor feedback that training was unimportant rather than training is important but important scheduled testing must take priority over the training unless needed to perform the immediate task.

Example 4 - "At times, in order to get things done, you have to go outside procedures, then plead ignorance." The CI gave information to QTC ERT that this statement referred to the manner in which the supervisor bypassed the procurement process. No instances of any violations were noted in examples provided in the interview process but rather a misunderstanding on the part of some people of the use of the field requisition. This concern could not be substantiated. Poor communications again created a misunderstanding between the supervisor and the employee. The supervisor did not explain to the employee the procurement process and how purchases of under \$300 can differ from purchases exceeding \$300 and \$10,000. Instead he made comments that were misunderstood and led to the expressed concern.

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. The conditions under which the new supervisor assumed this position made it difficult to achieve a satisfactory transition. This was compounded by his management style which was viewed as arbitrary and autocratic as he chose to give written directions rather than to discuss decisions and issues with the individuals concerned whereby the reasons for potentially unpopular decisions could be understood.
2. The supervisor's attitude concerning TVA safety procedures fostered friction between the supervisor and the employees reporting to him and remains contrary to the TVA "Safety-First" policy. This attitude could lead to personnel injury as well as damage to in-place equipment such as cables/cable trays or pipes and pipe insulation.
3. The "training" and "bypassing of the procurement process" concerns were not substantiated, but both are examples of where poor communications between a supervisor and his employees created misunderstandings.
4. Communications between the supervisor and the employees worsened until August 1985 when a meeting was held to air the differences. After the meeting, the employees noticed improvement in the attitude of the supervisor.

B. Recommendations

I-85-654-WBN-01 - Discuss with Supervisor his Attitude toward TVA Policies

Appropriate WBN plant management should discuss with the subject supervisor that part of his job is to enforce TVA policy and requirements; to insist on safety awareness regardless of the time constraints or schedules; and, when discussing TVA policy, realize that it is his responsibility to uphold TVA policy regardless of his personal feelings.

I-85-654-WBN-02 - Management Training

Determine both the generic and specific needs in this instance for developing and improving management skills of engineers and lower-level supervisors prior to their selection and placement into management positions requiring such skills.

I-85-654-WBN-03 - Investigate Personnel Action Taken

The Division of Personnel should investigate the facts relative to the personnel action described in this report to ascertain that the applicable personnel selection and replacement criteria were met. (See NSRS Report I-85-125-WBN.)

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-423-WBN
EMPLOYEE CONCERN IN-85-439-003
MILESTONE 1

SUBJECT: INADEQUATE CRAFT SUPERVISION

DATES OF INVESTIGATION: October 14-25, 1985

INVESTIGATOR: C. M. Key 10/29/85
C. M. Key Date

REVIEWED BY: for W.D. Stover 10/29/85
G. G. Brantley Date

APPROVED BY: [Signature] 10/30/85
G. A. Harrison Date

BACKGROUND

The Nuclear Safety Review Staff (NSRS) investigated Employee Concern IN-85-439-003 which Quality Technology Company (QTC) identified during the Watts Bar Employee Concern Program. The concern was worded as follows.

Superintendents and General Foremen are over craft that they have no experience or knowledge in. They do not know what is really required to do a good job, and all they want to do is get the job done in a rush. They don't care about quality. Example: Manager instructed craft not to follow approved construction requirements, but instead told craft to do only part of the specified process.

Further information was requested from QTC regarding the particular craft organization and the procedures that were referred to in the concern. These additional details were received by NSRS from QTC.

II. SCOPE

A. Applicable Documentation Reviewed

1. Personnel History Records (PHRs) for members of the craft organization named in the concern.
2. Job descriptions for the craft superintendent and assistant superintendent.
3. Procedures governing activities of this craft.

B. Interviews were conducted with craft personnel involved with the performance of activities questioned in the concern.

III. SUMMARY OF FINDINGS

Review of the craft superintendent's PHR indicated that the superintendent had more than ten years' management experience in the craft he was supervising and not as a steamfitter as alleged in the concern. In addition the superintendent appeared to meet the qualifications required by the job description for this superintendent's position. Examination of the foreman's PHR revealed that this individual had in excess of thirty years' experience. This experience included completion of an apprenticeship program and subsequent employment by TVA as a journeyman, foreman, and assistant superintendent in the craft that was questioned by the concern. Interviews of craft personnel involved with the performance of activities questioned in the concern did not identify any incidents related to the concern. However, the interviews did reveal that if the incidents had occurred, the results would have been obvious to the final inspectors, resulting in corrective action.

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The allegation appears to be unsubstantiated for the following reasons.

1. The superintendent and general foreman have experience and knowledge in the craft identified by the concern.
2. Interviews of affected craft personnel did not reveal any details to substantiate the concern.

B. Recommendations

None.

NRC

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
DATE : **NOV 5 1985**
SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-436-WBN
Subject EMPLOYEES NOT ALLOWED TO WRITE NONCONFORMANCE REPORTS
Concern No. IN-85-251-002

and associated recommendations for your action/disposition.
It is requested that you respond to this report and the attached
recommendations by 12/2/85. Should you have any questions, please
contact J. R. Mashburn at telephone 3778-WBN.
Recommend Reportability Determination: Yes No

Original Signed By
M. A. Harrison
Director, NSRS/Designee

JRM:LAO
Attachment
cc (Attachment):
H. N. Culver, W12A19 C-K
QTC/ERT, Watts Bar Nuclear Plant
W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
From: _____
Date: _____

I hereby acknowledge receipt of NSRS Report No. I-85-436-WBN
Subject EMPLOYEES NOT ALLOWED TO WRITE NONCONFORMANCE REPORTS for
action/disposition.



0077U

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-436-WBN
EMPLOYEE CONCERN IN-85-251-002
MILESTONE 1

SUBJECT: EMPLOYEES NOT ALLOWED TO WRITE NONCONFORMANCE REPORTS

DATES OF INVESTIGATION: September 17-October 25, 1985

LEAD INVESTIGATOR:

John Mashburn
J. R. Mashburn

October 31, 1985
Date

REVIEWED BY:

G. G. Brantley
for G. G. Brantley

10/31/85
Date

APPROVED BY:

M. A. Harrison
M. A. Harrison

10/31/85
Date

BACKGROUND

NSRS has investigated employee concern IN-85-251-002 which was identified by Quality Technology Company (QTC) during the Watts Bar employee concern program. The concern was stated as follows: "Employees performing work required by maintenance requests are not allowed to write NCRs or address nonconformances noted during performance of work."

(Note: An NCR is a Nonconformance Report.)

II. SCOPE

This concern was investigated by discussions with present and former plant supervisors, by interviews with ten employees performing work under maintenance requests (MRs), and by records and document review. The plant procedures governing NCRs, corrective actions, and MRs were reviewed, along with records of completed MRs and NCRs.

III. SUMMARY OF FINDINGS

A. WBN Procedures

In WBN procedures, MRs, DRs, and CARs can be precursors of NCRs. Procedures for completing MRs include steps for determining the need for a CAR, and the procedure for processing CARs includes a tabulation of other types of reports which includes NCRs. (See Attachment 3.)

WBN procedures appear to minimize the role of the nonsupervisory employee in nonconformance reporting (NCRs). The only acknowledgement of nonsupervisory personnel in the process is a single statement, a "Note" in AI-2.8.3 that says: "Any cognizant plant personnel may initiate an NCR form if it is reviewed and approved by his appropriate section supervisor." This is in sharp contrast to the wording of AI-9.2 for maintenance requests. For example: "All plant personnel shall report the need for maintenance on plant equipment or systems by the use of a maintenance request. MRs may also be generated for performance of routine preventive maintenance or other activities, such as MI, SI, and workplan performance for documentation or tracking purposes. An MR may also be used to request the services of plant personnel."

Similarly, any employee can initiate a Corrective Action Report (CAR), and the employee can insist on issuance of a CAR over the objections of the plant manager (AI-7.3, section 5.4.3.3). By contrast, the supervisor must act as a determined sponsor to get an NCR through all the steps of AI-2.8.3 (see Attachment 4).

B. Employee Awareness of NCRs

Discussions and interviews with plant personnel verified that employees were familiar with MR procedures for correcting problems or deficiencies, but many craft personnel were not familiar with NCR procedures. On the other hand, engineers and QA personnel were familiar with NCRs, and they were able to cite one or more NCRs being currently processed in their sections. None of the people interviewed knew of a specific instance of anyone being discouraged from reporting a deficiency, and those familiar with NCRs could not cite a case where an NCR was needed and refused.

C. NCR, DR, and CAR Activity Trends

A suggestion that arose from discussions with NSRS, QA, and compliance personnel was that an overall trend might be seen in NCR reporting volume that would shrink and surge as the expectation of licensing was or was not imminent. The attached plot of NCRs (Attachment 1) shows such trends, with a dramatic reduction in NCRs opened in August and September of 1984, preceding the October 1984 fuel-load target date. (That target date was changed in October.) The NUC PR-originated NCRs underwent a similar sharp drop in March 1985, which was the rescheduled target fuel-load date.

The plot of CARs (Attachment 2) shows similar dips in September 1984 and February 1985. The (Attachment 2) plot of DRs does not track the NCR and CAR plots; but this may be a reflection of the fact that it is a plot of "Report Dates" rather than earlier "Reported On" dates, and some processing delay of each issue occurred between those dates.

No interviewee even suggested that an overt act of management was at work to cause these reductions; rather, the graphs suggest an apparent tendency toward deemphasizing identification of new problems, possibly to emphasize efforts at resolving previously identified items.

There are several steps required to complete an NCR after the report number is assigned by planning and scheduling. Therefore, the degree of difficulty in getting management approvals may be reflected in report numbers issued but later cancelled. A review of the P&S log showed three such cancellations in July 1984 and one in June 1984. One of the three July cancellations was done in order to include the deficiency in another NCR. The P&S log review did not support a conclusion that NCRs were discouraged, because the cancellations occurred during the peak period of NCR processing, not during the minimum period.

D. Problems with Corrective Actions

Audit reports showing deficiencies in the nonconformance program have been unsuccessful in obtaining corrective action. A joint QA audit from 1980, JA-8000-13, and a followup DQA audit in March 1985, QWB-A-85-0009, found a discontinuity in procedures for implementing 10CFR50.55(e) and other requirements when the nonconformance was identified by NUC PR. This had led to failure to ensure proper tagging or segregating of nonconforming items, failure to obtain proper corrective action, and in some cases, to closure of NCRs by NUC PR without any awareness of related commitments made to NRC by OC or OE. The history of NUC PR at WBN is one of repeated failures to meet commitment dates for corrective actions in the nonconformance program as detailed in these reports. There is no new finding for this lack of corrective action in this employee concern report, because the QA findings are still open.

IV. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The employee concern is not substantiated. A nonsupervisory employee is not disallowed from writing NCRs and may initiate an NCR if it is reviewed and approved by his/her supervisor. This is the wording of AI-2.8.3. However, the supervisor may refuse to initiate or allow initiation of the NCR, and AI-2.8.3 gives the employee no recourse.

Recommendation

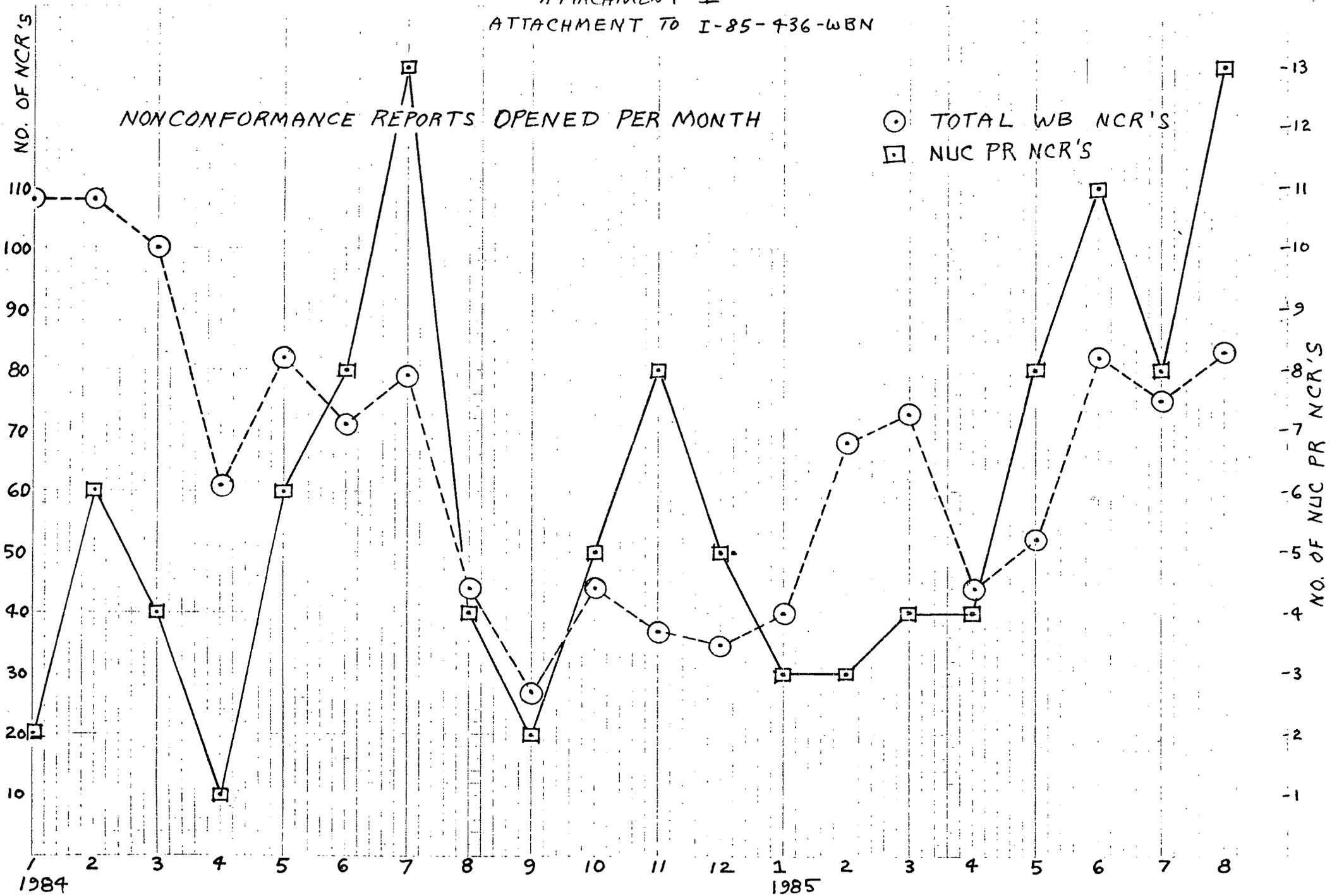
1-85-436-WBN-01 - Allow Employees to Write NCRs

Revise AI-2.8.3 to allow any employee to initiate an NCR similar to the wording of AI-7.3 for CARs, including steps to take when the supervisor does not agree.

ATTACHMENT 1
 ATTACHMENT TO I-85-436-WBN

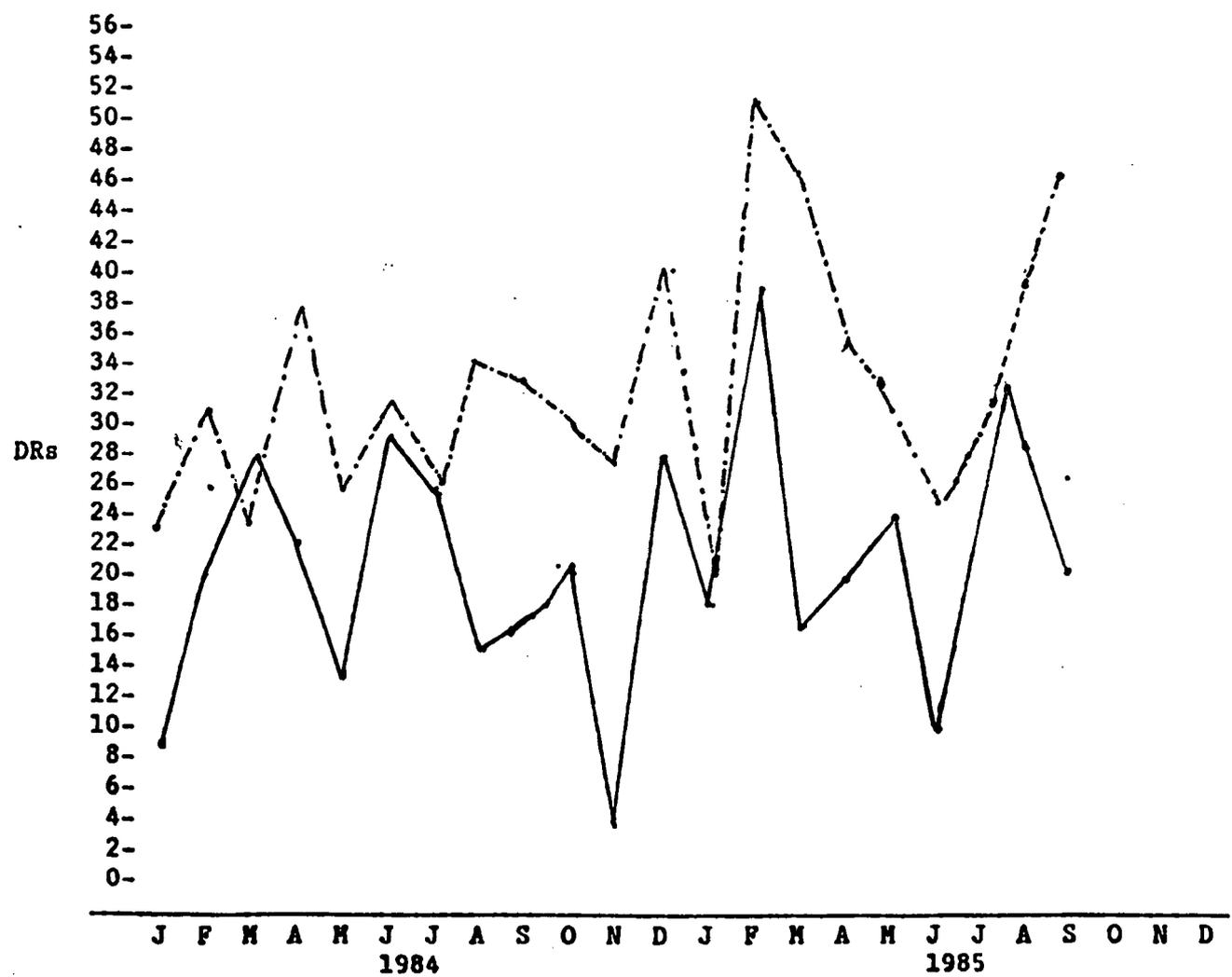
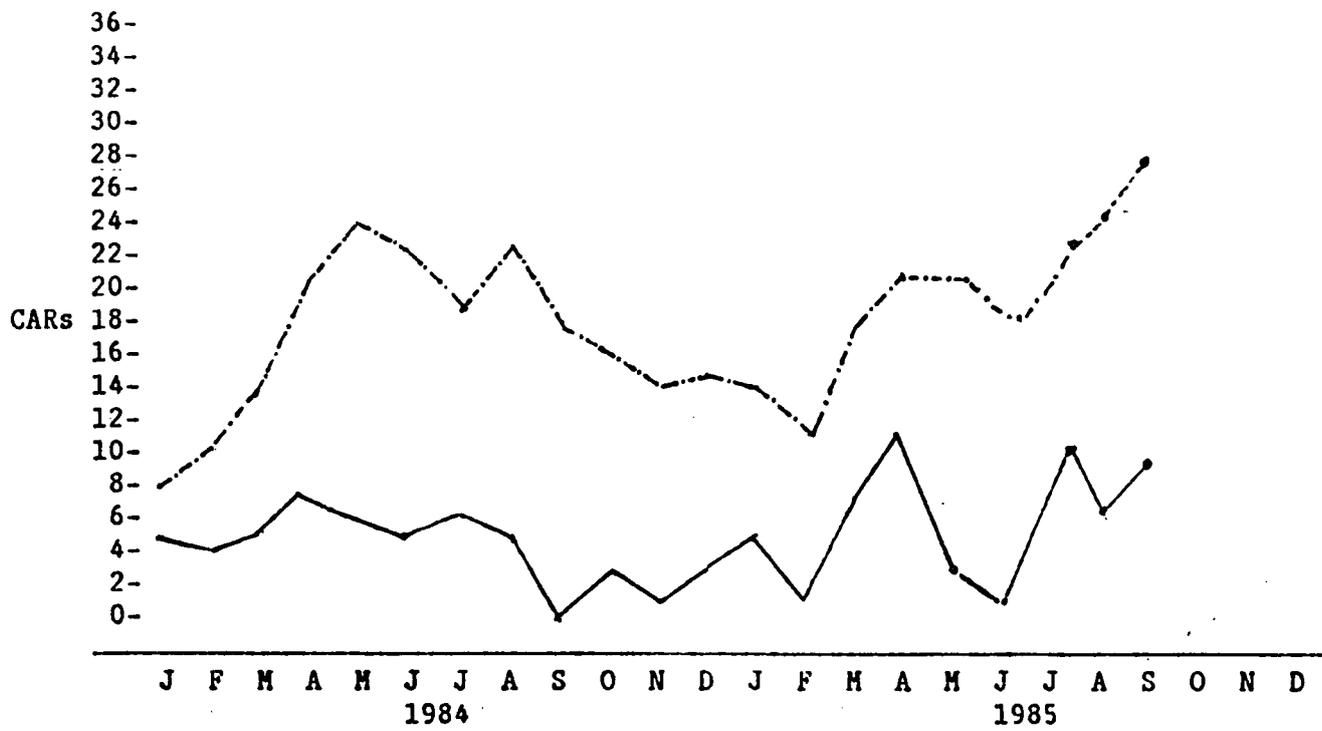
NONCONFORMANCE REPORTS OPENED PER MONTH

○ TOTAL WB NCR'S
 □ NUC PR NCR'S



LEGEND

———— Number issued
 - - - - - Number open



ATTACHMENT 3
 ATTACHMENT 1
 (For Information Only)

CORRECTIVE ACTION MECHANISMS

TYPE OF REPORTING DOCUMENT

PROBLEM IDENTIFYING MECHANISM	✓ NCR 50.55(e) AI-2.8.3	NCI AI-5.3	PT 21 AI-2.8.1	LER AI-2.8.4	DR AI-7.3	CAR AI-7.3	RPT Various	MR AI-9.2	FCR DCR AI-8.8 AI-8.8	DATA PACK Various	REFERENCE INSTRUCTION
RECEIPT INSPECTION	0	@	0						0		AI-5.2 & 5.3
MAINT./MOD. INSPECTION							@				AI-5.3, 7.1, 8.5, & 8.8
HOUSEKEEPING INSPECTION							@	0			AI-1.8
ISI INSPECTION							@	0			TI-50A & 50B
QA SURVEYS					0	0	@				AI-7.4
QA AUDITS							@				WB-11.5
NRC INSPECTION							@				WB-11.5
NSS/NSRS REVIEWS							@				WB-11.5
INPO REVIEWS							@				None
ASME ANI ACTIVITIES							@				AI-9.15
AMER. N. INSURER AUDITS							@				WB-11.5
PREOP TESTS								0		@	AI-6.2
STARTUP TESTS								0		@	AI-6.3
SURVEILLANCE TESTS				0				0		@	AI-6.1
POST-MAINT & POST-MOD TESTS								0		@	AI-8.8, 9.2, & 8.5
QA W.P. REVIEW					@	0					AI-8.5 & 8.8
QA MR/TR REVIEW					@	0					AI-9.2
QA PROC REVIEW					@	0					AI-3.1
QA SI DATA REVIEW				0	@	0					AI-6.1
SPONTANEOUS EMPL. RPTS.	0	0	0	0	0	@		@	0		AI-7.3, WB2.1.10, 2.1.11, & 11.8

@ Primary Corrective Action Mechanism

0 - Secondary Corrective Action Mechanism

NRC

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
DATE : **NOV 4 1985**
SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. IN-85-770-002

Subject WELDER CERTIFICATION

Concern No. IN-85-770-002

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached

recommendations by November 25, 1985. Should you have any

questions, please contact William M. Kemp at telephone 365-4414.

Recommend Reportability Determination: Yes X No

*Original signed by
M. S. Kidd*

Director, NSRS/Designee

MAH:JTH

Attachment

cc (Attachment):

- H. N. Culver, W12A19 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

From: _____

Date: _____

I hereby acknowledge receipt of NSRS Report No. IN-85-770-002
Subject WELDER CERTIFICATION for action/disposition.

Signature

Date

0075U



NSRS RECOMMENDATIONS

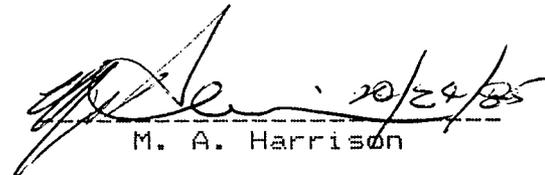
Concern: IN-85-770-002 (et al)

Recommendations

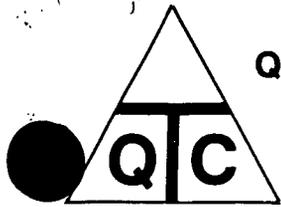
Q-85-770-002-01 - "Backdating Welder Certification Card" - WBN
Construction should issue an NCR to document and obtain resolution for the indeterminate condition of welds performed by welders whose qualifications had expired by virtue of not updating certification cards on schedule or from actual nonperformance of processes.

A suggested resolution is to evaluate the results of a proposed welding program review for which extensive reexamination of welds/weldments is planned to be performed.

Prepared by:

 10/24/85

M. A. Harrison



**QUALITY
TECHNOLOGY
COMPANY**

P.O. BOX 600
Sweetwater, TN
37874

ERT INVESTIGATION REPORT REV.1

PAGE 1 OF 6

CONCERN-NO: *IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

CONCERN: SEE DETAILS *All listed concerns tracked
under IN-85-770-002.

INVESTIGATION
PERFORMED BY: William M. Kemp, Jr./Rana L. Ahmed

DETAILS

IN-85-770-002

Welders certification cards were falsified.

IN-85-965-001

A welders certification expired on a Wednesday. This welder was re-certified the next Wednesday. But the certification was back dated to prevent the work preformed by the welder from being rejected. This was about 12/16/80.

IN-85-778-X07

Welder certification card falsified.

WI-85-003-X02

Welder certification cards falsified.

IN-85-021-X05

Welders certification cards were falsified

IN-86-143-002

Welder's certification card was back-dated around 30 days after failed to have his card up dated.

IN-86-167-005

Concern that welder re-quals (updates) have been back dated.

IN-86-167-X06

Welder certification card has been falsified.

CONCERN NO: IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

DETAILS, continued

IN-85-424-X13

Management personnel falsified welders certification card.

IN-85-612-X07

Welder certification card falsified.

IN-85-770-X07

Welders (8) certification cards were falsified.

WI-85-003-001

Welders certification card updated is incorrect (back dated). Time frame May 27-June 3, 1985. Welder performing duties in Turbine Building, Unit 2.

Personnel Contacted:

Confidential

Documents Reviewed:

ASME Section IX QW 320

AWS D1.1 Section 5 Welders Qualifications

QCI 4.02 Revision 4 Welder - Welding Operator Performance
Qualification.

QAM 5.1 Welding Control Rev. 20

CONCERN NO: IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
-- WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

DETAILS, continued

Summary of Investigation

These concerns are substantiated.

Based on the investigation of these concerns "Back Dating" of welder qualification was a common practice. "Back Dating" would be approved based upon someone (i.e., Foreman, QC Inspector or O.C.) having knowledge that the welder had welded in that specific process. However, there was no objective evidence, i.e., supporting documentation such as weld number, item, work order or work package to support the justification of "Back Dating" the welder qualification (Certification).

The "Falsification" issues are to be acted upon by the TVA Office of General Counsel (OGC). 1

Requirement:

AMSE Section IX, QW 322 states that when a welder:

- a) "...has not welded with a process during a period of three months or more his qualifications for that process shall be expired except when he is welding with another process the period may be extended to six months."
- b) "... he has not welded with any process during a period of 3 months all his qualifications shall be expired including any which may extend beyond 3 months by virtue of (a) above."

QW 322 goes on further to state that the "Renewal of Qualification for a specific welding process under (a) and (b) above may be made in a single test joint (plate or pipe) on any thickness, position or material to reestablish the welders or welding operation qualification for any thickness, position or material for the process for which he was previously qualified."

AWS D1.1 Section 5 states:

5.30 Period of Effectiveness

"The welder's qualification as specified in this Code shall be considered as remaining in effect indefinitely unless (a)

CONCERN NO: IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
-- WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

DETAILS, continued

5.30 continued

the welder is not engaged in a given process of welding for which the welder is qualified for a period exceeding six months or unless (2) there is some specific reason to question a welder's ability. In case (1), the requalification test need be made only in the 3/8 in (9.5 mm) thickness."

5.31 Records

"Records of the test results shall be kept by the manufacturer or contractor and shall be available to those authorized to examine them."

QAM 5.1 Para 2.0 application states:

2.1 Scope "All welding shall be performed by qualified welders and welding operators using qualified procedures and certified welding material in accordance with the code."

QCI 4.02, Para. 6.4.1.2

"Welders are requalified when any of the following occur:"

6.4.1.2.1 "When they do not use any process for a period of three months."

6.4.1.2.2 "When they do not use a specific process for a period of six months."

Findings:

During the course of this investigation, two welders were interviewed and the following information was provided:

Welder # 1

On July 19, 1985 his Certificate (welding card) expired. His certificate was back dated on 8/2/85 by WQC to July 11, 1985.

Welder #2

On July 8, 1985 the welder went to the test shop to renew his certification which expired on July 7, 1985. His card was back dated to June 11, 1985.

CONCERN NO: IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
 IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
 -- WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

DETAILS, continued

The Office of Construction's (OC) "welder's qualification verification" was reviewed (random sample).

13 cards were checked and 4 cards were back dated.

i.e, Welder A - back dated on 11/28/84 to show 10/31/84

Welder B - back dated by WQC on 5/22/85 to 5/14/85

Welder C - back dated by WQC on 9/15/84 to 8/30/84

Welder D - back dated by WQC on 5/29/85 to 5/27/85

This was discussed with (Confidential) (WEU) and (Confidential), (WEU); two forms were located. One form, (a WEU form), identified the welders numbers and the date that the qualifications were updated (back dated). The other form was from WQC to WEU which was a "certification up date log." 1

The second form was discussed with (Confidential) who stated that if a welders qualification was past the 3 month limitation, a "verbal" concurrence between QC Inspectors, welding foreman or OC would be requested in order to support the "back dating" (up dating) of the welders certification. Although this took place, there is no documented evidence i.e., weld number, location or work order to support the "back date" and to assure no welding was conducted during the time span when certification had expired and when it had been corrected. 1

Nowhere in the procedures is "back dating" addressed. In the procedures, if a welder's qualification "expires", per Q 322 and AWS Section 5, he shall make "a single test joint" per ASME IX ~~WQ~~ 322 and "A single test" per AWS D1.1. *Handwritten: QW 5/22/85*

Welders and welding operators are qualified/or regualified per ASME/AWS not certified.

CONCERN NO: IN-85-770-002, IN-85-424-X13, IN-85-021-X05, IN-86-167-005
IN-85-965-001, IN-85-612-X07, IN-85-770-X07, IN-86-167-X06
-- WI-85-003-001, IN-85-778-X07, IN-86-143-002, WI-85-003-X02

DETAILS, continue

Conclusion:

These concerns are substantiated. Back dating of welders' certification did take place without any procedural guidelines addressing this practice. In addition, there is no documented evidence which supports the back dating of a welders certification.

By "Back dating" qualifications for renewal with out objective evidence to support the back dating, welding can be conducted by "expired" qualifications.

QCI 4.02 Rev. 5 was issued 8/26/85 documenting the controls for maintaining welders qualification. These controls utilize specific information i.e., reference documentation, however this does not correct the past indeterminate condition of "back dating" without objective evidence.

The "falsificaton" issues are to be investigated/evaluated by the OGC relative to the back dating of welders certifications.



PREFORMED BY Wm Kemp 10/23/85
DATE

REVIEWED BY Oh There 10/23/85
DATE

Report Reviewed & Accepted
[Signature] 10/24/85
NSR

NRC

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
DATE : **NOV 4 1985**
SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-466-WBN
Subject CABLE PULL NONCOMPLIANCES
Concern No. IN-86-199-001

and associated recommendations for your action/disposition.
It is requested that you respond to this report and the attached
recommendations by December 2, 1985. Should you have any
questions, please contact P. R. Bevil at telephone 3813 (WBN).
Recommend Reportability Determination: Yes X No

Original signed by
M. S. Kidd
Director, NSRS/Designee

PRB:MAH:LAO
Attachment
cc (Attachment):
H. N. Culver, W12A19 C-K
QTC/ERT, Watts Bar Nuclear Plant
W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
From: _____
Date: _____

I hereby acknowledge receipt of NSRS Report No. I-85-466-WBN
Subject CABLE PULL NONCOMPLIANCES for action/disposition.

Signature Date



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TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NOS. I-85-467-WBN, I-85-466-WBN, I-85-568-WBN,
I-85-573-WBN, I-85-518-WBN, AND I-85-575-WBN

EMPLOYEE CONCERNS IN-86-201-001, IN-86-199-001, IN-86-259-001,
IN-86-262-003, IN-86-259-004, AND IN-86-266-X09

MILESTONES 6, 6, 6, 3, 1, 6 (RESPECTIVELY)

SUBJECT: CABLE PULL NONCOMPLIANCES

DATES OF INVESTIGATION: October 7-28, 1985

INVESTIGATOR:

Paul B. Border

for P. R. Bevil

10/31/85
Date

REVIEWED BY:

Paul B. Border

P. B. Border

10/31/85
Date

APPROVED BY:

A. Harrison

A. Harrison

10/31/85
Date

Note: This report will be tracked under NSRS Investigation Report No.
I-85-466-WBN.

BACKGROUND

NSRS has investigated the following employee concerns which were identified to Quality Technology Company (QTC) during the WBN employee concern program.

IN-86-201-001

Cable pulling limits may have been exceeded during cable pulls before 1982. CI states that pulling limits were not adhered to or monitored before that date.

IN-86-199-001

Cable pulls are not always performed to the requirements of the QCI. For example, break links were not used during cable pulls, and conduits are too full.

IN-86-259-001

TVA failed to use fuse links or other tension indicators while pulling cable. Fuse links have only been used in the past 1-1/2 years.

IN-86-262-003

Units 1 & 2. Approximately a year and one-half ago (1983) a break link was to be used during a cable pull; however, a "steel choker" is still being added and the probability of exceeding the maximum pull tension is very high. Most of the cable had been pulled by 1983.

IN-86-259-004

Cables have been pulled at Watts Bar by using a come-along winch. Doors were held shut to prevent QC observation.

IN-86-266-X09

Apparent lack of coverage of safety related cable pulls by electrical QC inspectors.

II. SCOPE

The scope of this investigation included the following to address all of the above related employee concerns. Applicable QA procedures and instructions were reviewed; interviews were held with cognizant personnel; various pertinent QA audit and surveillance, NSRS, and INFO reports were reviewed.

SUMMARY OF FINDINGS

A. Applicable Requirements

1. General Construction Specification G-38, "Installing Insulated Cables Rated up to 15,000 Volts," (all revisions)
2. WBN-QCI-3.05, "Cable Installation," (all revisions)
3. WBN-QCP-3.05, "Inspection of Cable Installation," (all revisions)

B. Findings

1. NSRS Investigation Report I-85-06-WBN (RIMS Q01 850709 050) issued 7/9/85, documents the investigation of an employee concern regarding the adequacy of cable routing, installation, and inspection at WBN. Problem areas identified in this report encompass most of the employee concerns stated above. The report stated that cable pull tension limits have been potentially exceeded. This was accomplished either by inadequate or improper tension control, monitoring devices, or by inadequate inspection.
2. A mini-internal INPO review report issued 2/14/85 also documented potentially exceeding cable tension limits. The report stated in finding CC.5-1: "Deficiencies observed include: failures to follow procedure by not using a break rope to monitor pull tension," Finding QP.3-1 stated in part, "Observation of deficiencies include: . . . failure of electrical inspectors to verify proper attributes during cable pulling operations. . . ."
3. Due to problems identified with cable pulls, TVA Stop Work Order number 24 was issued 7/19/85. This stop work order resulted in immediate cessation of cable pulling activities for all class 1E and associated cable.
4. (The following pertains to Employee Concern IN-85-262-003 only.) In discussion with Electrical Quality Control (EQC) personnel, it was learned that a steel choker is often loosely placed over fuse links on large power cable pulls. This is done to prevent a cable from injuring a worker in case the fuse link suddenly breaks.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Employee Concerns IN-86-201-001 and IN-86-259-001 were substantiated in that previous verification activities indicate cable pull tension limits have potentially been exceeded at WBN. Employee Concern IN-86-199-001 was also similarly substantiated; however, the "conduits are too full" portion of the allegation will be discussed in NSRS Investigation Report I-85-464-WBN.

2. Employee Concern IN-86-262-003 was substantiated. Steel chokers are and have been used in cable pulling activities at WBN. As stated previously, however, steel chokers are only loosely placed over the fuse link; therefore, no noncompliant activity is committed. If this was not the case in the specific employee concern, the referenced NSRS report would still envelope this situation.
3. Employee Concern IN-86-259-004 was substantiated in part. It describes the use of a come-along winch on cable pulls as if this is not in compliance with procedures. WBN-QCI-3.05 allows the use of power-assisting devices to pull cables as long as the cable tension is controlled or monitored. It was verified that come-alongs are utilized at WBN for cable pulls; but according to interviews with electrical and EGC personnel, all are used properly. The portion of IN-86-259-004 which stated "doors were held shut to prevent QC observation" could not be substantiated by interviews. Again, if cable tension limits were exceeded, NSRS Report I-85-06-WBN covers this circumstance.
4. Employee Concern IN-86-266-X09 could not be substantiated by interviews; however, NSRS Report I-85-06-WBN would also envelope this problem in regard to any potential tension damage to a cable during a cable pull.

B. Recommendations

None.

Note: Corrective action measures which will be taken to correct or resolve cable pulling findings in NSRS Report I-85-06-WBN will also resolve all referenced employee concerns in this report.

NRC

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE : NOV 4 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-460-WBN

Subject DRAWING CONTROL

Concern No. IN-86-108-001

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached
 recommendations by 12/2/85. Should you have any questions, please
 contact J. J. Knightly at telephone 3839-WBN.

Recommend Reportability Determination: Yes No X

Original signed by
M. S. Kidd
 Director, NSRS/Designee

JJK:LAO
 Attachment
 cc (Attachment):
 H. N. Culver, W12A19 C-K
 QTC/ERT, Watts Bar Nuclear Plant
 W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

From: _____

Date: _____

I hereby acknowledge receipt of NSRS Report No. I-85-460-WBN
 Subject DRAWING CONTROL for action/disposition.



0079U

Signature

Date

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-460-WBN
EMPLOYEE CONCERN IN-86-108-001
MILESTONE 6

SUBJECT: DRAWING CONTROL

DATES OF INVESTIGATION: October 15-25, 1985

INVESTIGATOR: John Knightly 11/1/85
J. J. Knightly Date

REVIEWED BY: [Signature] 11/1/85
F. B. Border Date

APPROVED BY: [Signature] 11/1/85
M. A. Harrison Date

I. BACKGROUND

The Nuclear Safety Review Staff (NSRS) investigated employee concern IN-86-108-001 which Quality Technology Company (QTC) had identified during the Watts Bar Employee Concern Program. The concern was worded as follows:

CI has been unofficially informed that the latest drawings on all TVA nuclear power plant sites are not, in the majority of instances, the latest drawings at offsite TVA administrative offices/departments, including a computer print-out that does not reflect the current drawing revision. This can, and does, cause design, modification, and/or repair problems. Nuclear Power. CI has no more information.

II. SCOPE

NSRS has reviewed drawing control requirements, implementing instructions, drawing listings, recent audit findings concerning this subject, and status reports and correspondence from the F&E Configuration Control Task Force and Drawing Management System Subtask Group. Additionally, several individuals responsible for WBN design, maintenance of current drawing revisions, performance of WBN modifications, and quality assurance verification of these activities have been contacted to discuss effectiveness of the drawing control process as it relates to the employee's concern.

III. SUMMARY OF FINDINGS

A. Applicable Requirements and Commitments

1. 10CFR50, Appendix B - Document control measures shall assure that documents, including changes, "are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed."
2. Topical Report TVA-TR-75-1, Revision 8, Paragraph 17.1.64 - "Provisions shall be established, delineated, and executed to preclude the use of obsolete or superseded documents at locations where the prescribed activities are being performed. . . . An updated document list or equivalent shall exist to assure that obsolete or superseded documents are replaced in a timely manner by updated applicable document revisions."
3. Nuclear Quality Assurance Manual (NQAM), Section 2.1, December 31, 1984 - "A controlled file of System Configuration Control Drawing List (SCCDL) and other Configuration Control (CC) drawings (as required) shall be maintained in the Drawing Control Center (DCC). A system to control usage and distribution of drawings shall be established. . . ." Section 2.2 - The DCC "updates a drawing status program. This would be the Drawing Management System (DMS) for all plants. . . . Maintains the master file of current revision level as-constructed drawings and unimplemented as-designed drawings."

4. Watts Bar Nuclear Plant Administrative Instruction AI-4.3, "Drawing Control for Unlicensed Units."
5. Watts Bar Nuclear Plant Administrative Instruction AI-8.5, "Control of Modification Work on Transferred Systems Before Unit Licensing."
6. Watts Bar Nuclear Plant Quality Control Instruction QCI-1.25, "Control of As-Constructed Drawings."
7. Audits, reviews, and reports as follow.
 - a. TVA Operations and Construction Quality Assurance Branches Joint Audit Report JA-8300-01, dated April 4-14, 1983, Subject: Equipment Turnover and Configuration Control. "Existing equipment transfer/configuration control process at WBN and BLN is adequate, but considerable programmatic improvements are needed to clarify the program and make it more effective."
 - b. Corrective Action Report WB-CAR-84-41 dated August 30, 1984 reported the failure of Drawing Control Center to have the most current revision levels of all as-constructed drawings in accordance with the requirements of AI-4.3. Root cause was identified as failure of CONST to provide the latest as-constructed revision. The CAR was closed October 1984 with the comment that the drawings would be provided by CONST to NUC PR, and that NUC PR would verify revision level.
 - c. WBN Nonconforming Condition Report (NCR) W-205-F dated November 20, 1984 reported failure to depict actual plant configuration with the as-constructed drawings. The NCR was closed April 1985 following evaluations and corrective actions on all identified discrepancies. Additional information concerning this NCR is included in section B.1.

B. Findings

1. Configuration Control

An overall purpose of the drawing management activities by DE, DC, and NUC PR is to achieve control of current drawings which accurately depict actual configuration of plant structures, systems, and components. Examples at WBN of numerous configuration problems are documented in NCR W-205-F (11/20/84) which resulted from NUC PR-CONST-EN DES task team walkdowns of the residual heat removal, containment spray, component cooling, safety injection, and emergency diesel generator systems. The configuration discrepancies identified in NCR W-205-F have been evaluated as corrected, and the NCR was closed April 1985. Individuals interviewed from the Watts Bar design, drawing control, and quality assurance organizations commented that configuration problems remain to be corrected at WBN but probably to a lesser extent than other TVA plants. In response to EN DES and NUC PR Joint Audit Report JA 8100-6 concerning configuration deficiencies at the Browns Ferry Nuclear Plant, the P&E Configuration Control Task Force (CCTF) was formed in June 1983 and was promptly expanded to assess problems and propose solutions at all TVA nuclear sites. WBN representation is included in this effort.

2. Drawing Revision Control

As of September 1985, approximately 30,000 drawings had been transferred from WBN OC to WBN NUC PR. The supervisor of the OC DCU estimated that over 90 percent of these drawings were statused as being constructed as designed; i.e., constructed to the particular drawing revision in effect at the time of transfer. As-designed drawing distribution is made by OE to the OE Master File and other designated files, and the as-constructed status of these drawings is identified on the Drawing Management System (DMS) by OC in accordance with WBNP-QCI-1.25. The OC and NUC PR document control supervisors stated that the DMS statusing was accomplished. A spot check of the DMS printouts indicated that the statusing symbols were in place. As estimated 2,000-3,000 drawings (6-10 percent of the total) have FCNs, ECNs, or other changes outstanding. For these drawings, differences would be expected between the marked-up WBN drawings and those located offsite. To correct this, WBN NUC PR has completed plans for onsite microfilming and OE distribution of the drawings received from OC (memorandum from D. W. Wilson to J. W. Coan dated September 19, 1985, "Watts Bar Nuclear Plant - Microfilm Watts Bar As-Constructed Mylars at Site" (T04 850904 802). The distribution of these drawings along with day-to-day filming and distribution thereafter is to help assure identical drawings at WBN and all offsite offices.

3. Computer Statusing System

Computer printouts for drawing control available in the Drawing and Vendor Manual Unit (D&VMU) include: (1) the TVA Drawing Management System (DMS) batch listings; and, (2) the Wang (previously Jacquard) Drawing List maintained by WBN Site Services. The DMS is F&E's online computer system used to record and retrieve drawing information for the active TVA nuclear projects. The system is primarily used to record and retrieve general drawing issue/revision information for both TVA and vendor-engineered drawings, as-constructed status/revision information, and as-constructed drawing distribution. Data is entered into the system online by OE, OC, and NUC PR and can be retrieved online or reported in the batch listings. The construction status on DMS is maintained by OC for the drawings controlled by OC up to transfer and by NUC PR for drawings controlled by NUC PR after transfer. In their report dated June 21, 1985, quality control checks by OE and QA of the WBN revision levels for as-designed drawings identified a total of 7 revision-level errors on the DMS listing from a randomly selected sample of 386 drawings issued to WBN during the preceding month. This was an error rate of 1.8 percent. A spot check of entries in the Wang listing did not identify any revision-level differences from the DMS listing. The Wang (previously Jacquard) Drawing List is a tracking system started by WBN CONST and now administered by NUC PR. Its purpose is to manage in a convenient way the various changes from as-designed drawings and to handle additional data not included in the DMS such as section work assignments. The convenience of the Wang list of 4,709 drawing entries (list dated October 15, 1985) was apparent when compared to the 100,000 drawings on the DMS list.

4. Drawing Revision Effect on Modifications

Discussions with Modifications, Site Services, and Quality Assurance personnel indicated considerable confidence in the WBN drawing revision controls as they relate to the process for accomplishing modifications. In accordance with WBN AI-8.5, all modification work on transferred equipment or structures is performed according to an approved workplan which specifies the applicable drawings covered by the plan. For ECNs, the drawings included in a workplan should be the revision level issued under the ECN. The organization assigned to accomplish the work for an ECN should not necessarily receive "the latest revision" but should receive the appropriate revision for the work to be performed. This process appears to be working satisfactorily. No special problems related to drawing revisions were identified.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Although the accuracy of drawings relative to the as-constructed status of the plant is a concern at all TVA nuclear sites, the specific concerns of the employee relative to drawing revision controls and computer statusing are not substantiated. NCRs and audit deviations have been directed toward inaccuracies of the drawings relative to as-constructed plant configuration rather than to drawing revisions or the computer statusing systems. At WBN there is not evidence of extensive drawing revision problems or of extensive inaccuracies with the computer printouts for drawings. Adverse effects on design or modifications were not identified, and personnel in these areas expressed considerable confidence in the drawing control and workplan processes.

B. Recommendations

None.

NER

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
DATE : **NOV 4 1985**
SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-360-WBN

Subject PERFORMANCE OF UNAPPROVED WORK

Concern No. IN-85-847-006

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached

recommendations by November 25, 1985. Should you have any

questions, please contact P. C. Mann at telephone 3828-WBN.

Recommend Reportability Determination: Yes No

Original signed by
M. S. Kidd

Director, NSRS/Designee

PCM:JTH
Attachment
cc (Attachment):
H. N. Culver, W12A19 C-K
QTC/ERT, Watts Bar Nuclear Plant
W. F. Willis, E12B16 C-K (4)

--Copy and Return--

To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
From: _____
Date: _____

I hereby acknowledge receipt of NSRS Report No. I-85-360-WBN
Subject PERFORMANCE OF UNAPPROVED WORK for action/disposition.

Signature Date

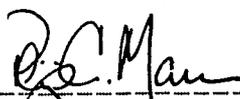


TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-360-WBN
EMPLOYEE CONCERN IN-85-847-006
MILESTONE 1 - FUEL LOAD

SUBJECT: PERFORMANCE OF UNAPPROVED WORK

DATES OF INVESTIGATION: September 23-26, 1985

LEAD INVESTIGATOR:



P. C. Mann

10/28/85
Date

REVIEWED BY:



P. R. Washer

10/29/85
Date

APPROVED BY:



M. A. Harrison

10/29/85
Date

BACKGROUND

NSRS has investigated employee concern IN-85-847-006 which Quality Technology Company identified during the Watts Bar Employee Concern Program. The concern is worded: "Standard practice for craft supervision is to allow work to be performed in the field using unapproved 'bootleg' copies of work plans."

II. SCOPE

The scope of the investigation was determined from the stated concern to be: Certain craft work activities were initiated in the field prior to receiving approval from NUC PR. NSRS reviewed numerous workplans, including some that were not cited in the concern. All cited workplans involved installation of conduit, cable, smoke detectors, and conduit supports. The work involved both addition of new components and rework of existing components. The majority of the work was performed to satisfy requirements for additional fire protection/detection capabilities as specified by Appendix R of 10CFR50.

The scope of the concern is similar to that identified in concern IN-85-046-002 which was investigated by WBN Construction with a response provided on September 17, 1985. The previous concern was substantiated by the line organization.

SUMMARY OF FINDINGS

Based upon review of the applicable documents and interviews with the personnel responsible for these documents, NSRS has substantiated the identified concern. Following are the details that led to the investigation result.

- A. NUC PR allows limited timeframes for performance of work which requires the deenergization of fire-protection circuits in the plant. As a result, OC personnel attempted to perform as much preliminary work as possible prior to pulling the outage on the systems. This preliminary work included procuring material, installing concrete anchors, bending conduit, and welding conduit-support structural members.
- B. The NUC PR signature approval of the workplan constitutes an agreement that the described work is necessary and has been properly scoped and is authorized. NUC PR approval to actually start work is always required and is accomplished through coordination with the shift engineer, independent of the formal review and approval of the workplan, since the shift engineer is responsible for all work affecting plant status. However, the unapproved work could be accomplished without the knowledge of the shift engineer since approved workplans are being worked in the same plant areas.
- C. Final verification and acceptance of any work controlled by a workplan is not accomplished until the fully approved workplan has been transmitted to the field.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The concern was substantiated during interviews with responsible line management who acknowledged that certain preliminary work was performed prior to receipt of the NUC PR-approved workplan. No workplans were identified that had been performed prior to approval by responsible OC engineers and workplan coordinators. No conditions adverse to quality were identified as a result of performing work unapproved by NUC PR.

Recommendations

I-65-360-WBN-01 - Workplan Approval Prior to Starting Work

WBN should obtain final approval prior to beginning any work, or modify existing procedures to provide the flexibility for performing precisely identified preliminary work activities outside the power block prior to receiving all approvals.

NRC

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : Craven Crowell, Director of Information, E12A4 C-K

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE : NOV 6 1985

SUBJECT: REPORTS SUBMITTAL FOR "NUCLEAR SAFETY UPDATE"

Attached is one copy each of the following final reports of investigation or evaluation of employee concerns for your use, summarization, and publication in Nuclear Safety Update. All have been reviewed and accepted by NSRS.

<u>Concern No.</u>	<u>Investigation Performed by</u>	<u>Concern No.</u>	<u>Investigation Performed by</u>
IN-85-021-001	ERT		
IN-85-119-001	ERT		
IN-85-169-001	ERT		
IN-85-445-008	NSRS		
IN-85-824-002	ERT		
IN-85-825-002	NSRS		
IN-86-110-001	NSRS		
IN-86-190-003	NSRS		

Original Signed By
M. A. Harrison

K. W. Whitt

Attachments

Please acknowledge receipt by signing, copying, and returning this transmittal form to J. T. Huffstetler at E3B37 C-K.

Name

Date

Repo4A:B

cc: H. N. Culver, W12A19 C-K
E. R. Ennis, WBN
W. F. Willis, E12B16 C-K (4)



EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-021-001

DATE OF PREPARATION: 11-4-85

CONCERN: Hand tube benders being used on Unit 2 are required to be qualified, however, these same tube benders were used on Unit No. 1 without any qualifications.

INVESTIGATION PERFORMED BY: ERT

FINDING(S): This investigation evaluated the requirement for qualification of hand tube benders, and the use of unqualified tube benders on Unit 1. The bender qualification records (tubing and pipe) revealed that qualification began in 1977 (Ref. QCP 4.10 STI No. 47). To date, not all tube and pipe benders have been identified and qualified. TVA's stated position is that material classes (A, B, C, D) require qualified benders, and (G and H) class materials do not. However, no program exists for the control of benders used to perform bending operations for specific classes of piping subassemblies. Process specification G29M 4.M.2.1 was not adhered to.

CORRECTIVE ACTION(S) NCR 6276 was written to address and document this concern. The correction method proposed will consist of an OE recommended program to evaluate instrument pipe and tubing benders on Unit 1 to ensure that installations adequately comply with G-29 process specification 4.M.2.1. This program is currently being organized by OE and will be implemented by the site upon disposition of the NCR.

CLOSURE STATEMENT: This concern was substantiated.

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Acting Site Director, Watts Bar Nuclear Plant
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K
DATE : **OCT 30 1985**
SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : IN-85-021-001
SUBJECT : TUBE BENDING
CONCERN NO.: IN-85-021-001

(X) ACCEPT () REJECT

Response was coordinated with QTC Investigator R. Chappell. Total agreement regarding chrome-plating of bending shoes was not reached, however NSRS and QTC will concur with the response as stated, acknowledging that chrome-plating is recommended, but not absolutely required, by GCS G-29C.

Original signed by
M. S. Kidd
K. W. Whitt

cc: H. N. Culver, W12A19 C-K
W. F. Willis, E12B16 C-K (4)
QTC/ERT, CONST-WBN--For response to employee.

0062U



CONCERN NO. IN-85-021-001

NCR 6276 was written to address and document this concern. The correction method proposed will consist of an OE recommended program to evaluate instrument pipe and tubing bends on unit 1 to ensure that installations adequately comply with G-29 process specification 4.M.2.1. This program is currently being organized by OE and will be implemented by the site upon disposition of the NCR.

Finding 1:

This finding does not cite the use of bending equipment that cannot be located or traced to a qualification record, but it does note the fact that 41 benders are missing. This finding reflects an accountability and record keeping problem rather than a specific quality problem. However, NCR 6276 specifies a correction method for the potential use of these missing benders on previous installations. This includes not only bending equipment that has since been identified and qualified but also includes equipment that can no longer be accounted for. OE has developed a comprehensive sampling program to establish the acceptability of all unit 1 bends based on design requirements regardless of their origin. The disposition of the nonconformance report will reflect the results of the sampling program. Also NCR 6275 addresses the necessary modifications to site procedures to ensure adequate control of bending equipment and prevent future concerns regarding bending equipment management.

Finding 2 and 4(A):

Bending operations performed on TVA safety classes A, B, C, and D pipe and tubing are considered QA and as such must meet the applicable ASME Code requirements. Construction Specification G-29 process specification 4.M.2.1 designates the applicable ASME Code requirements. Bending operations on TVA safety classes G and H are not governed by the ASME Code and are not required to be performed or documented explicitly in accordance with Construction Specification G-29. Therefore an unqualified and/or unidentified bender may be used on TVA classes G and H pipe or tubing of any material.

Construction Specification G-29, Process Specification 4.M.2.1 paragraph 2.5.4 also states that "tools used in bending stainless steel shall be used exclusively to bend stainless steel". Consistent with this requirement past practice has been to qualify and identify bending equipment used exclusively on stainless steel. Benders used on non-QA (classes G and H) bends are not required to be qualified or identified. Therefore these benders are not uniquely identified. The method used for distinguishing equipment used exclusively to bend stainless steel from that used in non-QA applications therefore led to this finding, which is in itself not a specific quality problem. However, the correction method for NCR 6275 will provide site procedure revisions (1) to describe color coding and identification of bending equipment for specific applications and (2) to describe a surveillance method to ensure that qualified and uniquely identified bending equipment is used exclusively on stainless steel.

Finding 3(A):

CF 186 is indeed an invalid process and was erroneously reported to the ERT investigator as the proper cold forming qualification record for bender ID No. 298.

Bender ID No. 298 is a qualified bender for 1/2" schedule 80 stainless steel pipe as substantiated by CF-190. The situation cited of bender ID No. 298 which was used to bend 1/2" schedule 80 stainless steel pipe is, therefore, the proper application of this bending equipment.

However, in accordance with the correction method of NCR 6275 site procedures will be revised to initiate a surveillance method to provide additional control and to ensure the continued proper use of bending equipment. In addition IEU-A will commit to reviewing all unit 2 vaulted documentation to ensure reference to correct bender qualification processes. Action required to ensure proper documentation of unit 1 bending activities is addressed in Concern Number IN-85-824-002 Supplement A.

Finding 3(B) Reference response to Finding 2, 4(A) and 4(B):

Further discussion with ERT personnel established that both radius blocks in question are in fact marked "Parker" and are not site fabricated.

Current procedures do not require unique identification of all benders. Investigations indicate that these two bending shoes (Radius Blocks) were not used on any QA applications. These shoes have now been removed from the field and placed under engineering control.

Future control of bending equipment will be handled as specified in the response to Findings 2 and 4(A).

Finding 3(C):

This finding does not cite a case where there was an incorrect entry on the bender usage list (BUL) due to its location in relation to the location of the bending operation. However, the correction method of NCR 6275 will provide revisions to site procedures requiring a surveillance program to ensure that the BUL is handled in accordance with QCI 3.13-5 requirements and is kept in the bending area. Affected craft personnel will be retrained in the requirements of the revised procedures.

Finding 4(B):

This finding is not substantiated by construction specification G-29 which states "To alleviate the possibility of galling when bending stainless steel it is recommended that tools and formers be chrome plated".

Finding 4(B) continued:

When procurement of new bending equipment is necessary, an attempt is made to purchase tools and formers that are chrome plated, however, some required equipment is not available from the vendor in a plated condition. Also special site fabricated equipment is not plated.

Since construction specification G-29 does not require bending tools to be plated but merely recommends that they be plated when used on stainless steel, the site is not required to make special arrangements to have them plated. A request from OC for further clarification of this concern resulted in the issue of a memo from J. W. Coan to Guenter Wadewitz (B45 850925 253) reemphasizing OE's commitment to the statements made in Process Specification G-29 (see attached memos). Also the justification for not requiring plated bending equipment is reinforced by G-29 process specification 4.M.4.1 which specifies the exterior surface cleanliness requirements and acceptance criteria for stainless steel pipe and tubing. Any further discussion of this issue should be directed to OE.

Finding 5:

This finding is addressed by the correction methods for both NCR 6275 and NCR 6276. NCR 6275 specifies a correction method for the potential past use of an invalid cold forming qualification record. This correction method will consist of an OE recommended program to evaluate all instrumentation pipe and tubing bends in unit 1 to ensure their adequate compliance with G-29 requirements.

There have been documentation errors in the recording of cold forming qualification record numbers on some unit 2 subassemblies, however, there is nothing to suggest that unqualified bends were made on unit 2. Also the correction method for NCR 6276 will require OE to evaluate some specific invalid cold forming qualification records and to determine their adequacy. Most of the invalid qualification records were deemed invalid due to very slight discrepancies in wall thickness and ovality. OE has expressed a high level of confidence in their ability to accept these qualifications. The correction method for NCR 6275 will provide site procedure changes to ensure adequate control of bending equipment.

Listed below is an explanation of the alleged procedure deficiencies associated with specific subassemblies.

<u>Subassembly</u>	<u>Date Bought</u>	<u>Procedure</u>	<u>Deficiency</u>
2-032-ALA	01-28-85	CF-129	Min. Wall not acceptable
2-032-ALA	01-28-85	CF-132	Min. Wall not acceptable
2-032-ALA	01-28-85	CF-131	Min. Wall not acceptable
2-068-L062-03	07-09-85	CF-129	Min. Wall not acceptable
1-062-L348A-09	02-29-84	CF-132	Min. Wall not acceptable

Concern No. IN-85-021-001 continued

Finding 5 continued:

The findings listed on the previous page are common in nature. In each case the procedure number cited was, in fact, not a valid qualification for the bending equipment used, but was referenced on documentation for the subassembly. Further investigation of weld maps, bender usage lists, and QC documentation (QCP 3.11-2 Attachment B) reveals that these procedure numbers (CF-129, CF-131, and CF-132) were inadvertently listed in addition to valid procedure numbers and qualified bender ID numbers which were used in the fabrication of each subassembly. In each case the valid procedure that supersedes the invalid procedure is listed alongside the invalid procedure as if two procedures were used for the same type of bend. The procedures CF-129, CF-131, and CF-132 were deemed invalid due to minor deficiencies in the original test results and therefore the bending process was requalified and new procedure numbers assigned. In addition, procedures CF-129, CF-131, and CF-132 have been sent to OE for evaluation and possible approval. The unnecessary procedure numbers will be deleted from the identified documents and final disposition of the questionable bend procedures will be in accordance with NCR 6276.

Listed below is a summary of the invalid procedure numbers and the valid procedure numbers which qualified the benders used in fabrication of each subassembly.

<u>Subassembly</u>	<u>Invalid Procedure</u>	<u>Valid Procedure</u>	<u>Qualified Bender ID</u>
2-032-AL-A	CF-129	CF-179	I-146
2-032-AL-A	CF-132	CF-180	I-144
2-032-AL-A	CF-131	CF-180	I-144
2-068-L062-03	CF-129	CF-179	I-159
1-062-L348A-09	CF-132	CF-180	I-131

All bends on the subassemblies in question can be traced to a qualified bender (i.e. a bender which has been certified by a valid cold forming qualification). Therefore, OC feels that these installations are in accordance with Design, Quality, and Safety requirements. Documentation will be corrected in accordance with WBNP QCI 1.08 "Quality Assurance Records". Corrective action will be taken as detailed in NCR 6275 to prevent future errors in recording of applicable information on fabrication and inspection documents.

Concern No. IN-85-021-001 continued

Finding: 2-003-L382-01 11-16-84 CF-186 Ovality Not Acceptable

A review of documentation and of the craft foreman's BUL sheet has identified No. I-91 as the bender used for bends on 1/2" schedule 80 stainless steel pipe in this subassembly. The bend procedure or cold forming process (CF-186), referenced on the bending inspection records, is not considered valid for qualification of bending and in addition applies to 1/2" schedule 40 stainless steel pipe, not schedule 80. This discrepancy resulted from an incorrect bend procedure number being entered on the records as a supporting document for the integrity of bender No. I-91.

However, this bender is qualified for production bending of 1/2" schedule 80 stainless steel pipe by cold forming process CF-190. Although this error went undetected by both engineering and quality control personnel, no conditions (adverse to quality or safety) resulted. Documentation will be corrected in accordance with WBNP QCI 1.08 "Quality Assurance Records".

Finding: 2-032-ALA 01-28-85 CF-186 Ovality Not Acceptable

Bend procedure CF-186 was referenced on bending inspection documentation as the process which qualified bender No. I-92, the actual bending tool used for bends on 1/2" schedule 40 stainless steel pipe in subassembly 2-032-ALA. Bend procedure CF-186 is not considered a valid bending procedure. Due to ovality measurements of sample bends made to qualify the procedure which were slightly higher than allowed without OE approval. This bend procedure has been forwarded to OE for evaluation and will be dispositioned as part of NCR 6276.

Finding: 2-043-L232B-02 05-13-85 CF-199 Heat No. 09118 Not Qualified

This finding indicates a specific heat number (09118) for tubing which was bent using a process that was not qualified for that heat of material. A review of documentation for subassembly 2-043-L232B-02 and weld map W-2-043-AL R3 which identifies the heat numbers of materials used in fabrication of the subassembly clearly disputes this finding and shows that no deficiency exists. Subassembly 2-043-L232B-02 contains no tubing with heat No. 09118. This is verified by QCP 3.13-6 Test 76 ("Inspection of Tubing Instrument Lines"). Further investigation determined that this subassembly was fabricated using bender No. I-149 in accordance with procedure CF-199 which is qualified specifically for the tubing used. Bends made on tubing bearing heat No. 454925 were made using bender No. I-187 in accordance with procedure No. CF-166 which is also qualified for the material used. Bending records for the installation in question are accurate and acceptable. Therefore no deficiency exists.

Concern No. IN-85-021-001 continued

Finding: 2-043-L232C-02 05-13-85 CF-199 Heat No. 09118 Not Qualified

The subassembly identifier number cited in this finding does not exist. Therefore, the finding can not be addressed. ERT investigator, Ray Chappell, was contacted by OC on August 23, 1985 for clarification. Mr. Chappell was unable to provide any further information regarding this detail and informed OC to disregard the finding.

Finding: 1-062-L263B-01 02-18-84 CF-144 Min. No. of Bends Not Made

Deficient bend procedure CF-144 was referenced on the inspection record as the result of incorrectly transcribing the correct procedure number CF-194 to the final inspection document. The existing document will be corrected by the responsible engineer and quality control inspector in accordance with site procedure WBNP QCI 1.08, "Quality Assurance Records".

Findings: 2-032-AO-B 01-28-85 Bend Per Process Not Inspected
2-032-ALA 01-28-85 Bend Per Process Not Inspected

An OC review of QCP 3.11-2 Attachment B documentation for the above subassemblies revealed four (4) bend procedure numbers noted as associated with particular bender ID numbers on the line entry marked "Bender Number(s) for Bend(s) used in Subassembly". These numbers were not listed on the inspection checklist under the heading marked "Process No." This column of the checklist indicates to the inspector which bending processes were used and require inspection. The additional bend procedure numbers noted are in fact associated with the particular bending tools that were used in the fabrication of these subassemblies. However, they should be considered unnecessary information. Although no quality control requirements were violated, the procedure numbers not applicable to these subassemblies will be removed from the inspection document in accordance with WBNP QCI 1.08 "Quality Assurance Records".

Finding 6:

NCR 6275 and NCR 6276 address this concern. The correction method of NCR 6275 specifies site procedure changes that will require a weekly surveillance of (1) bending operations, (2) use of the BUL, and (3) an examination of bending equipment. This surveillance program would assign responsibility for a physical condition verification of bending equipment, and also document the disposition of any lost or damaged equipment.

The correction method for NCR 6276 will consist of an OE recommended program to evaluate instrument pipe and tubing bends on unit 1 to ensure that installations adequately comply with G-29 specifications.

Concern No. IN-85-021-001 continued

Finding 6 continued:

We have no indications that programmatic provisions for periodic requalification of benders is necessary. At both SQN and WBN, there have been no identified instances of worn or out-of-adjustment bending equipment causing unacceptable quality bends. In fact at SQN, the initial inspection instruction written in 1977 to implement G-29 specifications required that a sample bend inspection be performed quarterly on each qualified bender. After three years of sample bend inspections in this manner no problems were encountered and the sample bend inspection performance period was extended to an annual basis.

Since that time, no out-of-tolerance problems were encountered. BLN construction personnel were also consulted on this matter. BLN reported that they had experienced no problems with out-of-tolerance bends after an original bender qualification. Based on this past experience, we feel that the new procedure revisions requiring a surveillance program (to verify the physical condition of bending equipment on a weekly basis) will ensure continued bend quality.

The correction method for NCR 6275 will also involve a revision to QCI 3.11-2 to require additional inspection of bends on completed subassemblies.

Finding 7:

The correction method for NCR 6275 will require a procedure revision to QCI 3.13-5. This procedure revision will delete the requirement of having craft personnel record both the cold forming qualification record number and the bend equipment unique identifier on the BUL. In addition, it is recognized that in the past the bending process might not have been qualified for each material heat on which it was used. This resulted in the referencing of invalid cold forming qualification records on past documentation. The pending revision to QCI 3.13-5 requires that all heat numbers be recorded by the craft for each bending process used. Verification of the acceptability of the bending process for each material heat number listed will become the responsibility of engineering. With these procedure changes, there will be no need to list heat numbers on the Test 52 attachment B. The statement concerning unqualified material being used is absolutely unsubstantiated. QCP 3.11-2 paragraph 6.2.2 requires that inspection "verify that the correct material was used in the instrument line installation". QCP 3.13-6 paragraph 6.1.2 requires that the inspector "verifies the heat numbers on the tubing installed correspond to the heat numbers specified on the compression fitting map and the heat number is of the proper type, grade, and TVA class". QCI 4.03 Attachment C "Fitup Inspection" requires a verification of heat numbers of the two features to be joined. These procedures are being followed and provide definite assurance that the correct material is being used. Based on these facts we ascertain that this allegation is untrue and unsubstantiated.

Concern No. IN-85-021-001 continued

Finding 7 continued:

Procedure revisions to QCP 3.11-2 in accordance with the correction method of NCR 6275 will address and resolve the problems of documentation with erroneous information being vaulted. In addition OC will attempt to qualify three separate heats of each material, thereby qualifying the process for all heats of like material. This effort should help eliminate errors associated with qualifications made on only one heat.

Conclusion:

There are many tests that also indirectly serve to verify the quality of field bends such as the individual line inspections (Test 52), individual hydrostatic tests, cleanliness (swipe) tests, pre-op testing, cold hydro and hot functional testing. Past history with SQN and unit 1 WBN has not revealed even the slightest problem with field produced bends from a functional standpoint.

It is true that the initial WBN bending program did not provide adequate record keeping. However, there is very little, if anything, to suggest that there is an actual quality problem with any field bends. Many of the allegations made appear serious until one realizes that there are valid qualified procedures for all pipe and tubing that is normally bent. In the great majority of cases when the words "unqualified procedure" was used, it simply means that someone wrote down an unqualified procedure number on a document or piece of equipment, not that there is in fact no valid procedure to perform the bends in question.

The ERT investigation did not reveal a single bend in place in the field that would not satisfy the requirements of a qualified bend. However, it is felt that the correction methods of NCR 6275 and NCR 6276 will provide the necessary changes to ensure adequate control of bending equipment and documentation and to prevent future concerns regarding bending program management.

Principally prepared by Charles Wagner, extension 468.

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

AUG 14 1985

Handle	Noted
Whitt	
✓ MAH	
LML	
BJN	
WCS	
JTH	
IRG	
ARG	
✓ JTH	

TO : H. G. Parris, Manager of Power & Engineering (Nuclear), MR6N011 B-C
 FROM : K. W. Whitt, Director, Nuclear Safety Review Staff, E3A8 C-K
 DATE : August 8, 1985
 SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. IN-85-021-001

Subject TUBE BENDER

Concern No. IN-85-021-001

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by August 23, 1985. Should you have any questions, please contact M. A. Harrison at telephone 6328.

Recommend Reportability Determination: Yes X No

R. M. Pierce, 9-169 SP-K
 cc: W. F. Willis, E12B16 C-K (S)
 QTC-ERT, CONST, Watts Bar

M. A. Harrison
 Director, NSRS/Designee

 --Copy and Return--

To: K. W. Whitt, Director of Nuclear Safety Review Staff, E7B31 C-K
 From: H. G. Parris, Manager of Power and Engineering (Nuclear), MR6N11 B-C
 Date: 8-13-85

I hereby acknowledge receipt of NSRS Report No. IN-85-021-001

Subject 8-13-85

for action/disposition.

Jeanne May
 Signature

8-13-85
 Date

(Please copy entire page for return)



NSRS RECOMMENDATIONS: IN-85-021-001

1. Q-85-021-001-01 "Tube Bending Control Program"

WBN CONST should determine the corrective actions necessary to regain control of tube bending processes. Notify NSRS of the intended program improvements.

2. Q-85-021-001-02 "Indeterminate Tube Installation"

WBN CONST should initiate a NCR identifying that tubing fabrication/ installation did not meet specification requirements. The NCR should be evaluated for reportability to the NRC.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 1 of 6

CONCERN: Hand tube benders being used on Unit No. 2 are required to be qualified, however these same tube benders were used on Unit No. 1 without any qualifications.

INVESTIGATION

PERFORMED BY: R.D. Chappell

DETAILS:

PERSONNEL CONTACTED:

Confidential

DOCUMENTS REVIEWED:

QCP - 3.13-6 R/O	Process Specification G29M4.M.2.1 R/6
QCI - 3.13-6 R/O	NCR 3864R R/O
QCP - 4.10-5 R/1	NCR 5735 R/O
QCI - 3.13-5 R/3	NCR 4633 R/O, R/1, R/2
QCI - 1.12-7 R/1	Memorandum Dated Sept. 20, 1984
QCP - 3.11-2 R/5	to J. C. Standifer
QCP - 3.11 R/14	

This investigation evaluated the requirement for qualification of hand tube benders, and the use of unqualified tube benders on Unit 1. The bender qualification records (tubing and pipe) revealed that qualification began in 1977 (Ref. QCP 4.10 STI No. 47). To date, not all tube and pipe benders have been identified and qualified. TVA's stated position is that material classes (A, B, C, D) require qualified benders, and (G and H) class materials do not. However no program exists for the control of benders used to perform bending operations for specific classes of piping subassemblies.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 2 of 6

DETAILS: (cont)

FINDINGS:

- 1) A review of the "Bender Identification Log" identified 45 benders that have identification numbers assigned. These benders cannot be located, or traced to a qualification record that references their identification number. Without the qualification records, the type, model, manufacturer, and qualified process cannot be determined. In an attempt to retrieve and identify the missing benders a survey was taken of all craft performing bending operations. Four (4) benders were located reducing the total number missing to 41.
- 2) The hand tube benders in the tool crib that are issued to the craft on a daily basis were examined for proper identification. Seven (7) of these benders were not identified, three (3) were 3/8 inch, and four (4) were 1/2 inch.
- 3) On 7/23/85 a walkdown was conducted to verify in-process bending activities involving two (2) Parker pipe benders. ERT was informed that no hand tube bending was being performed at the time of the walkdown. The following deficiencies were noted:
 - A) Parker, model 632, Serial No. 1477, bender ID No. 298 was being used IAW qualification procedure CF186, to bend 1/2 inch SCH. 80 stainless steel pipe. CF186 was determined to be an invalid process.
 - B) Parker (model number not legible) has two (2) shoes marked 18 x 3 3/8, and 24 x 4 1/2 respectively. Neither shoe were stamped with identification/qualification numbers. In addition, the shoe marked 18 x 3 3/8 is made from carbon steel plate, and appears to be site fabricated, and is not identified with an "I" or "CF" number, and "do not use on stainless steel".

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 3 of 6

DETAILS: (cont)

- C) QCI 3.13-5 R/3 requires the bender usage list (BUL) to be kept in the bender area while bending operations are being performed. The ERT observed craft bending 1/2 inch stainless steel pipe in the turbine building utilizing a Parker bender IAW procedure CF190. The material was to be installed in the reactor building. The (BUL) was located at the craft's tool box a couple of levels down in the auxiliary building. By not having the (BUL) in the bending area, the potential exists for incorrect entries on the (BUL) where multiple bends and processes are required.
- 4) Process specification G29M 4.M.2.1 R/6 paragraph 2.5.4 reads in part....."tools used in bending stainless steel shall be used exclusively to bend stainless steel. To alleviate the possibility of galling when bending stainless steel, it is recommended that tools and formers be chrome plated."
- A) Hand tube benders are not controlled to assure usage on stainless steel only. Hand tube benders are used on stainless, copper, and in a few cases carbon steel.
- B) Some chrome plated bending shoes have the chrome worn off with usage. Site fabricated bending shoes are made from carbon steel plate and are not chrome plated. Many of the forming blocks are unplated carbon steel and are gouged from use. The potential exists for galling and contamination (carbon impregnation) when the stainless steel pipe is sliding through the forming blocks and bending shoes.
- 5) QCI 1.12-7 R/O paragraph 7.3, requires the qualified procedure number ("CF-xxxx") be stamped on each qualified bending shoe by the RQC. A review of all "CF" procedures by IEU, determined 67 bending procedures for various reasons; ie. min. wall, ovality, unacceptable, etc; to be invalid. As a result of not being able to identify and control the use of numerous benders, and inadequate record keeping from the beginning of the bender identification and qualification program, the ERT was unable to determine if, and how many times an invalid procedure was used. Allowing invalid "CF" numbers to remain stamped on bending shoes provides a potential for invalid bending procedures to be used and referenced.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 4 of 6

DETAILS: (cont)

Selected vaulted records for Q systems, 003, 032, 043, 062, 063, and 068 were reviewed with the following results:

<u>ASSY NO.</u>	<u>DATE</u>	<u>PROCEDURE</u>	<u>PROCEDURE DEFICIENCY</u>
2-032-ALA	1/28/85	CF186	Ovality not acceptable
2-003-L382-01	11/16/84	CF186	Ovality not acceptable
2-032-ALA	1/28/85	CF129	Minimum wall not acceptable
2-032-ALA	1/28/85	CF132	Minimum wall not acceptable
2-032-ALA	1/28/85	CF131	Minimum wall not acceptable
2-043-L232B-02	5/13/85	CF199	Heat No. 09118 not qualified
2-043-L232C-02	5/13/85	CF199	Heat No. 09118 not qualified
2-068-L062-03	7/9/85	CF129	Minimum wall not acceptable
1-062-L348A-09	2/29/84	CF132	Minimum wall not acceptable
1-062-L263B-01	2/18/84	CF144	Minimum no. of bends not made
2-032-A0-B	1/28/85		1 bend per process not inspected
2-032-ALA	1/28/85		1 bend per process not inspected

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 5 of 6

DETAILS: (cont)

The above referenced bending procedures were not acceptable, but were used and processed through the system as acceptable. The use of unacceptable bending procedures could have resulted from using an invalid procedure number that was stamped on the bending shoe, or the craft are not utilizing the updated qualified bending procedures list identified in attachment "B" of process specification G29M 4.M.2.1 R/6. Attachment "B" is continually updated by IEU, but is not being followed.

Since QC is not involved during the fabrication phase of the piping subassembly, no verification of qualified bending procedures, or benders is performed until the final documentation review. This review is not adequately identifying nonconformances.

- 6) Process specification G29M 4.M.2.1 R/6 paragraph 2.5 reads in part.... "tools used for bending shall be controlled in a manner appropriate to their application so as to ensure reproducibility of bend geometry."

Many hand benders are issued to various craft personnel, and bending shoes and forming blocks are stored in the area of the pipe benders. No one has the assigned responsibility of verifying the physical condition of bending equipment. ERT located a 1/2 inch bender in a craft's tool box with a portion of the mandrel broken out, also many of the forming blocks were gouged from being clamped to the bending machines. In addition to damaged equipment being accessible for use in the work areas, there are no programmatic provisions for periodic requalification of benders. The potential exists that worn, and out of adjustment equipment may not be producing the quality of bends required. Process specification G29M 4.M.2.1 R/6 paragraph 2.2, requires all production bends to be free from cracks, buckles, wrinkles, bulges, and grooves. Section 2.7.1 defines minimum wall thickness, section 2.7.2, 2.11 minimum radius of bends, and 2.8 ovality tolerances. The ERT was informed that the primary reason for qualifying benders and procedures was to control the process and hold the amount of inspection to a minimum. QCP 3.11-2 R/5 paragraphs 6.2.3.1, 6.2.3.2 requires a minimum visual inspection of one bend for each process used, and ovality is only required to be inspected when a line exceeds 1/2 inch nominal diameter. Considering the lack of control regarding benders and procedures, and the possibility of numerous bends existing with the same procedure being used on the same piping assembly. ERT determined the amount of inspection now being performed on piping subassemblies to be inadequate.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-021-001

Page 6 of 6

DETAILS: (cont)

- 7) Since the craft are not required to enter the heat numbers of materials on the "bender usage sheet" and no programmatic requirement exists for entering the heat numbers on the 52 test sheet, unqualified material and bending procedures are being used, documented, and vaulted without being identified by engineering, and QC.

CONCLUSION:

This concern is substantiated.

This conclusion is based on the findings identified during the course of the investigation.

- * Tube benders not qualified.
- * Tube benders not controlled.
- * Tube bending procedures are being used that are not valid.
- * Process specification G29M 4.M.2.1 is not being adhered to.
- * Maintenance of bending equipment is not defined or performed.
- * QC and Engineering review of documentation is inadequate.
- * Due to the use of unqualified bending equipment and procedures the quality of past and present piping subassemblies is indeterminate.

Prepared By

Roy Chappell

7-27-85
Date

Reviewed By

Oh'New

7/27/85
Date

Report Reviewed & Accepted:

M. J. Day
NSRS
8/7/85

See Also IN 85 874-007
10/28/85

REQUEST FOR REPORTABILITY EVALUATION

FINAL

1. Request No. IN-85-021-001 (ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: _____ (Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)

Hand tube benders being used on Unit No. 2 are required to be qualified.

however, these same tube benders were used on Unit No. 1 without any qualifications.

4. Reason for Reportability: (Use supplemental sheets if necessary)
- A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.
- No _____ Yes X If Yes, Explain: Use of unqualified benders and invalid procedures renders quality of hardware indeterminate.

AND

- B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B
- No _____ Yes X If Yes, Explain: Special processes for bending pipe and tubing are not being controlled using qualified procedures as required by 10 CFR50 Appendix B, criterion IX.

OR

- C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.
- No X Yes _____ If Yes, Explain: _____

OR

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-119-001

Page 1 of 2

DATE OF PREPARATION: 11-1-85

CONCERN: Drawing 47W600 requires 1/8" per foot slope. Contrary to the above, system 68 (Reactor trip) Unit 1, 702' elevation in containment; the instrument lines laying in raceways do not have 1/8" per foot slope. Specific areas not available, but CI indicated that a tour of the elevation would provide several examples.

INVESTIGATION PERFORMED BY: ERT

FINDING(S): Sensing lines to panels 1-068-L227, and L228 were inspected at various locations between the cabinets and the root valves.

Some specific discrepancies noted were as follows:

1. Sensing Lines 1-068-L227-3, -4, -8, & 9 had an upward slope in excess of 1/2 of an inch per foot at the bend in the tubing by Az 150 degrees, elevation 702' outside crane wall.
2. There was an upward slope of 3/8 of an inch per foot on sensing line 1-068-L228-7 inside crane wall (Az 201 degrees)
3. There was an upward slope of 5/16 of an inch per foot on 1-068-L226-1 at the bend by Az 324 degrees outside crane wall.
4. Sensing Lines 1-068-L227-1, & 3 had less than 1/8 of an inch per foot slope at cabinet L227.

Additional discrepancies noted were as follows:

1. Clamps did not have full thread engagement on lines 1-068-L227-1, -4 at support FOS 596 by cabinet L227.
2. Sensing Line 1-068-L227-3 was in direct contact with support for Snubber 1-63-572.
3. There were arc strikes on sensing line 1-068-L228-7 in proximity of panel.
4. There was grey duct tape installed on sensing line 1-068-L226-6 by panel.

ERT Form Q

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-119-001

Page 2 of 2

DATE OF PREPARATION: 11-1-85

CORRECTIVE ACTION(S)

The instrument line slope problems and the additional deficiencies were identified on July 9, 1985, by NCR 6172. ECN 5846 and workplans 5320 and 5846-2 will be generated to relocate the reactor coolant flow instrumentation to reduce sensing line length and minimize maintenance requirements after fuel load. New instrument sensing lines will be installed and documented to correct slope and hanger deficiencies.

The arc strikes discovered on the subject instrument lines will be eliminated with the installation of new piping. Generally, arc strike identification and removal is handled according to WBNP-QCP-4.10-18 and is not considered a generic deficiency by OC.

The discovery of foreign material contacting stainless steel (i.e. duct tape) is similarly considered not to be a generic deficiency as Process Specification G29M 4.M.4.1 requires no specific cleaning requirements for these sensing lines. Those sensing lines that are required to be cleaned (swipe tested) are identified on cleanliness drawings and are limited to the 47W625 radiation sampling system per G29M 4.M.4.1 section 3.

NCR 6172 was termed significant by OC-QMO and NRC reportability will be reviewed by NEB-NLS.

CLOSURE STATEMENT: This concern was substantiated.

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

file copy

TO : E. R. Ennis, Acting Site Director, Watts Bar Nuclear Plant

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-k

DATE : **OCT 30 1985**

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : IN-85-119-001

SUBJECT : INSTRUMENT SENSING LINE SLOPE

CONCERN NO.: IN-85-119-001

 ACCEPT REJECT

The additional information provided in the response dated October 14, 1985, is acceptable. However, upon follow-up verification, NSRS will evaluate justification for the determination that cleanliness requirements need not be specified for stainless sense lines other than the radiation sampling system.

Please notify NSRS referencing this concern number (IN-85-119-001) when slope and hanger deficiencies have been corrected.

K. W. Whitt

 K. W. Whitt

Attachment

cc (Attachment):

H. N. Culver, W12A19 C-K
 QTC/ERT-WBN--For response to employee
 W. F. Willis, E12B16 C-K (4)



QTC CONCERN IN-85-119-001

The following response is the same as that to QTC concern PH-85-001-002 which reads:

"The instrument line slope problems and the additional deficiencies were identified on July 9, 1985, by NCR 6172. ECN 5846 and workplans 5320 and 5846-2 will be generated to relocate the reactor coolant flow instrumentation to reduce sense line length and minimize maintenance requirements after fuel load. New instrument sense lines will be installed and documented to correct all slope and hanger deficiencies as listed on Employee Concern IN-85-218-001.

The arc strikes discovered on the subject instrument lines will be eliminated with the installation of new piping. Generally, arc strike identification and removal is handled according to WBNP-QCP-4.10-18 and is not considered a generic deficiency by OC.

The discovery of foreign material contacting stainless steel (i.e. duct tape) is similarly considered not to be a generic deficiency as Process Specification G29M 4.M.4.1 requires no specific cleaning requirements for these sense lines. Those sense lines that are required to be cleaned (swipe tested) are identified on cleanliness drawings and are limited to the 47W625 radiation sampling system per G29M 4.M.4.1 section 3.

NOTE: NCR 6172 was termed significant by OC-QMO and NRC reportability will be reviewed by NEB-NLS."

Principally prepared by: Jim Cruise, NSB-B, extension 397.

q
TLR

NSRS Recommendation: IN-85-119-001

(1) Q-85-119-001-01, "Instrument Line Slope"

WBN CONST should initiate an NCR to document and resolve the specific and additional discrepancies identified in this report.



P.O. BOX 600

• SWEETWATER, TN. 37874 •

(615)365-4414

ERT INVESTIGATION REPORT

Page 1 of 2

CONCERN NO: IN-85-119-001 Revision 1

CONCERN: Drawing 47W600 requires 1/8" per foot slope. Contrary to the above, System 68 (Reactor trip) Unit 1, 702' Elevation in containment; the instrument lines laying in raceways do not have 1/8" per foot slope. Specific areas not available, but CI indicated that a tour of the elevation would provide several examples.

PERFORMED BY: Roger A. Bird

Details:

Personnel Contacted: Confidential

Reference: PH-85-001-002

Findings: The concern is substantiated. Sensing lines to panels 1-068-L226, L227, and L228 were inspected. These sensing lines were inspected at various locations between the cabinets and the root valves. The sensing lines did not meet the design criteria of 1/8" per foot negative slope.

Some specific discrepancies noted are as follows:

1. Sensing Lines 1-068-L227-3,-4,-8,& 9 have an upward slope in excess of 1/2 of an inch per foot at the bend in the tubing by Az 150 degrees, elevation 702' outside crane wall.
2. There is an upward slope of 3/8 of an inch per foot on sensing line 1-068-L228-7 inside crane wall (Az 201 degrees).
3. There is an upward slope of 5/16 of an inch per foot on 1-068-L226-1 at the bend by Az 324 degrees outside crane wall.
4. Sensing Lines 1-068-L227-1,& 3 have less than 1/8 of an inch per foot slope at cabinet L227.

CONCERN NO: IN-85-119-001

Details: (continued)

Additional discrepancies noted are as follows:

1. Clamps do not have full thread engagement on lines 1-068-L227-1, -4 at support FOS 596 by cabinet L227.
2. Sensing Line 1-068-L227-3 is in direct contact with support for Snubber 1-63-572.
3. There are arc strikes on sensing line 1-068-L228-7 in proximity of panel.
4. There is grey duct tape installed on sensing line 1-068-L226-6 by panel.

Prepared by Roger A. Bird 9-18-85
 date

Reviewed by James A. [Signature] 9-18-85
 date

Report Reviewed &
 Accepted:
[Signature]
 SSS

REQUEST FOR REPORTABILITY EVALUATION

FINAL

1. Request No. IN-85-119-001 (ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: System 68
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)
System 68 instrument sensing lines do not have 1/8" foot slope as required
by drawing 47W600

4. Reason for Reportability: (Use supplemental sheets if necessary)
A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.
No Yes If Yes, Explain: Could cause faulty instrument readings for low flow RX trips

AND

B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.
No Yes If Yes, Explain: Instrument lines were accepted by OCI's with unacceptable slopes

OR

C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.
No Yes If Yes, Explain: _____

OR

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-169-001

DATE OF PREPARATION: 10-31-85

CONCERN: 2" Class B check valve installed in a Class "A" system (system 62 Auxiliary spray) located in Unit 1 around elevation 720' Azimuth 130 at the crane wall.

INVESTIGATION PERFORMED BY: ERT

FINDING(S): Investigation determined that a Class 2 check valve, serial number MA6-24 was installed in a designated Class "A" line of system 62, chemical and volume control system. In addition the valve lacked an ASME tag, TVA class and drawing tag and the TVA system identification tag.

CORRECTIVE ACTION(S) NCR WBNMEB8523 has been written to document this significant condition adverse to quality. As part of the corrective action Kerotest, the valve manufacturer, has been contacted on upgrading the Class B valve to Class A. Verbally Kerotest has indicated that they have a 95 percent confidence that the valve can be upgraded. Therefore, TVA is proceeding to obtain from Kerotest the necessary qualifications to upgrade the subject valve. The action required to prevent recurrence will be addressed later in the failure evaluation report.

Based on being able to accomplish the above, it can be concluded that the valve in question would not have failed and would have accomplished its intended safety function. Proper tagging of the valve will occur as a portion of the NCR resolution.

CLOSURE STATEMENT: This concern was substantiated. Drawing 47W406-9, Revision 22, is the apparent cause of the nonconforming installation as it clearly calls for the Class 2 valve to be installed in a Class "A" line of system 62.

CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO: IN-85-169-001

SUBJECT: Incorrect Valve Installed

CONCERN NO: IN-85-169-001

ACCEPT

ACCEPT WITH COMMENT

REJECT


Prepared By


Reviewed By

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : K. W. Whitt, Director, Nuclear Safety Review Staff, E7B31 C-K
 FROM : R. M. Pierce, Project Manager, Watts Bar Nuclear Plant, 9-169 SB-K
 DATE : July 19, 1985
 SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR INVESTIGATION/EVALUATION

Attached is the requested response to QTC Concern No. IN-85-169-001
 (1 attachment)

If additional information is needed, contact J. D. Collins, extension 3000.


 R. M. Pierce

TO : R. M. Pierce, Project Manager, Watts Bar Nuclear Plant, 9-169 SB-K
 FROM : K. W. Whitt, Director, Nuclear Safety Review Staff, E7B31 C-K
 DATE :
 SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR INVESTIGATION/EVALUATION

I hereby acknowledge receipt of the response to
 QTC Concern No. IN 85-169-001 - 2 pages.

(Q-85-169-001-01)


 Signature

7/26/85
 Date

(Please copy entire page for return)



Report No : I-85-169-001
Subject : Incorrect Valve Installed
Concern No: IN-85-169-001

NSRS Recommendations: IN-85-169-001

1. Q-85-169-001-01 "Documenting Nonconformances"

Initiate and process nonconformance reports as required to document the following:

- a. Tagging of an ASME class valve; - NCA 8311, nameplates for components states in part, "The markings on the completed component required by NCA-8220 shall be applied to a separate nameplate attached to the component by suitable means ... the information shall be attached by a method that will not affect the structural integrity of the item."
- b. Drawing 47W406-9 revision 22; QAPP-5 states in part, "Procedures and drawings are the documents which ensure that TVA personnel accomplish work in a manner which meets all commitments and requirements." As such, it is imperative that every effort is made to ensure the correctness of those documents; NA-3251 states in part, "...The owner...shall be responsible for the proper correlation of all design specifications, including those for components of appurtenances"; NA-3252 paragraph D). The code classification of the component paragraph E) the definition of the component and piping boundaries.
- c. Incorrect installation

Response

Our investigation into the concern confirms that a Class B check valve was installed in a Class A line. Drawing 47W406-9 calls for the installation of a Class B valve. Revision 2 of the drawing called for the incorrect valve installation and the drawing has gone through numerous revisions without the error being identified and corrected.

SCR WBNMEB8523 has been written to document this significant condition adverse to quality. As part of the corrective action, Kerotest, the valve manufacturer, has been contacted on upgrading the Class B valve to Class A. Verbally Kerotest has indicated that they have a 95 percent confidence that the valve can be upgraded. Therefore, we are proceeding to obtain from Kerotest the necessary qualification to upgrade the subject valve. The root cause was the incorrect mechanical piping drawing. The action required to prevent recurrence will be addressed later in the failure evaluation report.

Based on being able to accomplish the above, it can be concluded that the valve in question would not have failed and would have accomplished its intended safety function. Proper tagging of the valve will occur as a portion of the NCR resolution.

NSRS RECOMMENDATIONS: IN-85-169-001

1. Q-85-169-001-01 "Documenting Nonconformances"

Initiate and process nonconformance reports as required to document the following:

- A) Tagging of an ASME class valve; - NCA 8311, nameplates for components states in part "The markings on the completed component required by NCA-8220 shall be applied to a separate nameplate attached to the component by suitable means... the information shall be attached by a method that will not effect the structural integrity of the item.
- B) Drawing 47W406-9 revision 22; QAPP-5 states in part "Procedures and drawings are the documents which ensure that TVA personnel accomplish work in a manner which meets all commitments and requirements. As such it is imperative that every effort is made to ensure the correctness of those documents; NA-3251 states in part "...The owner...shall be responsible for the proper correlation of all design specifications, including those for components of appurtenances; NA-3252 paragraph D) The code classification of the component paragraph E) the definition of the component and piping boundaries.
- C) Incorrect installation

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-169-001

page 1 of 2

CONCERN: 2" Class "B" check valve installed in a Class "A" system (system 62 Auxillary Spray) located in Unit 1 around elevation 720' azmuth 130' near crane wall.

INVESTIGATION

PERFORMED BY: William R. Pickering

DETAILS:

Personnel contacted: Confidential

Drawings: 47W809-1 Revision 25
47W406-12 Revision 15
47W406-4 Revision 17
47W406-10 Revision 19
47W406-9 Revision 2

Findings Substantiated:

The ERT investigator located a Class 2 check valve, serial number MA 6-24 in Unit 1, elevation 733, azmuth 104 degrees-08' installed in a designated Class A line, system 62, Chemical Volumn and Control Piping. In addition the stated valve is not identified with the ASME tag, TVA class and drawing tag and the TVA system identification tag.

Drawing 47W406-9 revision 22, is the apparent cause of the nonconforming installation as it clearly calls for that particular valve to be installed in a Class "A" line of system 62.

The ERT investigator also located a Class 2 Seal Water Injection Test Valve, serial number KZ 19-24, system tag number 2-TV-62A-572 in Unit 2, elevation 712'-06", azmuth 51 degrees is missing the ASME tag.

CONCERN NO: IN-85-169-001

DETAILS: (continued)

Recommended Correction Action: Initiate a nonconformance report for the following:

A) Tagging of an ASME class valve;- NCA 8311, nameplates for components states in part "The markings on the completed component required by NCA-8220 shall be applied to a separate nameplate attached to the component by suitable means... the information shall be attached by a method that will not effect the structural integrity of the item.

B) Drawing 47W406-9 revision 22; QAPP-5 states in part "Procedures and drawings are the documents which ensure that TVA personnel accomplish work in a manner which meets all commitments and requirements. As such it is imperative that every effort is made to ensure the correctness of those documents; NA-3251 states in part "...The owner... shall be responsible for the proper correlation of all design specifications, including those for components of appurtenances; NA-3252 paragraph D) The code classification of the component paragraph E) the definition of the component and piping boundaries.

C) Incorrect installation

Prepared by William A. Ruckelshaus 7-6-85
date

Reviewed by O. A. News 7/6/85
date

REQUEST FOR REPORTABILITY EVALUATION

FINAL

1. Request No. IN-85-169-001 (ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: CKV SN MA 6-24, SYSTEM 62, CVCS, UNIT 1
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)

A CLASS 2 CHECK VALVE S/N# MA 6-24 IS INSTALLED IN A CLASS "A" SYSTEM LINE AT ELEVATION 733' - 11' AZMUTH 104 - 08, RADIUS 40' - 09'. THE STATED VALVE ALSO LACKS ASME NAMEPLATE AND SYSTEM IDENTIFICATION TAG.

4. Reason for Reportability: (Use supplemental sheets if necessary)

A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.

No Yes If Yes, Explain: VALVE INSTALLED IS UNDER RATE FOR SYSTEM POTENTIAL; COULD RESULT IN FAILURE.

AND

B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.

No Yes If Yes, Explain: _____

OR

C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.

No Yes If Yes, Explain: DRAWING 47W406-9 HAS GONE THROUGH NUMEROUS REVISIONS, REVIEWED, AND APPROVED FOR CONSTRUCTION; HOWEVER, REMAINS INCORRECT.

OR

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.

No Yes If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.

No Yes If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CA THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by:

[Signature]
ERT Group Manager

365-4464
Phone Ext.

[Signature]
ERT Project Manager

365-4414
Phone Ext.

Acknowledgment of receipt by NSRS

[Signature]
Signed

Date 7/10/86

Time 0935

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-445-008

Page 1 of 2

DATE OF PREPARATION: 11-4-85

CONCERN: The excessive number of construction/inspection criteria makes it difficult to know the latest requirements. By this stage of the project, procedures should not require further change. (. . . EG QCP-3.14 written 8-7-78, revised 14th time 1-2-85, and QCP-1.14 is now at Rev. 16). Normal "training" method for these changes is "read & route", but this is not adequate for the larger procedures such as the one for anchor pull tests.

INVESTIGATION PERFORMED BY: TVA NSRS

FINDING(S): There is a large number of QCP procedures. Eighty-nine procedures fill approximately three volumes. However, these are required because of industry standards, design requirements, NRC regulations, and other upper-tier documents.

QCP-1.14 has been revised twice in the past year, once in 1984, and twice in 1983. Each of these changes was required by changes in the General Construction Specification G-32, which is the governing document for the Construction QCP.

No QCP-3.14 R14 was found. QCP-3.11 R14 dated 1/2/85 fits the description of the revised QCP described in the employee concern. This procedure was revised one time in 1985, once in 1984, and three times in 1983. New requirements were added in three of these cases, and the other changes were made for clarification and editorial purposes.

There are a total of 89 QCPs. 90 percent of these procedures have been revised nine times or less for the life of the project. 63 percent have been revised less than five times. In reviewing a selected QCP, it was determined that QCP-3.05 R24 was revised 25 percent of the time because of changes in the upper-tier documents, 21 percent of the time due to NRC inspection findings, 21 percent of the time to add new sections or delete old sections, and 33 percent of the time for clarification of requirements or data sheets.

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-445-008

Page 2 of 2

DATE OF PREPARATION: 11-4-85

FINDING(S) CONT:

Procedure changes require a training session in which a section supervisor instructs inspectors that are certified to that procedure. He/She or his/her representative go over the changes with a question-and-answer session at the end. Attendance at the training session is documented.

Major procedure changes (as identified by the Procedures and Training Section) require that inspectors undergo a retest for certification to the current procedure-revision level after the training session.

The "read-and-route" method of training for procedure update was used prior to 1982. The above-described method was used after 1982.

Inspectors are trained in new procedures prior to issuance of the procedures. For example, QCP-1.14 Revision 16 was issued on 7/31/85 for use. The training program for the inspectors using QCP-1.14 was held on 7/25/85.

Quality control inspectors were interviewed. Each inspector is not qualified to all inspections procedures. They are qualified only to those procedures that affect the work of their QC section; i.e., electrical, mechanical, instrumentation, etc. This limits the number and type of procedures that each inspector must be trained to perform. The four inspectors interviewed did not consider the number of inspections or changes to instructions to be excessive. The inspectors were certified to an average of 10 procedures each.

CORRECTIVE ACTION(S) None required

CLOSURE STATEMENT: This concern was not substantiated.

FINAL

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-85-445-008 _____
(ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: PROCEDURE REVISIONS _____
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)
PROCEDURES ARE STILL BEING CHANGED- SHOULD BE FEWER CHANGES AT THIS
STAGE OF THE PROJECT. "READ AND ROUTE" TRAINING METHOD IS NOT
ADEQUATE. _____
4. Reason for Reportability: (Use supplemental sheets if necessary)
- A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.
No Yes _____ If Yes, Explain: _____

- AND
- B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.
No Yes _____ If Yes, Explain: _____

- OR
- C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.
No Yes _____ If Yes, Explain: _____

- OR

FINAL

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from the performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CARRY THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by:

W.R. Rubach

ERT Group Manager

365 4478

Phone Ext.

M. M. M. M.

ERT Project Manager

365-4414

Phone Ext.

Acknowledgment of receipt by NSRS

Bruce L. Rogler

Signed

Date 11/5/85

Time _____

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-452-WBN
EMPLOYEE CONCERN IN-85-445-008
MILESTONE 1 - FUEL LOAD

SUBJECT: INSPECTION PROCEDURE REVISION AND TRAINING

DATES OF INVESTIGATION: September 24-October 16, 1985

LEAD INVESTIGATOR:



R. N. Russell

10/23/85
Date

REVIEWED BY:



G. G. Brantley

10/23/85
Date

APPROVED BY:



M. A. Harrison

10/23/85
Date

I. BACKGROUND

The employee concern as received from the ERT stated:

The excessive number of construction/inspection criteria makes it difficult to know the latest requirements. By this stage of the project, procedures should not require further change. (. . . EG QCP-3.14 written 8-7-78, revised 14th time 1-2-85, and QCP-1.14 is now at Rev. 16). Normal "training" method for these changes is "read & route", but this is not adequate for the larger procedures such as the one for anchor pull tests.

This concern was Quality Technology Company number IN-85-445-008 dated August 19, 1985.

II. SCOPE

Documentation relating to the revision of QCPs and training of individual inspectors was reviewed. Interviews with personnel involved in field inspections related to QCP-1.14 and QCP-3.11 were performed. Documents were reviewed and personnel interviewed to determine the following:

- A. Reason for procedure change;
- B. number of procedure changes and intervals between change;
- C. training received for procedure changes;
- D. methods of training for QCP changes; and,
- E. qualification to the current revision level for inspectors at the time of inspection.

III. SUMMARY OF FINDINGS

A. Excessive Number of Inspection Criteria

There is a large number of QCP procedures. Eighty-nine procedures fill approximately three volumes. However, these are required because of industry standards, design requirements, NRC regulations, and other upper-tier documents. The Code of Federal Regulations requires and TVA management has decided that procedures requiring these inspections are necessary to ensure quality and reliability of equipment and workmanship.

B. Procedures Should Not Require Further Change

QCP-1.14 has been revised twice in the past year, once in 1984, and twice in 1983. Each of these changes was required by changes in the General Construction Specification G-32, which is the governing document for the Construction QCP.

No QCP-3.14 R14 was found. QCP-3.11 R14 dated 1/2/85 fits the description of the revised QCP described in the employee concern. This procedure was revised one time in 1985, once in 1984, and three times in 1983. New requirements were added in three of these cases, and the other changes were made for clarification and editorial purposes.

Five other QCPs were examined. Each of these was changed in 1985 because of changing upper-tier documents. Quality control inspectors were interviewed. Each inspector is not qualified to all inspection procedures. They are qualified only to those procedures that affect the work of their QC section; i.e., electrical, mechanical, instrumentation, etc. This limits the number and type of procedures that each inspector must be trained to perform. The four inspectors interviewed did not consider the number of inspections or changes to instructions to be excessive. The inspectors were certified to an average of 10 procedures each.

There are a total of 89 QCPs. 90 percent of these procedures have been revised nine times or less for the life of the project. 63 percent have been revised less than five times. In reviewing a selected QCP, it was determined that QCP-3.05 R24 was revised 25 percent of the time because of changes in the upper-tier documents, 21 percent of the time due to NRC inspection findings, 21 percent of the time to add new sections or delete old sections, and 33 percent of the time for clarification of requirements or data sheets.

C. Training Method for QCP Changes is "Read and Route"

Each new inspector is required to have on-the-job training with a qualified inspector. At the conclusion of this on-the-job training he/she is tested to complete the qualification.

Procedure changes require a training session in which a section supervisor gets all inspectors that are certified to that procedure together. He/She or his/her representative go over the changes with a question-and-answer session at the end. Attendance at the training session is documented.

Major procedure changes (as identified by the Procedures and Training Section) require that inspectors undergo a retest for certification to the current procedure-revision level after the training session.

The "read-and-route" method of training for procedure update was done prior to 1982. The above-described method was used after 1982.

D. Inspections are Done with Outdated Procedures

Inspectors are trained in new procedures prior to issuance of the procedures. For example, QCP-1.14 Revision 16 was issued on 7/31/85 for use. The training program for the inspectors using QCP-1.14 was held on 7/25/85.

Checks are conducted to ensure that qualified inspectors are performing inspections. After an inspection has been performed, the date of the inspection is compared with the inspector's certification date for the latest revision level of the applicable procedure. This is done by the inspection group leader and is later done by the records unit. If a discrepancy is found, the inspection card is returned to the responsible unit and the inspection is redone.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The allegation is unsubstantiated for the QCF program for the following reasons.

- A. The number of inspection criteria are related to requirements in upper-tier documents and a conscious management decision to ensure quality through checks and inspections. Even though there are 89 QCPs containing inspection criteria, each inspector is required to be qualified only for those procedures in his/her responsible area.
- B. Procedure changes are not arbitrary. They are related to a changing set of codes and standards, clarifications, and NRC findings. The QCF changes have not been excessive.
- C. Inspectors are trained and tested in inspection procedures prior to performing inspections. The "read-and-route" method of training has not been used for inspection personnel since 1982.
- D. Checks and balances were found that ensure that personnel were qualified to the latest revision level of inspection procedures. This system is also used to catch mistakes and correct them expeditiously.

Recommendations

None.

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-824-002

Page 1 of 2

DATE OF PREPARATION: 11-4-85

CONCERN: Unit 1 - "All Over" ...No approved bending procedure, no certified "bending" personnel, no qualified bending machines until approximately three years ago. (all of the above in place for Unit 2). Paperwork has "mysteriously" appeared for all bending activities conducted previous to this three year time period.

INVESTIGATION PERFORMED BY: ERT

FINDING(S): Qualification of bending procedures began in 1977, however many were determined to be invalid.

No requirement exists for qualifying "bending" personnel. The bending equipment determines the bend quality and qualification of personnel was not considered necessary.

The requirements for qualification of bending machines was initiated by QCI 1.12-7 R/O dated 6/11/82. Prior to 6/11/82 bending machines were not required to be qualified, however bender identification numbers were being assigned prior to QCI 1.12.

Prior to 1983 bending inspection and documentation activities were performed in accordance with the requirements of QCP 4.10 R/4 dated 3/11/77, "Standard Inspection and Test Instruction for Mechanical Piping Systems".

A QA audit was performed on construction activities in 1981; reference audit report WB-M-81-08 dated 12-10-81. The audit identified the following deficiencies:

- a) Bend numbers have not been assigned and shown on the fabrication sketches, and documented on the Process Control Operation Sheets (PCOS).
- b) The qualified bending procedure is not documented on the PCOS.

ERT Form Q

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-824-002

Page 2 of 2

DATE OF PREPARATION: 11-4-85

FINDING(S) CONT:

- c) The inspection requirements (visual) are not listed on the PCOS.
- d) The inspection acceptance is not documented on the PCOS.

As a result of the QA Audit, NCRs 3864R dated 1/5/82 and 4633 R/O dated 2/8/83, R/1 dated 2/28/83, and R/2 dated 5/18/83 were initiated.

Disposition of the NCRs required "reinspect all bends listed on subassemblies for absence from cracks and wrinkles. Document acceptability by signature of inspector by each item on list".

Review of a letter dated February 19, 1982 from H. B. Rankin, acting Sequoyah and Watts Bar Design Project Manager to J. E. Wilkins, Project Manager Watts Bar, stated the following: "ALL documentation for ALL finalized ASME code instrument sense lines are being nonconformed. ALL finalized lines will be reinspected to the criteria of WBNP-QCP 4.10 Appendix G."

The completed corrective action documentation certified that all lines were free from cracks and wrinkles.

CORRECTIVE ACTION(S) In consideration of shortcomings in the control of Unit 1 bending activities, TVA has generated NCR 6276. The correction method of this nonconformance states that OE is ". . . to provide recommendations for corrective action necessary to ensure the quality of affected installations." More specifically, this will involve a Unit 1 bend sampling program whereby a representative sample of each type of Unit 1 bend will be inspected to ensure that the criteria related to pipe and tubing wall thickness and ovality has been satisfied, as well as ensuring that all bends are free from buckles, wrinkles, bulges, and grooves. In addition, each bend will be subjected to a magnetic particle or liquid penetrant inspection. It is TVA's contention that such a comprehensive inspection on a random sample of the total bend population will substantiate a level of confidence in the quality of the entire Unit 1 bending program.

CLOSURE STATEMENT: This concern was substantiated.

ERT Form Q

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : E. R. Ennis, Acting Site Director, Watts Bar Nuclear Plant

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

DATE : OCT 30 1985

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

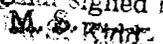
REPORT NO. : IN-85-824-002

SUBJECT : TUBE BENDING

CONCERN NO.: IN-85-824-002

(X) ACCEPT () REJECT

Response was coordinated with QTC investigator, R. Chappell.

Original signed by


K. W. Whitt

cc: H. N. Culver, W12A19 C-K
 W. F. Willis, E12B16 C-K (4)
 QTC/ERT, CONST-WBN--For response to employee.

0063U



file copy

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : K. W. Whitt, Director, Nuclear Safety Review Staff, E3A8 C-K

FROM : Guenter Wadewitz, Project Manager, Watts Bar Nuclear Plant OC

DATE : OCT 18 1985

SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR INVESTIGATION/EVALUATION

Attached is our response to employee concern number IN-85-824-002.

G. Wadewitz
Guenter Wadewitz

COC:LLE
QERT.LE
Attachments
cc (Attachment):
H. N. Culver, W12A19 C-K



EMPLOYEE CONCERN NO. IN-85-824-002

ITEM 1 - NO APPROVED BENDING PROCEDURE

Although bending is currently controlled by site instructions and procedures (WBNP QCP 4.10-5, WBNP QCI 3.11, WBNP QCP 3.11, WBNP QCI 3.11-1, WBNP QCP 3.11-2, and WBNP QCI 1.12-7), it was recognized on NCR 6276 that site procedures were not properly implemented to control unit 1 bending operations. The correction method of NCR 6276 stipulates that OE is to " . . . provide recommendations for corrective action necessary to ensure the quality of affected installations." OC has surveyed the types and quantities of the unit 1 bends in question and has provided this data to OE for review. It is anticipated that OE will provide guidelines for establishing a sampling program whereby OC Quality Control personnel will be required to inspect a representative number of unit 1 pipe and tubing bends to establish that an acceptable level of quality exists. This program is intended to provide an adequate level of confidence in the quality of all affected unit 1 bends.

ITEM 2 - NO CERTIFIED "BENDING" PERSONNEL

OC concurs with ERT response that "No requirement exists for qualifying 'bending' personnel. The bending equipment determines the bend quality and qualification of personnel was not considered necessary."

ITEM 3 - NO QUALIFIED BENDING MACHINES UNTIL APPROXIMATELY THREE YEARS AGO

Although bending machine qualification is currently controlled by site instruction WBNP QCI 1.12-7 and site procedure WBNP QCP 4.10-5, it was recognized on NCR 6276 that methods of controlling unit 1 bending machine qualification during that time period were not properly implemented. The correction method of NCR 6276 stipulates that OE is to " . . . provide recommendations for corrective action necessary to ensure the quality of affected installations." OC has surveyed the quantities and types of bends made by field bending equipment for unit 1. This data has been submitted to OE for review. It is anticipated that OE will provide guidelines for establishing a sampling program which will require OC Quality Control personnel to inspect a representative number of unit 1 pipe and tubing bends to establish that an acceptable level of quality exists. This program is intended to provide an adequate level of confidence in the quality of all affected unit 1 bends.

ITEM 4 - PAPERWORK HAS "MYSTERIOUSLY" APPEARED FOR ALL BENDING ACTIVITIES CONDUCTED PREVIOUS TO THIS THREE YEAR TIME PERIOD

It is assumed that the "mysterious paperwork" in your concern is in reference to NCRs 3864 and 4633 which were generated as a result of inadequate control of bending processes as cited in QA audit WB-M-81-08. These nonconformance reports were initiated in accordance with site procedures with the intended purpose of establishing an acceptable level of quality for all previously documented instrument sense lines.

FINDINGS

In response to findings addressing the documentation for bending activities prior to 1983 (prior to the issue and implementation of WBNP QCI 3.13-5), we concur with the deficient items as detailed. Our research reveals that the requirements of WBNP QCP 4.10 listed below were not satisfied as recognized by QA Audit Report WB-M-81-08 Deficiency No. 1.

1. Bend numbers were not added to fabrication sketches.
2. Bend numbers were not added to the PCOS.
3. The qualified bending procedures were not documented on the PCOS.
4. The inspection requirements were not listed on the PCOS.
5. The inspection acceptance was not documented on the PCOS.

NCR 3864 was initiated on January 5, 1982 as a result of these findings with a disposition requiring that all previously documented subassemblies have bends reinspected to verify the absence of cracks and wrinkles. Documentation to this effect was completed and attached to the nonconformance report. An additional commitment was made to include a signed-off inspection statement on all subsequent process control operation sheets. Failure to comply with this commitment ultimately led to the issue of NCR 4633. Furthermore, it is recognized that the disposition of NCR 3864 did not fully address each requirement of WBNP QCP 4.10 as recommended by the memorandum (SWP 820222 185) concerning the subject from H. B. Rankin to J. E. Wilkins dated February 19, 1982. An inspection of bends to verify the absence of cracks and wrinkles is sufficient only when documentation exists to support the fact that bending operations have been performed with adequately qualified benders. Having lacked this documentation, a reinspection of all bends in accordance with WBNP QCP 4.10 (including inspections of wall thickness, ovality, bend radius, and magnetic particle or liquid penetrant inspection) would have been required to meet the intent of the DPO disposition.

FINDINGS CONTINUED

NCR 4633 was initiated on February 8, 1983 as a result of improper implementation of the corrective action of NCR 3864 which responded to site QA Audit WB-M-81-08. The disposition of this NCR required that the qualification procedures in effect during the nonconformance period (June 11, 1982 to February 7, 1983) be evaluated by means of inspecting sample bends. These bends were produced using bending equipment of the same manufacturer and model number used for the original qualification tests as well as pipe and tubing sizes and heat numbers specified on the original tests. Inspectors were instructed to verify that bends were free from cracks, buckles, grooves, or bulges. Once again, this disposition was inadequate as a result of insufficient documentation related to the identification of bending equipment used for each subassembly. Furthermore, this disposition did not address the possible use of unqualified bending equipment during this period. It merely served to enhance the level of confidence in the previously qualified bending procedures.

In consideration of these shortcomings discovered in the previous attempts to address inadequate control of unit 1 bending activities, we have generated NCR 6276. The correction method of this nonconformance states that OE is ". . . to provide recommendations for corrective action necessary to ensure the quality of affected installations." More specifically, this will involve a unit 1 bend sampling program whereby a representative sample of each type of unit 1 bend will be inspected to ensure that the criteria related to pipe and tubing wall thickness and ovality has been satisfied, as well as ensuring that all bends are free from buckles, wrinkles, bulges, and grooves. In addition, each bend will be subjected to a magnetic particle or liquid penetrant inspection. It is our contention that such a comprehensive inspection on a random sample of the total bend population will substantiate our level of confidence in the quality of the entire unit 1 bending program.

EMPLOYEE CONCERN NO. IN-85-824-002

RESPONSE TO CONCLUSION

ITEM NO. 6 - WHY WEREN'T REINSPECTION ACTIVITIES/DOCUMENTS ENCLOSED IN EACH PIPING SUBASSEMBLY DOCUMENTATION PACKAGE FOR TRACEABILITY?

Site instruction WBNP QCI 1.08 requires that " NCRs . . . that alter inspection requirements shall be referenced in the remarks section" of the applicable QA record. This requirement was in effect during the disposition periods of NCRs 3864 and 4633. It is our conclusion that an oversight on the part of engineering and inspection personnel resulted in noncompliance with this requirement. However, upon acceptable completion of the disposition of NCR 6276, evidence of satisfactory compliance with the correction method will be included in each affected instrument subassembly documentation package.

For any further information regarding these concerns or follow-up actions you may contact the Instrumentation Engineering Unit supervisor.

Principally prepared by Shawn Hughes, extension 468.

24/8
U.P.

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : G. Wadewitz, Project Manager, OC-WBN

FROM : K. W. Whitt, Director, Nuclear Safety Review Staff, E3A8 C-K

DATE : August 29, 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. IN-85-824-002

Subject Tube Bending - Corrective Action Completion

Concern No. IN-85-824-002

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by September 13, 1985. Should you have any questions, please contact O. Thero/R. Chappell at telephone 128-615-365-4464.

Recommend Reportability Determination: Yes _____ No X

Director, NSRS/Designee

cc: W. F. Willis, E12B16 C-K (4) E. R. Ennis, WBN
 J. W. Coan, P-104 SB-K QTC/ERT-WBN
 H. N. Culver, W12A19 C-K

--Copy and Return--

To: K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K

From: _____

Date: _____

I hereby acknowledge receipt of NSRS Report No. IN-85-824-002

Subject Tube Bending - Corrective Action Completion

for action/disposition.

Signature

Date

(Please copy entire page for return)



NSRS RECOMMENDATIONS: IN-85-824-002

Q-85-824-002-01 - "Incomplete Corrective Action - Tube Bending"

OC-WBN should verify that corrective action taken to resolve deficiencies in Audit WB-M-81-08 (12/10/81), and NCRs 3864R and 4633 was complete, addressing all identified deficiencies. Additionally, determine if all code sensing lines were inspected in accordance with the instructions of the letter from H. B. Rankin to J. E. Wilkins February 19, 1982. If not, justify the reinspection criteria and mode of documentation of reinspection. (Refer to Investigation Report Supplement A).

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 1 of 6

CONCERN: Unit 1 - "All Over" ...No approved bending procedure, no certified "bending" personnel, no qualified bending machines until approximately three years ago. (all of the above in place for Unit 2). Paperwork has "mysteriously" appeared for all bending activities conducted previous to this three year time period.

INVESTIGATION

PERFORMED BY: R. D. Chappell

DETAILS:

Investigation of this concern was conducted in July, 1985 which was substantiated, and reported in file number IN-85-021-001. Except as documented in supplement "A" of this report.

PERSONNEL CONTACTED:

CONFIDENTIAL

DOCUMENTS REVIEWED:

QCP - 3.13-6 R/O	Process Specification G29M4.M.2.1 R/6
QCI - 3.13-6 R/O	NCR 3864R R/O
QCP - 4.10-6 R/1	NCR 5735 R/O
QCI - 3.13-5 R/3	NCR 4633 R/O, R/1, R/2
QCI - 1.12-7 R/1	Memorandum Dated Sept. 20, 1984
QCP - 3.11-2 R/5	to J. C. Standifer
QCP - 3.11 R/11	

This investigation evaluated the requirement for qualification of hand tube benders, and the use of unqualified tube benders on Unit 1. The bender qualification records (tubing and pipe) revealed that qualification began in 1977 (Ref. QCP 4.10 STI No. 47). To date, not all tube and pipe benders have been identified and qualified. TVA's stated position is that material classes (A, B, C, D) require qualified benders, and (G and H) class materials do not. However no program exists for the control of benders used to perform bending operations for specific classes of piping subassemblies.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 2 of 6

DETAILS: (cont)

FINDINGS:

- 1) A review of the "Bender Identification Log" identified 45 benders that have identification numbers assigned. These benders cannot be located, or traced to a qualification record that references their identification number. Without the qualification records, the type, model, manufacturer, and qualified process cannot be determined. In an attempt to retrieve and identify the missing benders a survey was taken of all craft performing bending operations. Four (4) benders were located reducing the total number missing to 41.
- 2) The hand tube benders in the tool crib that are issued to the craft on a daily basis were examined for proper identification. Seven (7) of these benders were not identified, three (3) were 3/8 inch, and four (4) were 1/2 inch.
- 3) On 7/23/85 a walkdown was conducted to verify in-process bending activities involving two (2) Parker pipe benders. ERT was informed that no hand tube bending was being performed at the time of the walkdown. The following deficiencies were noted.
 - A) Parker, model 632, Serial No. 1477, bender ID No. 298 was being used IAW qualification procedure CF186, to bend 1/2 inch SCH. 80 stainless steel pipe. CF186 was determined to be an invalid process.
 - B) Parker (model number not legible) has two (2) shoes marked 18 x 3 3/8, and 24 x 4 1/2 respectively. Neither shoe were stamped with identification/qualification numbers. In addition, the shoe marked 18 x 3 3/8 is made from carbon steel plate, and appears to be site fabricated, and is not identified with an "I" or "CF" number, and "do not use on stainless steel".

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 3 of 6

DETAILS: (cont)

- C) QCI 3.13-5 R/3 requires the bender usage list (BUL) to be kept in the bender area while bending operations are being performed. The ERT observed craft bending 1/2 inch stainless steel pipe in the turbine building utilizing a Parker bender IAW procedure CF190. The material was to be installed in the reactor building. The (BUL) was located at the craft's tool box a couple of levels down in the auxiliary building. By not having the (BUL) in the bending area, the potential exists for incorrect entries on the (BUL) where multiple bends and processes are required.
- 4) Process specification G29M 4.M.2.1 R/6 paragraph 2.5.4 reads in part....."tools used in bending stainless steel shall be used exclusively to bend stainless steel. To alleviate the possibility of galling when bending stainless steel, it is recommended that tools and formers be chrome plated."
- A) Hand tube benders are not controlled to assure usage on stainless steel only. Hand tube benders are used on stainless, copper, and in a few cases carbon steel.
- B) Some chrome plated bending shoes have the chrome worn off with usage. Site fabricated bending shoes are made from carbon steel plate and are not chrome plated. Many of the forming blocks are unplated carbon steel and are gouged from use. The potential exists for galling and contamination (carbon impregnation) when the stainless steel pipe is sliding through the forming blocks and bending shoes.
- 5) QCI 1.12-7 R/O paragraph 7.3, requires the qualified procedure number ("CF-xxxx") be stamped on each qualified bending shoe by the RQC. A review of all "CF" procedures by IEU, determined 67 bending procedures for various reasons; ie. min. wall, ovality, unacceptable, etc; to be invalid. As a result of not being able to identify and control the use of numerous benders, and inadequate record keeping from the beginning of the bender identification and qualification program, the ERT was unable to determine if, and how many times an invalid procedure was used. Allowing invalid "CF" numbers to remain stamped on bending shoes provides a potential for invalid bending procedures to be used and referenced.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 4 of 6

DETAILS: (cont)

Selected vaulted records for Q systems, 003, 032 043, 062, 063, and 068 were reviewed with the following results:

<u>ASSY NO.</u>	<u>DATE</u>	<u>PROCEDURE</u>	<u>PROCEDURE DEFICIENCY</u>		
2-032-ALA	1/28/85	CF186	Ovality not acceptable		
2-003-L382-01	11/16/84	CF186	Ovality not acceptable		
2-032-ALA	1/28/85	CF129	Minimum acceptable	wall	not
2-032-ALA	1/28/85	CF132	Minimum acceptable	wall	not
2-032-ALA	1/28/85	CF131	Minimum acceptable	wall	not
2-043-L232B-02	5/13/85	CF199	Heat qualified	No. 09118	not
2-043-L232C-02	5/13/85	CF199	Heat qualified	No. 09118	not
2-068-L062-03	7/9/85	CF129	Minimum acceptable	wall	not
1-062-L348A-09	2/29/84	CF132	Minimum acceptable	wall	not
1-062-L263B-01	2/18/84	CF144	Minimum no. made	of bends	not
2-032-A0-B	1/28/85		1 bend per inspected	process	not
2-032-ALA	1/28/85		1 bend per inspected	process	not

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 5 of 6

DETAILS: (cont)

The above referenced bending procedures were not acceptable, but were used and processed through the system as acceptable. The use of unacceptable bending procedures could have resulted from using an invalid procedure number that was stamped on the bending shoe, or the craft are not utilizing the updated qualified bending procedures list identified in attachment "B" of process specification G29M 4.M.2.1 R/6. Attachment "B" is continually updated by IEU, but is not being followed.

Since QC is not involved during the fabrication phase of the piping subassembly, no verification of qualified bending procedures, or benders is performed until the final documentation review. This review is not adequately identifying nonconformances.

- 6) Process specification G29M 4.M.2.1 R/6 paragraph 2.5 reads in part.... "tools used for bending shall be controlled in a manner appropriate to their application so as to ensure reproducibility of bend geometry."

Many hand benders are issued to various craft personnel, and bending shoes and forming blocks are stored in the area of the pipe benders. No one has the assigned responsibility of verifying the physical condition of bending equipment. ERT located a 1/2 inch bender in a craft's tool box with a portion of the mandrel broken out, also many of the forming blocks were gouged from being clamped to the bending machines. In addition to damaged equipment being accessible for use in the work areas, there are no programmatic provisions for periodic requalification of benders. The potential exists that worn, and out of adjustment equipment may not be producing the quality of bends required. Process specification G29M 4.M.2.1 R/6 paragraph 2.2, requires all production bends to be free from cracks, buckles, wrinkles, bulges, and grooves. Section 2.7.1 defines minimum wall thickness, section 2.7.2, 2.11 minimum radius of bends, and 2.8 ovality tolerances. The ERT was informed that the primary reason for qualifying benders and procedures was to control the process and hold the amount of inspection to a minimum. QCP 3.11-2 R/5 paragraphs 6.2.3.1, 6.2.3.2 requires a minimum visual inspection of one bend for each process used, and ovality is only required to be inspected when a line exceeds 1/2 inch nominal diameter. Considering the lack of control regarding benders and procedures, and the possibility of numerous bends existing with the same procedure being used on the same piping assembly. ERT determined the amount of inspection now being performed on piping subassemblies to be inadequate.

ERT INVESTIGATION REPORT

CONCERN NO: IN-85-824-002

Page 6 of 6

DETAILS: (cont)

- 7) Since the craft are not required to enter the heat numbers of materials on the "bender usage sheet" and no programmatic requirement exists for entering the heat numbers on the 52 test sheet, unqualified material and bending procedures are being used, documented, and vaulted without being identified by engineering, and QC.

CONCLUSION:

This concern is substantiated.

This conclusion is based on the findings identified during the course of the investigation.

- * Tube benders not qualified
- * Tube benders not controlled
- * Tube bending procedures are being used that are not valid
- * Process specification G29M 4.M.2.1 is not being adhered to
- * Maintenance of bending equipment is not defined or performed
- * QC and Engineering review of documentation is inadequate
- * Due to the use of unqualified bending equipment and procedures the quality of past and present piping subassemblies is indeterminate

Prepared By R. Chappell 8-23-85
Date

Reviewed By R. Thero 8/23/85
Date

Report Reviewed &
Accepted
[Signature] 8/26/85
Nsds
See Also in 85 021 001
[Signature] 10/26/85

ERT INVESTIGATION REPORT

Supplement "A"

CONCERN NO: IN-85-824-002

Investigation of the above referenced concern was performed as a supplement to IN-85-021-001. The four (4) concerns identified in file IN-85-824-002 and the ERT response are as follows:

- 1) No approved bending procedure.

Response:

Qualification of bending procedures began in 1977, however many were determined to be invalid. This item was addressed in IN-85-021-001.

- 2) No certified "bending" personnel.

Response:

No requirement exists for qualifying "bending" personnel. The bending equipment determines the bend quality and qualification of personnel was not considered necessary.

- 3) No qualified bending machines until approximately three years ago.

Response:

The requirements for qualification of bending machines was initiated by QCI 1.12-7 R/O dated 6/11/82. Prior to 6/11/82 bending machines were not required to be qualified, however bender identification numbers were being assigned prior to QCI 1.12. This item was addressed in IN-85-021-001.

- 4) Paperwork has "mysteriously" appeared for all bending activities conducted previous to this three year time period.

Finding:

Prior to 1983 bending inspection and documentation activities were performed in accordance with the requirements of QCP 4.10 R/4 dated 3/11/77, "Standard Inspection and Test Instruction for Mechanical Piping Systems".

ERT INVESTIGATION REPORT

Supplement "A"

CONCERN NO: IN-85-824-002

A QA audit was performed on construction activities in 1981; reference audit report WB-M-81-08 dated 12-10-81. The audit identified the following deficiencies:

- a) Bend numbers have not been assigned and shown on the fabrication sketches, and documented on the Process Control Operation Sheets (PCOS).
- b) The qualified bending procedure is not documented on the PCOS.
- c) The inspection requirements (visual) are not listed on the PCOS.
- d) The inspection acceptance is not documented on the PCOS.

As a result of the QA Audit, NCRs 3864R dated 1/5/82 and 4633 R/O dated 2/8/83, R/1 dated 2/28/83, and R/2 dated 5/18/83 were initiated.

Disposition of the NCRs required "reinspect all bends listed on subassemblies for absence from cracks and wrinkles. Document acceptability by signature of inspector by each item on list".

Review of a letter dated February 19, 1982 from H.B. Rankin, acting Sequoyah and Watts Bar Design Project Manager to J.E. Wilkins, Project Manager Watts Bar, stated the following: "ALL documentation for ALL finalized ASME code instrument sense lines are being nonconformed. ALL finalized lines will be reinspected to the criteria of WBNP-QCP 4.10 Appendix G."

The completed corrective action documentation certified that all lines were free from cracks and wrinkles.

ERT INVESTIGATION REPORT

Supplement "A"

CONCERN NO: IN-824-002

CONCLUSION:

This concern is substantiated.

BASIS:

The NCRs and audit report were closed without addressing all the deficient items referenced in the audit report, such as:

- 1) Were bend numbers added to the fabrication sketches?
- 2) Were bend numbers added to the PCOS?
- 3) Were qualified bending procedure numbers added to the PCOS?
- 4) Were the inspection requirements added to the PCOS?
- 5) Were the PCOS's corrected to show inspection acceptance?

Mr. H.B. Rankin's memo required inspections be performed and documented in accordance with QCP 4.10 Appendix "G", which requires more than just verification of bends to be free from cracks and wrinkles, if the material was not previously qualified. Inspection for, ovality, wall thickness, bend radius, and magnetic particle, or liquid penetrant inspection is required for material that was not previously qualified.

- 6) Why weren't reinspection activities/documents enclosed in each piping subassembly documentation package for traceability?

REQUEST FOR REPORTABILITY EVALUATION

FINAL

1. Request No. IN-85-824-002
(ERT Concern No.)

(ID No., if reported)

2. Identification of Item Involved: _____
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)

Unit 1- "All over"- no approved bending procedure, no certified "bending" personnel, no qualified bending machines until approximately three years ago. Call of the above in place for Unit 2. Paperwork has "mysteriously" appeared for all bending activities conducted previous to this three-year time period.

4. Reason for Reportability: (Use supplemental sheets if necessary)

A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.

NO YES If Yes, Explain: _____

AND

B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.

No Yes If Yes, Explain: Special processes for bending pipe and tubing are not being controlled using qualified procedures, as required by 10CFR50, App. B, Criterion IX.

OR

C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.

No Yes If Yes, Explain: _____

OR

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.

No Yes ____ If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.

No Yes ____ If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CARRY THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by: J. Chappell for 365-4464
ERT Group Manager Phone Ext.

O. Theis for 365-4414
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS
[Signature]
Signed _____

Date 8/26/85 Time 1758

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-85-825-002

DATE OF PREPARATION: 10-31-85

CONCERN: TVA has several procedures which need to have portions rewritten for clarity or more defined criteria. Examples are TI-27 Part 3 ("Cognizant Engineer shall determine acceptance as it applies . . ."). No method of documenting this acceptance exists.) MIA-14 ("Cognizant Engineer or qualified personnel can complete the data sheet as appropriate".) No definition of "Qualified Personnel" exists.

INVESTIGATION PERFORMED BY: TVA NSRS

FINDING(S): The CI was contacted through QTC for more information but further information was not provided. A review of WBNP TI-27 Part III. "Visual and Chemical Specifications (Cleanliness Criteria for Piping Systems)" Revision 22, dated 8/23/85, revealed that the instruction did provide for the documentation of acceptance/rejection.

The provisions for documenting acceptance/rejection resulted from WBNP Corrective Action Report (CAR) 85-34 initiated on 4/19/85 as a result of a survey of instrument maintenance MRs.

Remedial Action No. 3 of CAR 85-34 states:

Instrument maintenance procedures will be revised to adequately give directions to individuals performing troubleshooting activities. This revision will delineate guidelines for documenting TI-27 Part III requirements and guidelines for other maintenance activities performed during troubleshooting or reference appropriate implementing procedures.

The CAR was completed and closed on 10/7/85.

A review was made of WBNP MAI-14, "Installation and Inspection of Electrical Penetration Pressure Seals, Fire-Stop Barriers, and Flame-Retardent Cable Coating," Revision 5, dated 5/15/85. This instruction revision did not use the term "Qualified Personnel." Personnel references to data sheets and packages included "QC Inspectors" and "Craft Foreman" as signatories.

CORRECTIVE ACTION(S) None required

CLOSURE STATEMENT: The concern may have been partially correct at the time it was expressed, however, conditions stated in the concern had been corrected prior to the investigation.

FINAL

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-85-825-002 _____
(ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: PROCEDURES
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)
SEVERAL TVA PROCEDURES NEED TO BE REWRITTEN TO CLARIFY OR BETTER
DEFINE CERTAIN ACTIVITIES.

4. Reason for Reportability: (Use supplemental sheets if necessary)

A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.

No Yes _____ If Yes, Explain: _____

AND

B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.

No Yes _____ If Yes, Explain: _____

OR

C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.

No Yes _____ If Yes, Explain: _____

OR

FINAL

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from the performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CARRY THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by: W. J. Dubach 365 4478
ERT Group Manager Phone Ext.

William J. Dubach
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

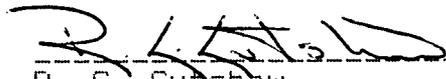
Bruce J. Saffrin Date 11/4/85 Time _____
Signed

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-339-WBN
EMPLOYEE CONCERN IN-85-825-002
MILESTONE 3

SUBJECT: CLARITY IN PROCEDURE

DATES OF INVESTIGATION: September 26-30, 1985

INVESTIGATOR:



R. C. Cutshaw

10/22/85
Date

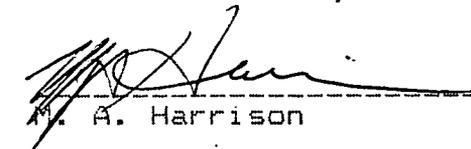
REVIEWED BY:



G. G. Brantley

10/22/85
Date

APPROVED BY:



M. A. Harrison

10/22/85
Date

I. BACKGROUND

A concern was received by the Quality Technology Company Employee Response Team that stated:

TVA has several procedures which need to have portions rewritten for clarity or more defined criteria. Examples are TI-27 Part 3 ("Cognizant Engineer shall determine acceptance as it applies . . .". No method of documenting this acceptance exists.) MIA-14 ("Cognizant Engineer or qualified personnel can complete the data sheet as appropriate".) No definition of "Qualified Personnel" exists.

II. SCOPE

Prior to determining the scope of this investigation, further clarifying information was requested from the CI through QTC. No further information was provided. The scope of this investigation was determined by the concern of record.

- A. Determine if TI (Technical Instruction) 27, Part 3, did or did not provide for the documentation of acceptance.
- B. Determine if MAI (Modifications and Additions Instruction) 14 did or did not refer to "Qualified Personnel" without further definition of what constituted a "Qualified Person" in reference to who could complete a data sheet.

III. SUMMARY OF FINDINGS

- A. A review of WBNP TI-27 Part III, "Visual and Chemical Specifications (Cleanliness Criteria for Piping Systems)" Revision 22, dated 8/23/85, revealed that the instruction did provide for the documentation of acceptance/rejection.

The provisions for documenting acceptance/rejection resulted from WBNP Corrective Action Report (CAR) 85-34 initiated on 4/19/85 as a result of a survey of instrument maintenance MRs.

Remedial Action No. 3 of CAR 85-34 states:

Instrument maintenance procedures will be revised to adequately give directions to individuals performing troubleshooting activities. This revision will delineate guidelines for documenting TI-27 part III requirements and guidelines for other maintenance activities performed during troubleshooting or reference appropriate implementing procedures.

The CAR was completed and closed on 10/7/85.

- B. A review was made of WBNP MAI-14, "Installation and Inspection of Electrical Penetration Pressure Seals, Fire-Stop Barriers, and Flame-Retardant Cable Coating," Revision 5, dated 5/15/85. This instruction revision did not use the term "Qualified Personnel." Personnel references to data sheets and packages included "QC Inspectors" and "Craft Foreman" as signatories.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The concerns of record were not substantiated due to recent revision of the instructions in question.

Recommendations

None.

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-86-110-001

Page 1 of 2

DATE OF PREPARATION: 11-4-85

CONCERN: During ice loading, TVA used jack hammers to compact ice to achieve thge minimum basket weight requirements. This could result in "channeling" of ice and endanger containment integrity during a LOCA (loss of cooling accident).

INVESTIGATION PERFORMED BY: TVA NSRS

FINDING(S): During initial ice loading, a modified pneumatic soil compacter was used to compact the ice in the upper 12 feet of approximately 50 percent of the ice baskets. This mechanism was used in an attempt to obtain the maximum allowable weight of ice per basket. MI-61.1 requires that each basket be filled with 1450-1550 pounds of ice.

Although MI-61.1 does not specifically allow or prohibit the use of a compacter, it does state in Section 1.0 that "the activities contained in this instruction may be altered if the change promotes better efficiency or ease of operating and does not adversely affect the quality of work performed." It further states in Section 6.5.2.2 that "the ice loading equipment and loading technique should be adjusted so that 1450 to 1550 pounds of ice is deposited in each basket."

A phone conversation with Westinghouse engineering personnel in Pittsburg, Pennsylvania, indicated that during the early qualification test for the ice condenser, various ice configurations were examined to determine effects on performance. WCAP-2951 states in Section II that "condenser performance is not significantly affected by the shape or size of pieces of ice within the range of interest." It further elaborates in Section V.E.5:

A number of ice shapes and ice bed configurations were tested including baskets full of ice chips or ice cubes of various shapes, baskets with and without steam flow holes, and a large block of ice with flow holes. The results indicate that performance was not strongly affected by the ice configuration.

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-86-110-001

Page 2 of 2

DATE OF PREPARATION: 11-4-85

FINDING(S) CONT:

Further tests performed and documented in WCAP-7040 substantiated the earlier tests (see Section IV.C.1.c).

During the review of the actual loading records, it was noted that 614 (about 32 percent) of the ice baskets had a weight exceeding the allowable maximum of 1550 pounds. In accordance with requirements of MI-61.1, the information was furnished to EN DES who subsequently forwarded the data to Westinghouse for analysis. At Westinghouse's suggestion, ice was removed from 36 of the baskets on August 5, 1984. This work was accomplished through issuance of Maintenance Request A408828 and implemented through Surveillance Instruction 6.17.

CORRECTIVE ACTION(S) None required

CLOSURE STATEMENT: Although the concern of ice compacting was substantiated, the accumulated evidence would indicate no adverse impact on ice condenser performance.

FINAL

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-86-110-001 _____
(ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: ICE CONDENSER
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)
TVA USED JACK HAMMERS TO COMPACT FLAKED ICE IN THE BASKETS. THIS
COULD CAUSE CHANNELING AND ENDANGER CONTAINMENT INTEGRITY DURING A
LOCA.

4. Reason for Reportability: (Use supplemental sheets if necessary)
 - A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.
No Yes _____ If Yes, Explain: _____

 - AND
 - B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.
No Yes _____ If Yes, Explain: _____

 - OR
 - C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.
No Yes _____ If Yes, Explain: _____

OR

FINAL

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from the performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CARRY THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by: W. J. Dubouché 365 4478
ERT Group Manager Phone Ext.

W. J. Dubouché 365-4414
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

Bruce L. Suffer Date 11/5/85 Time _____
Signed

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-455-WBN
EMPLOYEE CONCERN IN-86-110-001
MILESTONE 6

SUBJECT: ICE BASKET LOADING

DATES OF INVESTIGATION: October 15-18, 1985

INVESTIGATOR: J. D. Gilbreath 10/24/85
J. D. Gilbreath Date

VIEWED BY: G. G. Brantley 10/29/85
G. G. Brantley Date

APPROVED BY: M. A. Harrison 10/22/85
M. A. Harrison Date

BACKGROUND

NSRS has investigated Employee Concern IN-86-110-001 which was communicated to the Quality Technology Company (QTC) in response to the Watts Bar Employee Concern Program. The specific concern analyzed and discussed in this report was expressed to QTC as follows:

During ice loading, TVA used jack hammers to compact ice to achieve the minimum basket weight requirements. This could result in "channeling" of ice and endanger containment integrity during a LOCA (loss of cooling accident).

QTC also relayed that the concerned individual had no further information on the incident.

II. SCOPE

The scope of this investigation was directed toward verification of the event occurrence and assessment of the impact on ice condenser performance.

- A. During the course of this investigation, discussions were held with cognizant personnel in the Mechanical Maintenance Section of NUC PR and with Westinghouse personnel in Pittsburgh, Pennsylvania.
- B. In addition, the following documents were reviewed.
 - 1. WBNP FSAR
 - 2. Maintenance Instruction MI-61.1, Rev. 3, "Initial Ice Loading Procedure"
 - 3. WAT-EDP-18, Rev. 0, "Ice Loading Operation"
 - 4. WCAP-2951, "Ice Condenser Reactor Containment," June 1966
 - 5. WCAP-7040, "Ice Condenser Reactor Containment," March 1967

III. SUMMARY OF FINDINGS

Through discussions with NUC PR personnel, the allegation of "ice compacting" was substantiated. During initial ice loading, a modified pneumatic soil compacter was used to compact the ice in the upper 12 feet of approximately 50 percent of the ice baskets. This mechanism was used in an attempt to obtain the maximum allowable weight of ice per basket. MI-61.1 requires that each basket be filled with 1450-1550 pounds of ice.

Although MI-61.1 does not specifically allow or prohibit the use of a compacter, it does state in Section 1.0 that "the activities contained in this instruction may be altered if the change promotes better efficiency or ease of operating and does not adversely affect the quality of work performed." It further states in Section 6.5.2.2 that "the ice loading equipment and loading technique should be adjusted so that 1450 to 1550 pounds of ice is deposited in each basket."

A subsequent phone concersation with Westinghouse engineering personnel in Pittsburg, Pennsylvania, indicated that during the early qualification tests for the ice condenser, various ice configurations were examined to determine effects on performance. WCAP-2951 states in Section II that "condenser performance is not significantly affected by the shape or size of pieces of ice within the range of interest." It further elaborates in Section V.E.5:

A number of ice shapes and ice bed configurations were tested including baskets full of ice chips or ice cubes of various shapes, baskets with and without steam flow holes, and a large block of ice with flow holes. The results indicate that performance was not strongly affected by the ice configuration.

Further tests performed and documented in WCAP-7040 substantiated the earlier tests (see Section IV.C.1.c).

During the review of the actual loading records, it was noted that 614 (about 32 percent) of the ice baskets had a weight exceeding the allowable maximum of 1550 pounds. In accordance with requirements of MI-61.1, the information was furnished to EN DES who subsequently forwarded the data to Westinghouse for analysis. At Westinghouse's suggestion, ice was removed from 36 of the baskets on August 5, 1984. This work was accomplished through issuance of Maintenance Request A408828 and implemented through Surveillance Instruction 6.17.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Although the concern of ice compacting was substantiated, the accumulated evidence would indicate no adverse impact on ice condenser performance.

B. Recommendations

None.

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-86-190-003

Page 1 of 2

DATE OF PREPARATION: 11-4-85

CONCERN: An employee told the CI that the safety related concrete anchors (REDHEADS) were tested by a sampling plan rather than individually. CI questioned the acceptability of this practice.

INVESTIGATION PERFORMED BY: TVA NSRS

FINDING(S): Construction implements and complies with procedure QCP-1.14, "Inspection and Testing of Bolt Anchors Set in Hardened Concrete and Control of Attachments to Embedded Features," for anchor testing.

Nuclear Power implements and complies with procedure MAI-1, "Installation, Testing of Bolted Anchors Set in Hardened Concrete," for anchor testing.

Both procedures reference and implement General Construction Specification (G-Spec) G32, "Bolt Anchors Set in Hardened Concrete."

This specification references ANSI and ASTM standards, other G-specs, and Design Standard DS-C6.1, "Concrete Anchorages." These documents established the following method which is used for anchor testing.

1. Qualification tests are performed prior to the initial use of each size and brand of anchor at each project in project-placed concrete. The results of these tests are analyzed to assure that the design loads will be supported and that the required factors of safety are achieved.
2. Prior to installation testing, anchors are grouped into what is called a "lot." A lot is defined as the anchors installed by a specific crew either in a specific location in the plant or over a period of time. If the lot is defined on the basis of time, the maximum time is two weeks. The installing crew applies a unique identification marking adjacent to the anchor or anchors, and a record of all installations is maintained. Regardless of the basis for a lot, anchors of different types or brands are grouped into separate lots.

ERT Form Q

EMPLOYEE CONCERN DISPOSITION REPORT

CONCERN NO. IN-86-190-003

Page 2 of 2

DATE OF PREPARATION: 11-4-85

FINDING(S) CONT.

3. Lots are marked on controlled drawings, and the numbers and sizes of anchors are indicated.
4. Each anchor in the lot is inspected for perpendicularity, spacing between anchors, distances from abandoned anchors and free edges, embedment depth, and thread engagement.
5. A sample of anchors is randomly selected for proof testing. The number tested is dependent on the number of anchors in the lot. A large number of anchors dictates a larger sample. Failures identified in the sample require additional anchors be tested.

A review of 36 randomly selected anchor test records indicated that Construction and Nuclear Power are implementing procedural requirements.

NRC recognized an increase in deficiency reports regarding concrete anchors in 1979 and subsequently issued NRC IE Bulletin 79-02. This bulletin basically required that anchor design, safety factors, and documentation be reevaluated and that a testing program be initiated to confirm that anchors will perform their intended functions. The testing program outlined by NRC allowed sampling techniques to be utilized and emphasized that a high failure rate was basis for increased testing.

A review of ASTM E488, "Strength of Anchors in Concrete and Masonry Elements," showed that sampling techniques were acceptable for anchor testing.

CORRECTIVE ACTION(S) None required

CLOSURE STATEMENT: The employee concern was substantiated in that sampling techniques are used. However, determination of adequacy of the anchors based on sampling is an acceptable technique endorsed by industry standards, TVA procedures, and NRC in IE Bulletin 79-02.

FINAL

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-86-190-003 _____
(ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: CONCRETE ANCHOR TESTING
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)
TVA USED A SAMPLING PLAN FOR TESTING REDHEADS RATHER THAN TESTING ALL OF THEM.
4. Reason for Reportability: (Use supplemental sheets if necessary)
- A. This design or construction deficiency, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant.
No Yes _____ If Yes, Explain: _____
- AND
- B. This deficiency represents a significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B.
No Yes _____ If Yes, Explain: _____
- OR
- C. This deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria bases stated in the safety analysis report or construction permit.
No Yes _____ If Yes, Explain: _____
- OR

FINAL

REQUEST FOR REPORTABILITY EVALUATION

D. This deficiency represents a significant deficiency in construction of or significant damage to a structure, system or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

OR

E. This deficiency represents a significant deviation from the performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of the structure, system, or component to perform its intended safety function.
No Yes If Yes, Explain: _____

IF ITEM 4A, AND 4B OR 4C OR 4D OR 4E ARE MARKED "YES", IMMEDIATELY HAND-CARRY THIS REQUEST AND SUPPORTING DOCUMENTATION TO NSRS.

This Condition was Identified by: W.D. Dubouché 365 44778
ERT Group Manager Phone Ext.

W.S. Smith 365-44114
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

Barrie J. Pughen Date 11/5/85 Time _____
Signed

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NO. I-85-439-WBN
EMPLOYEE CONCERN IN-86-190-003
MILESTONE 6

SUBJECT: CONCRETE ANCHOR TESTING

DATES OF INVESTIGATION: October 3-7, 1985

INVESTIGATOR:

A. M. Gentry

A. M. Gentry

10/24/85

Date

INTERVIEWED BY:

Paul B. Border

P. B. Border

10/24/85

Date

APPROVED BY:

M. A. Harrison

M. A. Harrison

10/24/85

Date

BACKGROUND

A concern was received by the Quality Technology Company Employee Response Team that stated:

An employee told the CI that the safety related concrete anchors (REDHEADS) were tested by a sampling plan rather than individually. CI questioned the acceptability of this practice.

II. SCOPE

The ANSI and ASTM Standards, TVA Design Standards, and TVA Construction Specifications were reviewed to determine the acceptable methods for anchor testing. Construction and Nuclear Power site procedures were reviewed to determine if sampling methods are being implemented.

III. SUMMARY OF FINDINGS

A. Applicable Codes, Standards, and Procedures

The following documents were reviewed as a part of this investigation.

1. ANSI B40.1, "Gauges - Pressure Indicating Dial Type - Elastic Element"
2. ANSI B94.12, "Carbide-Tipped Masonry Drills and Blanks for Carbide-Tipped Masonry Drills"
3. ASTM A36, "Standard Specification for Structural Steel"
4. ASTM A307, "Standard Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners"
5. ASTM A325, "Standard Specification for High-Strength Bolts for Structural Steel Joints"
6. ASTM C144, "Standard Specification for Aggregate for Masonry Mortar"
7. ASTM E488-84, "Strength of Anchors in Concrete and Masonry Elements"
8. NRC I-E Bulletin 79-02 and TVA responses thereto
9. Construction Specification G-2, "Plain and Reinforced Concrete"
10. Construction Specification G-32, "Bolt Anchors Set in Hardened Concrete"
11. Construction Specification G-34, "Repair of Concrete"
12. Construction Specification G-51, "Grouting and Dry Packing of Base Plates and Joints"

13. Design Standard DS-C6.1, "Concrete Anchorages"
 14. Construction Procedure WBN-QCP-1.14, "Inspection and Testing of Bolt Anchors Set in Hardened Concrete and Control of Attachments to Embedded Features"
 15. Nuclear Power Procedure MAI-1, "Installation, Testing of Bolted Anchors Set in Hardened Concrete"
- B. Construction implements and complies with procedure QCP-1.14, "Inspection and Testing of Bolt Anchors Set in Hardened Concrete and Control of Attachments to Embedded Features," for anchor testing.
- C. Nuclear Power implements and complies with procedure MAI-1, "Installation, Testing of Bolted Anchors Set in Hardened Concrete," for anchor testing.
- D. Both procedures reference and implement General Construction Specification (G-Spec) G32, "Bolt Anchors Set in Hardened Concrete."

This specification references ANSI and ASTM standards, other G-Specs, and Design Standard DS-C6.1, "Concrete Anchorages." These documents established the following method which is used for anchor testing.

1. Qualification tests are performed prior to the initial use of each size and brand of anchor at each project in project-placed concrete. The results of these tests are analyzed to assure that the design loads will be supported and that the required factors of safety are achieved.
2. Prior to installation testing, anchors are grouped into what is called a "lot." A lot is defined as the anchors installed by a specific crew either in a specific location in the plant or over a period of time. If the lot is defined on the basis of time, the maximum time is two weeks. The installing crew applies a unique identification marking adjacent to the anchor or anchors, and a record of all installations is maintained. Regardless of the basis for a lot, anchors of different types or brands are grouped into separate lots.
3. Lots are marked on controlled drawings, and the numbers and sizes of anchors are indicated.
4. Each anchor in the lot is inspected for perpendicularity, spacing between anchors, distances from abandoned anchors and free edges, embedment depth, and thread engagement.
5. A sample of anchors is randomly selected for proof testing. The number tested is dependent on the number of anchors in the lot. A large number of anchors dictates a larger sample. Failures identified in the sample require additional anchors be tested.

- E. A review of 36 randomly selected anchor test records indicated that Construction and Nuclear Power are implementing procedural requirements.
- F. NRC recognized an increase in deficiency reports regarding concrete anchors in 1979 and subsequently issued NRC IE Bulletin 79-02. This bulletin basically required that anchor design, safety factors, and documentation be reevaluated and that a testing program be initiated to confirm that anchors will perform their intended functions. The testing program outlined by NRC allowed sampling techniques to be utilized and emphasized that a high failure rate was basis for increased testing.
- G. A review of ASTM E488, "Strength of Anchors in Concrete and Masonry Elements," showed that sampling techniques were acceptable for anchor testing.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The employee concern is substantiated in that sampling techniques are used. However, determination of adequacy of the anchors based on sampling is an acceptable technique endorsed by industry standards, TVA procedures, and NRC in IE Bulletin 79-02.

B. Recommendations

None.

TENNESSEE VALLEY AUTHORITY
NUCLEAR SAFETY REVIEW STAFF
NSRS INVESTIGATION REPORT NOS. *I-85-570-WBN
EMPLOYEE CONCERNS IN-86-259-006 AND IN-86-268-003
MILESTONE 3

SUBJECT: CABLE ARRANGEMENT IN CABLE TRAYS

DATES OF INVESTIGATION: October 15-28, 1985

INVESTIGATOR: *G. R. Owens* 11/1/85
G. R. Owens Date

REVIEWED BY: *F. B. Border* 11/2/85
F. B. Border Date

APPROVED BY: *M. A. Harrison* 11/2/85
M. A. Harrison Date

I. BACKGROUND

- A. Concern IN-86-259-006 was received by the Quality Technology Company (QTC) Employee Response Team that stated:

Many electrical cables have been placed in cable trays without adequate separation. Many cable tray covers extend 3 to 4 inches above the tray because of cable arrangement.

Note: Further information obtained from QTC clarified that the concern was about the disorderly arrangement of cables in various cable trays creating inadequate separation between individual cables and causing cable tray covers to be extended above the trays.

- B. Concern IN-86-268-003 was received by the QTC Employee Response Team that stated:

Cables were installed improperly in the Control Bldg., at elevation 729' and 741' spreader room. Cable separation was improper before painting with insulation.

II. SCOPE

Observations were made of cable trays in the cable spreading room, computer room, and at selected locations in the auxiliary building. Cabling criteria, design drawings, and construction and inspection procedures were reviewed. Discussions were conducted with cognizant personnel to evaluate the concerns of record.

III. SUMMARY OF FINDINGS

- A. Applicable Procedural Requirements

1. The WBN design criteria, WBN-DC-30-5, "Power, Control, and Signal Cables for Use in Category I Structures," described the requirements for the separation of cables within trays. This description was also presented in Section 8.3.1.4.1 of the FSAR. There were five different cable tray systems installed:

Low Level Signal Trays	(V1)
Medium Level Signal Trays	(V2)
Control Level Trays	(V3)
480-V Trays	(V4)
6900-V Trays	(V5)

The tray systems are also described in more detail in Electrical Design Standard DS-E13.2.1, Section 4.0.

2. Procedurally the V1-, V2-, and V3-level cable trays have no specific spacing requirements between the cables within the respective trays other than the trays were not to be loaded beyond 60 percent of the cross-sectional area of the individual tray.

3. Procedurally the V4-level cable trays have no specific cable spacing requirement, but trays in this case were not to be loaded beyond 30 percent of the cross-sectional area, except when a single layer of cable is used.

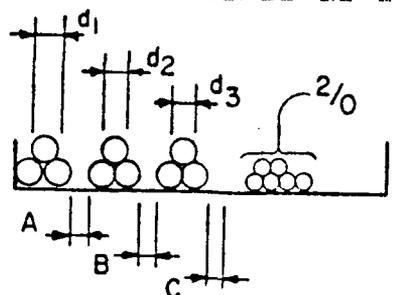
4. Procedurally the V5-level tray cables did require specific spacing. The criteria stated:

All 6900-V cables larger than 2/0 AWG shall be grouped into 3-ph circuits and shall be separated on the cable tray from other 3-ph circuits a nominal distance equal to the radius of the largest cable in the adjacent circuit. The 6900-V cables which are 2/0 AWG may be laid at random on cable trays but shall not be in contact with the grouped 3-ph circuits except at crossings and where cables enter or exit cable tray.

5. Construction Specification G-38, "Installing Insulated Cables Rated up to 15,000 Volts," stated the following regarding cables being placed on cable trays.

a. "Cables shall be placed on low-level signal trays, medium-level signal trays, control trays, and 480-volt trays in a neat, orderly fashion. Temporary bridges shall be used at intersections to allow cables to be pulled without excessive interlacing." (Prior to September 1982, G-38 stated the cables would be distributed as evenly as practical.)

b. "All medium voltage (MV) power cables (5-15 kV) larger than No. 2/0 AWG shall be placed on trays in grouped, three-phase circuits. Medium voltage power cables which are No. 2/0 AWG shall be either grouped as above or laid side-by-side with no space between individual conductors. Except as noted . . . below, the nominal spacing between adjacent three-phase circuit bundles or between a three-phase circuit bundle and ungrouped No. 2/0 AWG cables shall be determined as outlined in the sketch below. The nominal spacing defined in the sketch may be less at points where cables enter or exit a tray and at tray fittings where necessary to prevent exceeding the minimum cable bend radius. However, nominal spacing should be restored as soon as practical."



$$A = \frac{d_1}{2} \text{ or } \frac{d_2}{2}, \text{ whichever is larger.}$$

$$B = \frac{d_2}{2} \text{ or } \frac{d_3}{2}, \text{ whichever is larger.}$$

6. Drawing 45N880

- a. General Note 8 on Electrical Conduit and Grounding Drawing 45N880-1 also provided the same instructions for cable spacing in medium voltage (V5) trays.
- b. Note 9 on the same drawing instructed that cables were to be distributed evenly on trays and temporary bridges placed at intersections to allow cables to be pulled without interlacing.

Note: This was intended to provide a neat installation so that future modifications could be accomplished as easily as possible. However, the addition of the Vimasco coating caused such future modifications to be extremely difficult regardless of the cable arrangements.

7. WBN-QCP-3.05

- a. WBN-QCP-3.05 Section 7.3.6 provided the same requirements and sketch as presented in item 5.b for QC to inspect by after installations were completed.
- b. QCP-3.05 also provided Section 7.3.1 which stated: "Distribution - Cables are distributed evenly in the cable tray, and interlacing at intersections is prevented."

B. Findings

1. Observations were made of various cable trays by the investigator at the following locations.
 - a. Cable spreading room elevation 729 and 741
 - b. Computer room
 - c. Auxiliary building elevation 737 at coordinates A4 and between R and S
 - d. Auxiliary building elevation 737 at A13 and T
 - e. Auxiliary building elevation 772 at A12 and R
 - f. 6900-V shutdown board room in the auxiliary building
2. Some of the observations were:
 - a. Covers had been extended 2 to 4 inches above the side rails on many of the trays to accommodate the random arrangement of cables and the fire-retardant cable coating, Vimasco. The most prevalent place where cables rose above the side rails was at the point where trays transitioned from a vertical (45°) tray to a horizontal tray. (The cable bends often occurred above the side rails at this point.)

- b. Cables in safety-grade cable trays were generally more orderly arranged than nonsafety trays.
- c. Cable tray loading was difficult to observe because of the Vimasco, cable tray covers, and the disorderly state of the cable arrangements in many of the trays.
- d. V5 safety-level cable trays were observed in the 6900-V shutdown board room (Unit 1). The cables appeared to be orderly, and the "pyramiding type" arrangement was observed. Because of the Vimasco coating it was difficult to determine the separation distance between cables.
- e. Several of the locations observed with raised cable tray covers were at cable tray crossings of different safety divisions. Measurements were taken of the separation distance between the divisional trays.

(1) Cable Spreading Room Elevation 741

- (a) Cable tray 3A96 crossed over 3B254. The cover on 3B254 was raised 3 inches, and the distance between the cover and the bottom of 3A96 was 9 inches.
- (b) Cable tray 3A94 crossed over 3B251. The cover on 3B251 was raised 2 inches, and the distance between the cover and the bottom of 3A94 was 10 inches.
- (c) Cable tray 3A112 crossed over 3B264. The cover on 3B264 was raised 4 inches, and the distance between the cover and the bottom of 3A112 was 8 inches.

Two other crossovers in this room were observed to have 12 inches of separation between the top of the bottom tray covers and the bottom of the top trays. All these crossovers are shown on design drawings 45N880-8 and -10.

(2) Auxiliary Building, A4 and between R and S Coordinates, Elevation 737

Tray 3B2226 crossed over 3A2221. The cover on 3A2221 was raised 4 inches, and the distance between the top of the cover and the bottom of 3B2226 was 9 inches.

3. Interviews with Cognizant Personnel

- a. Interviews with cognizant personnel revealed their familiarity with the installation and inspection requirements, especially for the V5 level trays. Those interviewed were not aware of any compromises made to cable spacing in V5 trays as a result of the fire retardant being applied to the cables.
 - b. There was some expression that the cause of the disorderly arrangements in the V1-V4 trays was due to emphasis on production, especially in the nonsafety trays where QC inspections were not being accomplished.
 - c. Discussions with cognizant design personnel revealed no expected electrical problems due to the disorderly arrangement of cables in trays V1-V4.
 - d. In discussions with cognizant personnel, it was found that the inspector's signoff on the cable pull slips indicated that all requirements of QCF-3.05 were satisfied. (Included in QCF-3.05 was the spacing requirement for 6900-V cables.) The signoff is required by section 8.1 of QCF-3.05.
4. As a result of an independent review by Black and Veatch of the WBN auxiliary feedwater system, a concern was raised by the reviewers relative to the specified spacing between medium voltage power circuits in cable trays being compromised because of the addition of the fire-retardant coating to the cables. OE conducted an evaluation and concluded that even if the cables were assumed to be touching in the trays, adequate ampacity margins would still exist. This evaluation is described in Appendix B to a letter to the NRC dated 3/29/84 (A27 840329 002).
 5. In the cases where separate divisional cable trays must cross one another, the FSAR (Section 8.3.1.4.2) and OE's design criteria, WB-DC-30-4 state: "In cases where trays carrying cables of different divisions of separation cross, there is a minimum vertical separation of 12 inches (tray top of lower tray to tray bottom of upper tray) with the bottom tray covered with a solid steel cover and the top tray provided with a solid steel bottom for a minimum distance of 3 feet on each side of the tray crossing."
 6. Section 4.2.2.1.5 of the design criteria stated that if the one foot cannot be attained: ". . . fire resistant barriers shall be used. This barrier shall be either a 1/2-inch minimum thickness or Marinite-36 (or its equivalent), or two sheets of minimum 14-gauge steel with a minimum 1-inch air space separating the two sheets of steel."

7. Electrical conduit and grounding drawings 45N880-8 R6 and -10 R9 showed the cable trays and respective crossovers in the cable spreading room at elevation 741. These drawings refer to Note A of drawing 45N880-6 which addresses the crossovers and states: "Where cables of different divisions (channels or trains) cross, the bottom tray must be covered and the top tray must have a solid bottom for a minimum distance of 3'-0" on both sides of the tray crossing."
8. Note 8 on drawing 45N880-1 which applied to the cable spreading room stated: "In areas where cable tray fill exceeds the side rails of the tray, covers may be attached utilizing F-W raised cover connectors."
9. The design drawings did not provide specific requirements to maintain 12-inch separation between the bottom tray covers and the solid bottoms of the top tray or, as an alternative, fire-resistant barriers.
10. In personnel discussions it was revealed that QC inspections were made according to QCP-3.04. Section 7.1.4 stated that "separation requirement between divisional cable tray segments is in accordance with applicable drawing." The personnel interviewed were not familiar with the 12-inch requirement since it was not a part of the design drawings.
11. Discussions with site personnel revealed both manufacturer-fabricated cable tray covers and solid tray bottoms were installed as well as field-fabricated ones. Information from cognizant personnel indicated they were fabricated from 16- or 18-gauge steel.
12. A Nuclear Power audit in 1981 resulted in NCR W-31P being issued. The NCR identified 199 installed deficiencies against the FSAR requirements. These were primarily safety-grade separation deficiencies. Included were items 36 and 37 of the NCR attachment that stated cable tray 4A2089 was 5 inches from tray 3B2098, and tray 4A2085 was 4-1/2 inches from tray 3B2098.

The OE disposition to these deficiencies was to install solid tray covers and solid bottoms as shown on drawings 45W880-12D and -16D.

The investigator observed these crossovers and saw the covers and solid bottoms. (The covers were not raised in these cases.) The separation distance appeared to be the same as observed during the audit.

13. NCR W-283-P was issued on 10/16/85 concerning temporary cables being added to cable trays without loading evaluations being performed and cable routings being addressed. Also temporary cables have been cut and left in trays without adequate identification.

No other NCRs or other reporting deficiencies related to these concerns were identified during the investigation.

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

1. Although cables have in many cases been installed in cable trays in a disorderly way, the concern that adequate separation was not provided could not be substantiated. This was based on the evidence obtained that supported that cables in V5-level trays were installed as required and that no specific spacing requirements between cables were required in the V1-V4 trays.
2. The concern that cable tray covers had been raised 3 to 4 inches because of cable arrangements was substantiated by personal observations. The raising of covers was permitted by design documentation, but in doing so apparently violated specified separation requirements.
3. Although the cable tray covers and solid cable tray bottoms provided two steel barriers between separate safety divisional crossovers, they do not meet the guaging requirement of the design criteria, WB-DC-30-4.
4. The design process failed to implement design separation requirements (between safety divisions at cable tray crossovers) into the design output documentation. As a result, separation requirements were not included into the site installation instructions and tray separation violations occurred.
5. Permanent cables were installed in trays in a disorderly way contrary to the design drawing and inspection-procedure requirements. This contributes to difficulty in making future cable modifications. However, no evidence obtained supported that any problems of safety significance were created by this practice.
6. Temporary and spare cables contribute to the disorderly arrangement of cables in the trays.

B. Recommendations

I-85-570-WBN-01 - Install Fire Barriers

Inspect all divisional cable tray crossovers and install fire barriers as required by the FSAR, Section 8.3.1.4.2, and design criteria WB-DC-30-4, or reevaluate the acceptability of the existing cable tray covers and solid bottoms as acceptable fire barriers. Changes to the appropriate documentation would be required if determined to be acceptable. This is based on the statement that requires either 12 inches of separation or fire barriers if the 12 inches cannot be obtained.

I-85-570-WBN-02 - Review Design Process

Evaluate the design process to determine why the cable tray crossover separation requirement was not maintained in the design output documentation. Make any needed changes to the process to prevent reoccurrences.

I-85-570-WBN-03 - Resolve NCR W-283-P

Resolution of NCR W-283-P should be accomplished in such a way to improve control over temporary cables and loading of cable trays.