

TENNESSEE VALLEY AUTHORITY

KNOXVILLE, TENNESSEE 37902

400 West Summit Hill Drive, E3A8

December 26, 1985

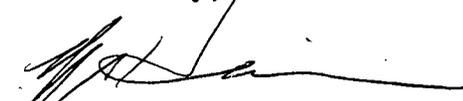
Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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 December 20, 1985 through December 26, 1985. TVA has previously submitted copies of the requested information through December 19, 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. A. Harrison or B. F. Siefken at FTS No. 856-6328 or 856-6230, respectively.

Sincerely,

  
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

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

8512310167 851226  
PDR ADOCK 05000390  
A PDR

*Add:*

*0025*  
*1/1*  
AD - J. Knight (ltr only)  
EB (BALLARD)  
EICSB (ROSA)  
PSB (GAMMILL)  
RSB (BERLINGER)  
FOB (BENAROYA)

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 INVEST CLOSED	KEY WORD	#
** 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	1
EX-85-049-001	NO SECURITY BARRIER	NSRS	10/17/85	.T.	11/26/85	T	12/10/85	SECURITY	1
IN-85-001-003	WELDS UNDER WATER	ERT	07/10/85	.T.	09/23/85	T	09/23/85	WELDING	1
IN-85-010-002	VIOLATION OF 050 NTS	NSRS	11/22/85	.T.	/ /		/ /	HANGERS	1
IN-85-012-X02	TENSILE STRNG OF FIT	NSRS	08/05/85	.T.	/ /		08/05/85	MATERIAL	1
IN-85-018-004	SUPV NOT FOLLOW PROC	NSRS	11/14/85	.T.	/ /		11/20/85	ELECTRICAL	1
IN-85-021-X05	WELDER CERTIF FALSIF	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-024-001	DRWNS & 050 NOTES	NSRS	07/03/85	.T.	/ /		/ /	HANGERS	1
IN-85-031-001	ENBD PLTS NOT CORREC	ERT	08/20/85	.T.	11/18/85		/ /	DESIGN	1
IN-85-037-001	CONCRETE ANCHORS	ERT	07/09/85	.T.	09/11/85	F	/ /	CIVIL	1
IN-85-038-001	ANALYS OF LARGE PIPE	ERT	07/08/85	.T.	09/05/85	T	09/05/85	DESIGN	1
IN-85-039-001	THML STRS ON PIPING	ERT	07/09/85	.T.	09/05/85	T	09/05/85	DESIGN	1
IN-85-039-002	STRES&SUPPRT LD PROB	ERT	11/08/85	.T.	/ /		11/12/85	DESIGN	1
IN-85-052-001	DRWNGS & 050 NOTES	NSRS	07/03/85	.T.	07/30/85	F	/ /	HANGERS	1
IN-85-088-001	VACUM TEST ON DOORS	ERT	07/09/85	.F.	/ /		07/09/85	TESTING	1
IN-85-091-X02	NO NCR FOR LOST DOCU	ERT	08/26/85	.T.	/ /		10/03/85	DOCUMENT	1
IN-85-130-002	FIRE SEALS BREACHED	ERT	07/05/85	.T.	09/13/85	T	09/13/85	CONSTRUCTI	1
IN-85-134-001	CRIT NOT MET/IDSS WL	ERT	11/22/85	.F.	/ /		11/22/85	WELDING	1
IN-85-160-001	UNREPORTED FIRE	NSRS	11/07/85	.F.	/ /		11/12/85	CONSTRUCTI	1
IN-85-160-002	UNQUALIFIED PERSONNE	NSRS	12/03/85	.F.	/ /		12/11/85	CONSTRUCTI	1
IN-85-169-001	SYS 62 VALVE CLASS	ERT	07/10/85	.T.	07/26/85	T	07/26/85	MATERIAL	1
IN-85-202-001	CRACK IN WELD	ERT	07/10/85	.T.	/ /		07/09/85	WELDING	1
IN-85-207-002	USE OF FISH TAPE	NSRS	11/22/85	.T.	/ /		/ /	ELECTRICAL	1
IN-85-251-002	MAINT WITHOUT NCR	NSRS	10/31/85	.F.	12/06/85	T	12/10/85	QA	1
IN-85-260-003	WELD DOCUMNTATION	ERT	10/07/85	.F.	11/29/85	T	12/10/85	WELDING	1
IN-85-293-001	NCR 4412	NSRS	12/18/85	.F.	/ /		12/18/85	DESIGN	1
IN-85-311-008	CR ENTRANCE FIREDOOR	ERT	08/19/85	.T.	09/24/85	T	10/10/85	OPERATIONS	1
IN-85-325-006	VALV CONT/OPER TRAN	NSRS	10/01/85	.F.	/ /		10/04/85	OPERATIONS	1
IN-85-393-003	FSAR REQ FOR SUPERV	NSRS	07/03/85	.T.	11/25/85	T	11/27/85	OPERATIONS	1
IN-85-406-001	UNAUTH CHNG TO WDREC	ERT	07/09/85	.T.	07/24/85	T	07/24/85	WELDING	1
IN-85-413-001	"050"NOTES	NSRS	08/09/85	.T.	/ /		08/09/85	HANGERS	1
IN-85-424-011	INADEQ UPDT WELD CER	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-424-X13	FALSIF WELDER CERTIF	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-439-003	INADEQ CRAFT SUPV	NSRS	10/30/85	.F.	/ /		10/30/85	CONSTRUCTI	1
IN-85-445-004	INCORR INSPEC REQUIR	ERT	11/25/85	.T.	/ /		/ /	QA	1
IN-85-445-008	PROC DIFFICULT TO KN	NSRS	10/23/85	.F.	/ /		10/30/85	CRAFT	1
IN-85-445-010	EYE TEST INADEQUATE	NSRS	10/28/85	.T.	/ /		/ /	WELDING	1
IN-85-445-013	47-050 HARD TO USE	NSRS	10/10/85	.T.	/ /		10/16/85	HANGERS	1
IN-85-445-X15	INSP REQ FALSIFIED	ERT/OGC	11/25/85	.T.	/ /		/ /	QA	1
IN-85-457-001	INADQ REVIEW BY PORC	NSRS	10/17/85	.T.	/ /		/ /	OPERATIONS	1
IN-85-465-002	LOOSE CONDUIT	NSRS	09/09/85	.F.	11/14/85	T	11/20/85	HANGERS	1
IN-85-472-002	NO NCRS ON ERCW LINS	NSRS	10/03/85	.F.	/ /		/ /	QA	1
IN-85-527-001	CABLE PULL W/O FUSE	NSRS	11/27/85	.T.	/ /		11/29/85	ELECTRICAL	1
IN-85-534-005	FIRE PROTEC HYDRO TE	NSRS	10/02/85	.F.	/ /		/ /	TESTING	1
IN-85-544-001	WORK W/O WORKPLAN	ERT	10/22/85	.F.	/ /		/ /	QA	1

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QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE INVEST CLOSED	KEY WORD	#
IN-85-544-002	VIOLATION OF PROCEDU	ERT	10/23/85	.T.	12/16/85	T	12/23/85	QA	1
IN-85-581-002	WLDRS NOT QUAL ELEC	NSRS	10/17/85	.T.	/ /		10/17/85	CONSTRUCTI	1
IN-85-612-X07	WELDER CERTIF FALSIF	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-671-002	NOT ISSUING IRN/WRN	NSRS	12/03/85	.T.	/ /		/ /	CIVIL	1
IN-85-676-001	DISAGREE W/TVA POLIC	NSRS	10/31/85	.T.	/ /		/ /	QA	1
IN-85-682-005	MGT ALLOW INSP HARAS	NSRS	11/27/85	.F.	/ /		/ /	QA	1
IN-85-684-001	DEFECTIVE TUBE STEEO	NSRS	09/16/85	.F.	/ /		09/16/85	MATERIAL	1
IN-85-688-002	INADEQUATE TVA PROCE	NSRS	12/18/85	.T.	/ /		12/24/85	QA	1
IN-85-688-004	PREVENT OF CORRECTIV	NSRS	12/09/85	.T.	/ /		/ /	QA	1
IN-85-770-002	PROC FOR CER NOT PER	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-770-003	UNCERTIFIED WELDERS	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-770-X07	WELDERS CERT FALSIFI	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-778-X07	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-795-001	COMPRESS FITTING	ERT	08/07/85	.T.	10/07/85	F	/ /	INSTRUMENT	1
IN-85-795-002	COMPRESS FITTING	ERT	08/07/85	.T.	10/07/85	F	/ /	INSTRUMENT	1
IN-85-845-001	SYS43 UNIS NOT ACHD	NSRS	12/04/85	.F.	/ /		/ /	CIVIL	1
IN-85-847-006	CRFT SUP ALW UNAP PL	NSRS	10/29/85	.T.	/ /		/ /	QA	1
IN-85-850-002	QUANTITY VS. QUALITY	NSRS	11/07/85	.F.	/ /		11/12/85	QA	1
IN-85-853-X02	VIOLAT TVA PROCEDURE	ERT	10/12/85	.F.	/ /		10/18/85	QA	1
IN-85-858-001	QUANTITY VS QUALITY	NSRS	12/09/85	.T.	/ /		/ /	QA	1
IN-85-897-001	INEXP CRAFTSMEN	NSRS	11/07/85	.T.	/ /		11/12/85	CRAFT	1
IN-85-913-004	CONSTRUCT VIOLATIONS	NSRS	11/26/85	.F.	/ /		/ /	QA	1
IN-85-915-003	DRAWING CONTROL	NSRS	10/22/85	.T.	/ /		/ /	DOCUMENT	1
IN-85-965-001	WELDOR CER BACKDATED	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-977-001	TAPE NOT REPL ON RCS	NSRS	10/10/85	.F.	/ /		/ /	QA	1
IN-85-977-002	DOCUMENT OF TCS/SIS	NSRS	10/03/85	.T.	/ /		/ /	DOCUMENT	1
IN-86-055-003	HYDRAZINE SPILL	NSRS	10/17/85	.T.	/ /		/ /	OPERATIONS	1
IN-86-068-002	RETUBIN OF HEAT EXCH	ERT	11/05/85	.T.	/ /		/ /	MAINTENANC	1
IN-86-081-001	INADEQ PLANT SYS STA	NSRS	11/19/85	.T.	/ /		/ /	OPERATIONS	1
IN-86-087-003	DELAY IN CARS/DRS	NSRS	12/09/85	.T.	/ /		/ /	QA	1
IN-86-087-004	DIFFERENCE IN Q-LIST	NSRS	10/04/85	.T.	/ /		/ /	QA	1
IN-86-090-001	DIFFERENCE IN Q-LIST	NSRS	10/04/85	.T.	/ /		/ /	QA	1
IN-86-090-002	DELAY IN CARS/DRS	NSRS	12/09/85	.T.	12/09/85	T	/ /	QA	1
IN-86-090-003	SIS APPROVAL W/O REV	NSRS	10/17/85	.T.	/ /		/ /	OPERATIONS	1
IN-86-098-001	DELAY IN CAR/DR	NSRS	12/09/85	.T.	/ /		/ /	QA	1
IN-86-102-001	REQ FOR CONDUIT INSU	NSRS	10/11/85	.T.	/ /		/ /	HANGERS	1
IN-86-102-002	NO ATTACH D/CONDUIT	NSRS	10/14/85	.F.	/ /		10/16/85	CONSTRUCTI	1
IN-86-103-001	NO ATTACH D/CONDUIT	NSRS	10/11/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-103-002	REMOVAL OF INSULATIO	NSRS	11/13/85	.F.	/ /		11/15/85	CONSTRUCTI	1
IN-86-112-001	USE OF TOOLS NOT DOC	NSRS	12/12/85	.T.	/ /		/ /	OPERATIONS	1
IN-86-134-002	IRN POLICY	NSRS	12/03/85	.T.	/ /		/ /	QA	1
IN-86-135-003	LINES NOT INSPECTEDD	NSRS	12/09/85	.T.	/ /		/ /	HANGERS	1
IN-86-143-002	WELDER CERT BACKDATE	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
IN-86-155-004	WELDS MAY NOT INSPEC	NSRS	10/22/85	.F.	/ /		10/22/85	WELDING	1
IN-86-167-005	WELDER REQUAL BACKDT	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
IN-86-167-X06	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1

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QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE INVEST CLOSED	KEY WORD	#
IN-86-210-001	HEAT EXCH TUBES INAD	ERT	11/05/85	.T.	/ /		/ /	DESIGN	1
IN-86-221-004	CLEANERS NOT APPVD	NSRS	10/10/85	.T.	12/06/85	T	12/12/85	MATERIAL	1
IN-86-226-001	HARAS FOR REP QC	NSRS	11/11/85	.T.	/ /		/ /	QA	1
IN-86-259-004	INADEQ CABLE PULL	NSRS	10/31/85	.T.	/ /		11/04/85	ELECTRICAL	1
NS-85-001-001	INACCUR WELD INSPECT	ERT	08/13/85	.T.	09/27/85	F	/ /	WELDING	1
NS-85-004-001	INADEQ ORIFICE PLATE	NSRS	12/17/85	.T.	/ /		/ /	DESIGN	1
PH-85-003-021	ENG EVAL NOT CONDUCT	NSRS	10/10/85	.T.	/ /		10/16/85	QA	1
PH-85-006-001	CHANGES TO 050 NOTES	NSRS	08/09/85	.F.	/ /		08/09/85	HANGERS	1
PH-85-012-001	INSPECT OF WELDS	ERT	07/19/85	.T.	/ /		07/19/85	WELDING	1
PH-85-014-002	INSPECT NOT PERFORMD	ERT/OGC	12/14/85	.F.	/ /		/ /	INSPECTION	1
PH-85-018-001	AUDIT FINDS WITHHELD	ERT	07/10/85	.F.	/ /		07/10/85	QA	1
PH-85-022-001	ORIFICE PLATES ERROR	NSRS	12/17/85	.T.	/ /		/ /	DESIGN	1
WI-85-003-001	FALSE WELD CERTF CRD	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
WI-85-003-X02	WELDER CERT CARD FAL	ERT/OGC	10/24/85	.T.	/ /		/ /	WELDING	1
WI-85-013-003	INSPECT THRU PAINT	ERT	11/06/85	.T.	/ /		/ /	WELDING	1
WI-85-016-001	PROCEDURE VIOLATIONS	ERT	11/01/85	.F.	/ /		/ /	CIVIL	1
WI-85-055-001	WELDER RECERTIFICATI	ERT	09/24/85	.T.	/ /		10/02/85	WELDING	1
WI-85-056-001	NOT FOLLOW CODE REQU	ERT	09/24/85	.T.	/ /		10/02/85	WELDING	1
** Subtotal **									

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\*\* MILESTONE: 2 CRITICALITY

IN-85-016-003	TUBING NOT CLAMPED	NSRS	09/03/85	.T.	/ /		/ /	HANGERS	1
IN-85-025-001	INCORE THERMO TEST	NSRS	07/03/85	.F.	/ /		/ /	TESTING	1
IN-85-064-002	SHUTDN BDS TOP OPEN	NSRS	06/28/85	.T.	07/22/85	T	07/22/85	ELECTRICAL	1
IN-85-069-001	INADEQUATE INSPECTS	ERT	07/10/85	.T.	10/10/85	F	/ /	HANGERS	1
IN-85-106-001	MN STM LOADS SUPPORT	ERT	07/11/85	.F.	/ /		07/11/85	DESIGN	1
IN-85-109-002	BOLTS REPLAC BY WELD	NSRS	11/07/85	.T.	/ /		/ /	WELDING	1
IN-85-186-002	INSL ON CONDT & CABL	ERT	07/10/85	.F.	09/24/85	T	10/10/85	ELECTRICAL	1
IN-85-216-001	WELDING SEQUENCE	ERT	07/10/85	.T.	08/05/85	F	/ /	WELDING	1
IN-85-217-001	CONDENS POTS, #1	ERT	07/15/85	.T.	/ /		07/14/85	DESIGN	1
IN-85-246-001	INSUFFNT MOVEMT/NVR	NSRS	08/09/85	.F.	/ /		08/09/85	DESIGN	1
IN-85-281-001	DIFFUSER FLOW	ERT	07/05/85	.T.	07/25/85	T	07/25/85	DESIGN	1
IN-85-281-003	TRNSM NOT READ SAME	NSRS	08/15/85	.T.	12/04/85	T	12/10/85	DESIGN	1
IN-85-415-002	CONCRETE ERCW LINES	NSRS	07/11/85	.F.	/ /		07/11/85	MECHANICAL	1
IN-85-439-006	SUBSTD WEAK CONCRETE	NSRS	11/07/85	.F.	/ /		/ /	CIVIL	1
IN-85-460-003	GOUGE IN LINE, 1#	ERT	08/29/85	.T.	09/24/85	T	10/17/85	MECHANICAL	1
IN-85-460-X05	EXCAV ARC STRK SYS72	ERT	10/21/85	.T.	/ /		/ /	WELDING	1
IN-85-485-X01	SOFT CONCRETE	NSRS	11/07/85	.F.	/ /		/ /	CIVIL	1
IN-85-534-001	FIRE PROTECT SYSTEM	NSRS	10/08/85	.F.	/ /		/ /	DESIGN	1
IN-85-601-001	INADEQ SURVL INSTRUC	NSRS	10/09/85	.T.	/ /		10/09/85	QA	1
IN-85-616-001	RO NOT AVAILABLE	NSRS	08/30/85	.T.	10/16/85	T	10/16/85	OPERATIONS	1
IN-85-802-001	TARGET ROCK VALVES	NSRS	10/25/85	.T.	/ /		/ /	DESIGN	1
IN-85-845-002	SYS43 HANGER DESIGN	NSRS	11/20/85	.T.	/ /		/ /	HANGERS	1
IN-86-064-001	INAPT AIR FLOW SWITC	NSRS	12/18/85	.T.	/ /		12/18/85	EQUIPMENT	1
IN-86-122-001	CRACKS IN WF 33 BEAM	NSRS	10/10/85	.T.	/ /		10/16/85	MATERIAL	1

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QTC NUMBER	SUBJECT	INVEST ORG	DATE REPORT	S U B ?	DATE RESPONSE	A C C ?	DATE INVEST CLOSED	KEY WORD	#
IN-86-259-003	PVC CONDUITS BROKEN	NSRS	12/03/85	.F.	/ /		12/06/85	ELECTRICAL	1
XX-85-020-001	SQN/ECNS APPLICABILI	NSRS	11/19/85	.F.	/ /		11/19/85	OPERATIONS	1
** Subtotal **									26
** MILESTONE: 3 5% POWER									
IN-85-001-002	WELD ROD CONTROL	ERT	07/10/85	.F.	/ /		07/06/85	WELDING	1
IN-85-016-001	BROKN CONCRE AT PLAT	NSRS/ERT	08/05/85	.F.	/ /		08/04/85	CIVIL	1
IN-85-021-003	BACKDATE CERTF CARDS	ERT	08/19/85	.T.	/ /		/ /	WELDING	1
IN-85-027-002	COMPUTER ANALYSIS	ERT	08/01/85	.T.	11/20/85	F	/ /	DESIGN	1
IN-85-052-008	PROCEED FOR WELD RODS	ERT	07/10/85	.T.	12/16/85	T	/ /	WELDING	1
IN-85-064-001	SPRAY ON SHUTDN BDS	NSRS	06/28/85	.T.	/ /		06/28/85	ELECTRICAL	1
IN-85-086-001	STM GEN MATERIALS	ERT	07/10/85	.F.	/ /		07/10/85	MATERIAL	1
IN-85-108-001	SYS 68 PIPING	ERT	07/12/85	.F.	/ /		07/12/85	MATERIAL	1
IN-85-113-003	WELDER CERTIFICATION	ERT	07/10/85	.T.	11/12/85	T	11/20/85	WELDING	1
IN-85-140-001	OPER WATCH VS PAPER	NSRS	08/30/85	.T.	10/16/85	T	10/16/85	OPERATIONS	1
IN-85-142-003	UNFOLLOWED WORK PLAN	NSRS	12/03/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-186-004	BOARDS IN ELEC PANEL	ERT	07/05/85	.F.	09/23/85	T	09/23/85	ELECTRICAL	1
IN-85-211-001	ERCW LINE LEAK	NSRS	06/27/85	.F.	/ /		06/27/85	MECHANICAL	1
IN-85-221-001	IMPROPER VALVE OPER	ERT	07/05/85	.T.	09/23/85	T	09/23/85	OPERATIONS	1
IN-85-337-002	WELD ROD CONTROL	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-346-003	WELD CERTIFICATIONS	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-352-001	UPDATE WELD CERTIFIC	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-388-006	HEAT CODE TRACEABILI	NSRS	07/03/85	.T.	07/26/85	T	07/26/85	MATERIAL	1
IN-85-424-004	STMFIT PERFM WELDING	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-424-006	ACCOUNT OF WELD RODS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-453-007	INADEQ CERTF OF WELD	ERT	08/19/85	.T.	/ /		/ /	WELDING	1
IN-85-463-007	DELAY IN DOCUMT DRWS	NSRS	11/22/85	.F.	/ /		11/27/85	DOCUMENT	1
IN-85-465-001	LINES CLOSE TO HANGR	NSRS	07/30/85	.T.	08/09/85	T	09/08/85	MECHANICAL	1
IN-85-493-004	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-501-001	UNUSED WLD RDS DISPO	ERT	09/03/85	.T.	/ /		/ /	WELDING	1
IN-85-532-004	WELDER RECERTIFICATE	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-532-005	RECERT W/O VERIFICAT	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-534-002	FIRE PROT LINES	NSRS	10/22/85	.F.	/ /		10/22/85	DESIGN	1
IN-85-540-001	INADE WELD CERTIFICA	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-543-002	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-554-001	INCOMP STAIN STEL LN	NSRS	09/03/85	.F.	/ /		09/03/85	CONSTRUCTI	1
IN-85-579-001	INCOMPLETE WELD	ERT	12/03/85	.T.	/ /		/ /	WELDING	1
IN-85-612-006	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-671-004	WELDS NOT PROP INSPE	NSRS	10/22/85	.T.	/ /		10/22/85	WELDING	1
IN-85-705-001	UNQUALIFIED PERSONNE	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-725-X14	INADQ RECERT PROG	ERT	11/05/85	.F.	/ /		/ /	WELDING	1
IN-85-725-X15	TEST PLATES INADQ	ERT	11/05/85	.F.	/ /		/ /	WELDING	1
IN-85-778-001	WELDER CERTIFICATION	ERT	09/26/85	.T.	/ /		10/15/85	WELDING	1
IN-85-824-002	UNAPPROV BEND PROCED	ERT	08/23/85	.T.	10/18/85	T	10/30/85	QA	1
IN-85-845-004	IMPROPER WELDING	NSRS	10/10/85	.F.	/ /		10/16/85	WELDING	1

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IN-85-850-004	WORK W/O OFFC APPROV	NSRS	12/19/85	.T.	/ /		12/24/85	QA	1
IN-86-055-002	LEAKING PIPE	NSRS	11/22/85	.F.	/ /		11/27/85	MAINTENANC	1
IN-86-083-003	PRODUCTION VS QUALIT	NSRS	12/05/85	.F.	/ /		/ /	TESTING	1
IN-86-119-001	INADEQUATE CONDUITS	NSRS	10/09/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-169-001	CONDUIT HEAT DAMAGED	NSRS	11/26/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-173-001	DESIGN CALCULATIONS	NSRS	10/28/85	.T.	/ /		/ /	DESIGN	1
IN-86-205-001	ERCW UNSUITABLE	NSRS	12/03/85	.F.	/ /		12/11/85	MECHANICAL	1
IN-86-259-006	INADQ SEPAR OF CABLE	NSRS	11/01/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-262-003	EXCEED MAX PULL TENS	NSRS	10/31/85	.T.	/ /		11/04/85	ELECTRICAL	1
IN-86-268-003	IMPROPER INSTAL CABL	NSRS	11/01/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-291-007	SECURITY CLEAR PERS	NSRS	12/03/85	.T.	/ /		/ /	OPERATIONS	1
PH-85-001-002	INST LNS SLOPE PROB	ERT	07/06/85	.T.	09/20/85	T	09/23/85	INSTRUMENT	1
WI-85-053-003	IMPORP WELDING DOCUM	NSRS	11/14/85	.T.	/ /		/ /	WELDING	1
WI-85-053-006	TEST DIR NOT QUAL	NSRS	10/25/85	.F.	/ /		/ /	CONSTRUCTI	1
WI-85-054-003	DRAINS PLUGGED UP	NSRS	11/22/85	.F.	/ /		11/27/85	MECHANICAL	1
Subtotal **									55
** MILESTONE: 5 100% POWER									
IN-85-010-004	FIRE PROT PIPNG DSN	ERT	09/16/85	.F.	/ /		09/24/85	DESIGN	1
IN-85-021-002	SYS77 DRAINS IN FLR	ERT	08/23/85	.T.	/ /		08/30/85	DESIGN	1
IN-85-218-001	APPROVAL OF AS-BUILT	ERT	07/29/85	.T.	08/22/85	T	08/22/85	INSTRUMENT	1
IN-85-407-001	INACCURATE Q-LIST	NSRS	10/04/85	.T.	/ /		/ /	DESIGN	1
IN-85-688-003	VALIDITY OF CRIT SYS	NSRS	10/04/85	.T.	/ /		/ /	DESIGN	1
IN-85-945-001	ELEC MANHOLES DISORG	NSRS	10/22/85	.T.	/ /		/ /	ELECTRICAL	1
IN-85-998-002	IRN PROG NEEDS IMPRO	NSRS	12/03/85	.T.	/ /		/ /	QA	1
IN-86-087-002	EFFECT OF QA DEPT	NSRS	11/19/85	.F.	/ /		11/21/85	QA	1
** Subtotal **									8
** MILESTONE: 6 01/01/86									
EX-85-012-001	UNQUALIFIED PERSONNE	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-078-001	UO/SAFTY RELATE SYST	NSRS	10/14/85	.F.	/ /		10/16/85	OPERATIONS	1
IN-85-196-003	VALVE OPER INADQ	ERT	08/24/85	.T.	11/25/85	T	12/10/85	OPERATIONS	1
IN-85-272-004	FIREPROOFING CABLES	NSRS	12/10/85	.T.	/ /		12/12/85	DESIGN	1
IN-85-352-002	NO PORT WELD OVENS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-424-001	NO PORT OVENS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-453-009	PASS OF WELD ROD	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-454-004	PASS OF WELD ROD	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-496-002	LINER OF ERCW PIPING	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-618-004	DAMAGED INST TUBING	NSRS	08/12/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-825-002	CLAIRTY IN PROCEDURE	NSRS	10/22/85	.F.	/ /		10/22/85	OPERATIONS	1
IN-85-913-001	ELECT JUNCTION BOXES	NSRS	11/26/85	.F.	/ /		/ /	ELECTRICAL	1
IN-85-913-002	ELECT JUNCTION BOXES	NSRS	11/26/85	.F.	/ /		/ /	ELECTRICAL	1

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** Subtotal **									
** MILESTONE: 6 09/02/85									
IN-85-020-001	IMPROP INSTAL REDHDS	NSRS/ERT	08/15/85	.T.	/ /		/ /	CIVIL	1
** Subtotal **									
** MILESTONE: 6 1ST REFUEL									
IN-85-211-002	ERCW LINE NOT STAINL	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-234-001	REQUIRE FOR WELD ROD	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
** Subtotal **									
** MILESTONE: 6 I85-166WBN									
IN-85-145-002	CONCRETE LINING APAR	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
** Subtotal **									
** MILESTONE: 6 IN85-052008									
EX-85-021-001	INADEQUAT ACCOUNTABI	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
** Subtotal **									
** MILESTONE: 6 IN85-113003									
EX-85-021-002	VERIFI PROCESS/WELD	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-426-002	INADEQ WELD CERTIFIC	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-815-001	CERTIFICATI OF WELDR	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
IN-85-835-002	WELDING CERTIFICATIO	ERT	09/26/85	.T.	/ /		10/03/85	WELDING	1
** Subtotal **									
** MILESTONE: 6 IN85-140001									
IN-86-208-001	SI REQ TO MUCH TIME	NSRS	12/17/85	.T.	/ /		/ /	OPERATIONS	1
** Subtotal **									
** MILESTONE: 6 IN85-150001									
IN-86-167-001	NO TRACEABIL OF RODS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
** Subtotal **									
** MILESTONE: 6 IN85-352002									
IN-85-441-003	NO PORT WELD OVENS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1

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** Subtotal **									
** MILESTONE: 6 IN85-406001									
IN-85-445-002	UNAUT ACCS TO WLD SY	ERT	08/27/85	.T.	/ /		08/27/85	WELDING	1
IN-85-458-007	CHNG OF WELD STATUS	ERT	08/27/85	.T.	/ /		08/27/85	WELDING	1
** Subtotal **									
** MILESTONE: 6 IN85-415002									
IN-85-196-004	INPROP INSTAL PIPING	NSRS	10/11/85	.F.	/ /		10/16/85	MATERIAL	1
IN-85-442-X12	LINING LOSS IN PIPE	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-589-001	LINER ON ERCW LINE	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-713-004	CONCRETE LIN IN PIPE	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-846-002	GOUT LINER/SAFTY HAZ	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
Subtotal **									
** MILESTONE: 6 NO DATE									
EX-85-039-003	DESIGN DEFICIENCY	NSRS	11/07/85	.T.	/ /		/ /	WELDING	1
EX-85-042-003	WELDERS REQUALIFICAT	ERT	10/23/85	.T.	/ /		10/30/85	WELDING	1
EX-85-046-001	IMPRP FIRE DAMPERS	NSRS	12/17/85	.F.	/ /		12/17/85	MEHCANICAL	1
IN-85-001-005	"SHODDY WORKMANSHIP"	NSRS	12/10/85	.T.	/ /		12/12/85	WELDING	1
IN-85-007-003	VENDOR WELDS INSPECT	NSRS	12/10/85	.T.	/ /		12/12/85	WELDING	1
IN-85-103-001	IEB 79-02	NSRS	08/09/85	.T.	/ /		08/09/85	DESIGN	1
IN-85-198-001	UNCOVERED CABLE TRAY	NSRS	12/04/85	.T.	/ /		12/09/85	CONSTRUCTI	1
IN-85-220-003	EXCESS NOS OF HGRS	NSRS	12/18/85	.F.	/ /		12/24/85	CIVIL	1
IN-85-278-003	INADQ QA RECORDS	NSRS	12/18/85	.F.	/ /		12/24/85	DOCUMENT	1
IN-85-279-005	NO TRACKING SYSTEM	NSRS	11/13/85	.T.	/ /		11/15/85	DESIGN	1
IN-85-282-002	PIPING WELDS	ERT	12/19/85	.T.	/ /		/ /	WELDING	1
IN-85-289-006	VERMASCO APPL PREMAT	NSRS	11/27/85	.T.	/ /		11/29/85	ELECTRICAL	1
IN-85-337-001	ERCW LN W/CEMENT LIN	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-373-001	DAMAGED CABLE	NSRS	06/28/85	.T.	07/25/85	T	07/25/85	ELECTRICAL	1
IN-85-424-007	LACK OF WELD ROD CON	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-426-001	UNREQ PORT OVENS	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-85-532-006	OVERSIZED WELDS	NSRS	08/16/85	.T.	/ /		/ /	WELDING	1
IN-85-543-004	DETERORATE STEEL	NSRS	07/29/85	.F.	09/26/85	T	07/29/85	CONSTRUCTI	1
IN-85-630-003	ERCW LINE IMPROP INS	NSRS	11/19/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-630-004	INADQ DOC FOR ERCW	NSRS	11/19/85	.F.	/ /		/ /	MECHANICAL	1
IN-85-877-001	LIN ACPT WITH DEFAUL	NSRS	12/12/85	.F.	/ /		12/12/85	QA	1
IN-85-915-002	DRAWING CONTROL	NSRS	10/17/85	.F.	/ /		10/17/85	DOCUMENT	1
IN-85-955-001	PWR LOST SYST INOPER	NSRS	12/09/85	.T.	/ /		12/12/85	DESIGN	1
IN-85-964-003	IMPROP MAT/EQUIUP USE	NSRS	12/10/85	.F.	/ /		12/12/85	MATERIAL	1
IN-85-964-X06	USE OF "SUPERGLUE"	NSRS	12/04/85	.F.	/ /		12/11/85	CONSTRUCTI	1
IN-86-014-001	EXCESS SI ON EQUIPME	NSRS	12/17/85	.T.	/ /		/ /	OPERATIONS	1
IN-86-108-001	DRAWINGS NOT CURRENT	NSRS	11/01/85	.F.	/ /		11/04/85	DOCUMENT	1

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IN-86-110-001	INADQ ICE LOADING	NSRS	10/25/85	.T.	/ /		10/30/85	DESIGN	1
IN-86-150-001	TRACEABILITY NOT ATT	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
IN-86-184-002	CLASSIFICATION PIPIN	NSRS	12/18/85	.T.	/ /		12/24/85	MATERIAL	1
IN-86-184-004	PIPE SIZES	NSRS	12/18/85	.T.	/ /		12/24/85	WELDING	1
IN-86-190-003	ANCHOR NOT TEST INDI	ERT	10/24/85	.T.	/ /		10/30/85	CIVIL	1
IN-86-199-001	CAB PULL/REQ PER QCI	NSRS	10/31/85	.T.	/ /		11/04/85	ELECTRICAL	1
IN-86-200-003	SUPPORT NOT SAFE	NSRS	12/11/85	.F.	/ /		12/12/85	CIVIL	1
IN-86-201-001	CAB PULL LIMIT EXCEE	NSRS	10/31/85	.T.	/ /		11/04/85	ELECTRICAL	1
IN-86-221-001	RED HEADS NOT REMOVE	NSRS	12/09/85	.T.	/ /		12/12/85	CIVIL	1
IN-86-232-001	REPAIR ERCW VIOLAT	NSRS	10/03/85	.F.	/ /		/ /	MECHANICAL	1
IN-86-259-001	FAILURE USE FUSE LIN	NSRS	10/31/85	.T.	/ /		11/04/85	ELECTRICAL	1
IN-86-259-005	OVERFILLED CABLE TRA	NSRS	11/14/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-259-X11	TVA PROC NO IEEE STD	NSRS	11/14/85	.F.	/ /		/ /	DESIGN	1
IN-86-262-002	OVERCROWDING CABLES	NSRS	11/14/85	.T.	/ /		/ /	ELECTRICAL	1
IN-86-266-X09	LACK OF COVERAGE	NSRS	10/31/85	.F.	/ /		11/04/85	ELECTRICAL	1
IN-86-290-001	IRNS NOT QUAL RECORD	NSRS	12/03/85	.T.	/ /		/ /	QA	1
IN-86-305-002	NO FIRE DAMPERS	NSRS	12/10/85	.F.	/ /		12/10/85	DESIGN	1
IN-86-314-004	INADQ CABLE SEPARATI	NSRS	11/27/85	.T.	/ /		11/29/85	ELECTRICAL	1
PH-85-038-001	OE PROCEDURE REVISIO	NSRS	12/17/85	.T.	/ /		12/17/85	DESIGN	1
WI-85-040-001	NCR FOR ERCW LINE	NSRS	11/19/85	.F.	/ /		/ /	MECHANICAL	1
WI-85-040-002	INADQ PROC/INSP PLAN	NSRS	11/19/85	.F.	/ /		/ /	MECHANICAL	1
WI-85-041-001	WELD MAT INADEQUATE	ERT	11/27/85	.T.	/ /		/ /	WELDING	1
WI-85-084-001	WELDER CERTIFICATION	ERT	11/12/85	.T.	/ /		/ /	WELDING	1
** Subtotal **									50
** MILESTONE: 6 PH85-001002									
IN-85-119-001	IMPROPER LINE INSTAL	ERT	09/18/85	.T.	10/22/85	T	10/30/85	INSTRUMENT	1
** Subtotal **									1
** MILESTONE: 6 U2 FUEL LD									
EX-85-059-002	INADQ INSTAL HANGERS	NSRS	12/18/85	.F.	/ /		12/24/85	HANGERS	1
IN-85-173-001	LEAK IN SPRINK SYS	ERT	08/13/85	.F.	/ /		08/13/85	MATERIAL	1
IN-85-189-002	ACCESS TO VALVES/#2	NSRS	10/04/85	.F.	/ /		10/04/85	DESIGN	1
IN-85-246-005	RUSTED WELDS/#2/RB	ERT	10/24/85	.T.	/ /		/ /	WELDING	1
IN-85-250-001	INSP PERF W/O WK REL	NSRS	11/27/85	.T.	/ /		11/29/85	HANGERS	1
IN-85-530-001	WLDS NOT ACCRD PROCD	NSRS	08/15/85	.F.	/ /		08/15/85	WELDING	1
IN-85-615-001	OBSTRUCTED ACCESS	NSRS	10/04/85	.F.	/ /		10/04/85	DESIGN	1
IN-86-155-002	HANGER UNACCEP WELDS	NSRS	11/27/85	.F.	/ /		11/29/85	WELDING	1
** Subtotal **									8
** MILESTONE: 7 N/A									
EX-85-008-001	UNQUAL SUBJOURNEYMEN	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1
EX-85-009-001	SUBSTN WK BY SUBJRMN	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1

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EX-85-010-002	UNQAUL SUBJOURNEYMEN	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-021-001	TUBE BENDERS	ERT	07/27/85	.T.	10/22/85	T	10/30/85	CONSTRUCTI	1
IN-85-032-001	PIPING CALCULATIONS	ERT	11/26/85	.F.	/ /		11/29/85	DESIGN	1
IN-85-091-001	LOST DOCUMENTATION	ERT	09/16/85	.T.	/ /		/ /	DOCUMENT	1
IN-85-130-001	UNQUILIFIED PERSONNE	ERT	09/28/85	.T.	/ /		/ /	CONSTRUCTI	1
IN-85-271-001	GROUND DOWN WELDS	ERT	12/19/85	.T.	/ /		/ /	WELDING	1
IN-85-277-001	INSTAL PIPE W/O DRWG	NSRS	11/27/85	.T.	/ /		11/29/85	CONSTRUCTI	1
IN-85-278-002	INADQ DOCUMENT CONTR	NSRS	12/10/85	.F.	/ /		12/12/85	DOCUMENT	1
IN-85-411-001	SAFTY HAZ ON PLATFRM	NSRS	07/23/85	.T.	08/09/85	T	09/08/85		1
IN-85-514-001	CONTAM DURING CUTTIN	ERT	08/22/85	.T.	/ /		/ /	INSTRUMENT	1
IN-85-541-001	REQ WELD ON 2 SIDES	NSRS	08/15/85	.F.	/ /		08/15/85	WELDING	1
IN-85-556-001	SUBJ DOING JOUR WORK	ERT	09/28/85	.T.	/ /		/ /	WELDING	1
IN-85-589-002	SUBJ DOING JOURN WRK	ERT	09/28/85	.T.	/ /		/ /	WELDING	1
IN-85-748-001	TIE-IN OF SEAL DRAIN	ERT	08/16/85	.F.	/ /		08/16/85	DESIGN	1
NS-85-002-001	BFN/SUPTS ON RHR SYS	ERT	10/12/85	.T.	/ /		/ /	OPERATIONS	1
NS-85-001-001	SQN/D-G BATTERIES	NSRS	11/18/85	.T.	/ /		/ /	QA	1
NS-85-007-002	SQN/LEAK DUE TO MGMT	NSRS	12/13/85	.F.	/ /		12/13/85	OPERATIONS	1
XX-85-013-001	SQN/WRONG WELD ROD	ERT	08/22/85	.F.	/ /		08/27/85	WELDING	1
XX-85-019-001	BLN/AUDIT FINDINGS	ERT	07/10/85	.F.	/ /		07/10/85	QA	1
XX-85-028-001	SQN/INCREASE IN RWP	ERT	11/22/85	.F.	/ /		/ /	OPERATIONS	1
XX-85-033-006	SQN/FOREMAN MATERIAL	NSRS	12/09/85	.F.	/ /		12/10/85	MATERIAL	1
XX-85-038-001	SQN/SEP OF CARBON/SS	ERT	10/10/85	.T.	/ /		/ /	MATERIAL	1
XX-85-051-001	SQN/RADIATION MONITO	NSRS	11/26/85	.T.	/ /		/ /	OPERATIONS	1
XX-85-052-001	SQN/INADQ DESIGN DOO	NSRS	11/26/85	.T.	/ /		/ /	DESIGN	1
XX-85-054-001	SQN/VIOLAT SIGN-OFFS	NSRS	11/26/85	.F.	/ /		11/29/85	WELDING	1
XX-85-065-001	SQN/IMPROPER INSPECT	NSRS	12/09/85	.F.	/ /		12/10/85	WELDING	1
XX-85-068-007	SQN/REPLAC SPOOL PIE	NSRS	12/09/85	.F.	/ /		12/10/85	QA	1
XX-85-070-007	SQN/DESIGN DRAWINGS	NSRS	12/20/85	.T.	/ /		12/24/85	HANGERS	1
XX-85-077-002	SQN/INACCURATE DRAWI	NSRS	12/13/85	.F.	/ /		12/13/85	DOCUMENT	1
XX-85-083-001	SQN/WELD INSPECTIONS	NSRS	12/12/85	.F.	/ /		12/13/85	WELDING	1
XX-85-086-003	SQN/DESIGN DEFICIENC	NSRS	11/29/85	.T.	/ /		/ /	WELDING	1
XX-85-093-001	SQN/INADQ TRAIN ENGI	NSRS	12/09/85	.F.	/ /		/ /	OPERATIONS	1
XX-85-093-003	BFN/INADQ TRAIN ENGI	NSRS	11/29/85	.F.	/ /		/ /	OPERATIONS	1
XX-85-096-004	VOID/XX-85-096-005	NSRS	11/26/85	.T.	/ /		11/29/85	OPERATIONS	1
XX-85-096-005	SQN/MONITOR TUBE PRO	NSRS	11/26/85	.T.	/ /		11/29/85	OPERATIONS	1
XX-85-098-002	SQN/RADIATION AREAS	NSRS	12/09/85	.F.	/ /		12/10/85	OPERATIONS	1
XX-85-099-001	SQN/SECURITY AT PLAN	NSRS	12/09/85	.F.	/ /		12/10/85	OPERATIONS	1
XX-85-102-011	SQN/DEFECTS ID BY MA	NSRS	12/11/85	.F.	/ /		12/11/85	WELDING	1

\*\* Subtotal \*\*

\*\* Total \*\*\*

*NRC*

# Memorandum

TENNESSEE VALLEY AUTHORITY

TO : S. Schum, QTC/ERT Program Manager, Watts Bar Nuclear Plant  
FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K  
DATE : DEC 20 1985  
SUBJECT: TRANSMITTAL OF ACCEPTED FINAL REPORTS

The following final reports have been reviewed and accepted by NSRS and are transmitted to you for preparation of employee responses.

I-85-267-WBN (IN-85-293-001)  
I-85-416-WBN (IN-86-064-001)  
I-85-546-WBN (PH-85-038-001)  
I-85-757-WBN (EX-85-046-001)

*Bruce P. Puffin*  
K. W. Whitt

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

\_\_\_\_\_  
NAME

\_\_\_\_\_  
DATE

GDM

Attachments

cc (Attachments):

R. P. Denise, LP6N35A-C  
E. R. Ennis, WBN  
D. R. Nichols, E10A14C-K  
Eric Sliger, LP6N48A-C  
W. F. Willis, E12B16 C-K (4)



TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NRSR INVESTIGATION REPORT NO. 1-85-416-WBN  
EMPLOYEE CONCERN: IN-86-064-001  
MILESTONE 2

SUBJECT: AIRFLOW SWITCHES INOPERABLE

DATES OF INVESTIGATION: October 15-December 13, 1985

INVESTIGATOR: John Mashburn  
J. W. Kashburn

12-17-85  
Date

INTERVIEWED BY: W.D. Stevens  
W. D. Stevens

12-18-85  
Date

APPROVED BY: for W.D. Stevens  
M. A. Harrison

12-18-85  
Date

## I. BACKGROUND

NSRS has investigated Employee Concern IN-86-064-001 which was identified by Quality Technology Company (QTC) during the Watts Bar Employee Concern Program. The concern was stated as follows.

Four air flow switches on the 480 Volt Board Room Air Handlers do not function. Their location is in the Auxiliary Building, elevations 772 and 786, in both units 1 and 2. These switches have been removed and re-calibrated and results have been within acceptable tolerance; however they remain inoperable in the installation.

## II. SCOPE

This concern was investigated by locating switches that met the description given by the concern statement; reviewing records of calibration activity; and identifying the status of applicable design, construction, and maintenance work from plant documents and discussion with Instrument Maintenance Section personnel.

## III. SUMMARY OF FINDINGS

Four airflow switches were identified that met the description given in the concern statement. On elevation 786 (the roof of the auxiliary building), switches 1-FS-31-476-B and 2-FS-31-476-B are in ducts of the air handlers for the 480-volt board rooms. On elevation 772, switches 1-FS-31-460-A and 2-FS-31-460-A are in ducts in the mechanical equipment rooms serving the 480-volt board rooms. Three maintenance requests (MRs) were found showing these four switches listed together, with recalibrations typically showing them within tolerance. In some cases, MRs were closed based on the switches passing a bench test; but their operability in the air-handling units (AHUs) was not checked because the AHUs could not be operated for other reasons.

The condition of concern was validated by the following observations. On November 25, 1985, the entire electronic board of 1-FS-31-476-B was unplugged from its base and lying disconnected in its housing. The AHU was on. The latest "as-constructed" drawing 47W920-29 is R21, whereas the change to relocate the -476 switches is on the latest "as-designed" drawing, R22. This means further work is planned to bring the actual hardware in line with the redesign. None of the three remaining switches were unplugged, but neither was there any flow in the ducts. Two of the three had lighted indicators showing no flow.

Discussion with Instrument Maintenance engineers indicated that the switches on elevation 772, numbers 1-FS-31-460-A and 2-FS-31-460-A, are in normal operating status now; and there is no need for relocating the probe or other modification. A generic problem existed with a large number of Fluid Components Incorporated (FCI) switches such as the four discussed in this report; i.e.: The original probes furnished with the switches had a very slow response, measuring up to 20 seconds in the case of 1-FS-31-460-A in November 1984. Unless the operator knew of this condition and had enough patience to hold the start button down for 20 seconds, he would perceive the air handler as being inoperable. The slow-responding probes have been replaced in all known instances where they create a problem, and Instrument Maintenance is prepared to replace additional ones if they are discovered.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### Conclusions

The concern is substantiated. Repeated calibration of the airflow switches did not permit them to operate satisfactorily in service. A corrective action was in process prior to the concerned individual's interview with QTC for the two switches on elevation 786, resulting in a design change per NCR NP-921 to relocate the flow switches in the ducts. The two switches on elevation 772 were brought into satisfactory operation by routine maintenance and a generic probe replacement for slow-responding FCI switches. These corrective actions appear to resolve the conditions that led to the expressed concern; and, therefore, no additional corrective actions are needed.

##### Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-267-WBN  
EMPLOYEE CONCERN IN-85-293-001  
MILESTONE 1

SUBJECT: CORRECTIVE ACTION FOR NCR 4412

DATES OF INVESTIGATION: December 9-10, 1985

LEAD INVESTIGATOR:

*P. C. Mann*  
P. C. Mann

12-17-85  
Date

INTERVIEWED BY:

*P. R. Washer*  
P. R. Washer

12-17-85  
Date

APPROVED BY:

*for M. A. Harrison*  
M. A. Harrison

12-18-85  
Date

## I. BACKGROUND

NSRS has investigated Employee Concern IN-85-293-001 which Quality Technology Company identified during the Watts Bar Employee Concern Program. The concern is worded:

NCR 4412 was written to address undersized orifice plates in System 67, both Units 1 and 2. NCR 4412 was dispositioned to change out (replace) undersized orifice plates (purchased from Meriam Instrument Company, Cleveland, Ohio, Contract #83520-1) with new orifice plates. C/I states that NCR 4412 has been closed but the undersized orifice plates were not removed from the system. No documentation exists to support the closure of NCR 4412.

## II. SCOPE

The scope of the investigation was determined from the stated concern to be: The corrective action for NCR 4412, which consisted of replacement of undersized orifice plates in system 67, had not been completed; and no documentation existed to support the closure of NCR 4412. NSRS reviewed the subject NCR, Engineering Change Notices (ECNs), site workplans, mechanical piping drawings, weld maps, and QA inspection records during this investigation.

## III. SUMMARY OF FINDINGS

Based upon review of applicable documents and visual examination of the system hardware, NSRS has not substantiated the identified concern. Following are the details that led to the investigation results.

- A. The disposition of NCR 4412 required the replacement of three orifice plates in the essential raw cooling water system, specifically for flow elements 1-FE-67-222, 2-FE-67-222, and 0-FE-67-226. The new plates were purchased from Daniel Industries, Incorporated. The Watts Bar Engineering Organization issued ECN 4329 to replace the subject orifice plates and clear NCR 4412. Site workplan 3765 was issued to implement the changes required by ECN 4329. Both the ECN and workplan have been closed.
- B. Watts Bar Quality Control Procedure WBN-QCP-1.42-1, "Flange Bolting," provides the mechanism for documenting the installation of orifice plates in bolted flange connections. The Flange Bolting Operation Sheet contains a signoff by the responsible QC inspector for proper orientation and identification of the orifice plate. A review of the applicable inspection records revealed that the plates had been replaced under ECN 4329 and also referenced the controlling workplan 3765.
- C. Orifice plates contain a metal tang (tab) that protrudes from the bolted flange connection for proper identification and inspection. A visual examination of the subject plates showed the manufacturer to be Daniel Industries, Incorporated.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

NSRS identified the supporting documentation for the corrective actions specified by NCR 4412 in conjunction with a physical hardware verification. The employee concern is not substantiated.

### Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-546-WBN  
EMPLOYEE CONCERN PH-85-038-001  
MILESTONE 6

SUBJECT: OEP-11 CHANGES TO PLANT

DATES OF INVESTIGATION: November 8-15, 1985

LEAD INVESTIGATOR: John Knightly 12/10/85  
J. J. Knightly Date

INVESTIGATOR: A. M. Gentry 12-10-85  
A. M. Gentry Date

REVIEWED BY: J. D. Smith 12-17-85  
J. D. Smith Date

APPROVED BY: for W. D. Stevens 12-17-85  
M. A. Harrison Date

## I. BACKGROUND

The Nuclear Safety Review Staff (NSRS) investigated Employee Concern PH-85-038-001 which Quality Technology Company (QTC) identified during the Watts Bar Employee Concern Program. The concern was worded:

Office of Engineering's Procedure OEP-11 "changes to Plant" was revised. The revision eliminated the front page of the ECN form which identified the documents/ other areas of plant the ECN could affect. The old ECN front page had, as an example - FSAR-affected \_\_\_ Yes \_\_\_ No Appendix "R"-Affected. \_\_\_ YES \_\_\_ NO which required some positive action by requiring the yes or no block to be checked. The new revision to OEP-11 has an attachment two (2) which is only a list of possible areas which might be affected and requires no check off. Therefore no one is using it. CI has no additional info. Anonymous concern.

## II. SCOPE

NSRS has reviewed applicable ECN requirements and procedures, Engineering Change Notice (ECN) files, and reports of audits and reviews concerning this subject. Additionally, several individuals responsible for ECN procedural development, coordination of ECN activities, and quality assurance verification of these activities have been contacted to discuss the ECN process as it relates to the employee's concern.

## III. SUMMARY OF FINDINGS

### A. Applicable Requirements and Commitments

1. 10CFR50 Appendix B - "Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and shall be approved by the organization that performed the original design . . . ."
2. TVA-TR-75-1, Revision 8, Paragraph 17.1.3.4 - "Design changes, including field-initiated changes, are controlled by written procedures. The control applied for changes are commensurate with those applied for the original design."
3. Office of Engineering Procedure (OEP) 11, "Change Control"
4. Division of Engineering Design (EN DES) Procedure EP-4.02, "Engineering Change Notices (ECNs) Before Licensing-Handling" (Superseded by OEP-11)
5. Watts Bar Nuclear Plant Quality Control Instruction (QCI) 1.09, "Disposition of Engineering Change Notices"
6. Watts Bar Engineering Project Procedure WBEP-EP-43.02, "Engineering Change Notices"

## 7. Audits, Reviews, and Reports:

The following reports cited inconsistent review by support branches of safety-related system changes and noted improper marking of ECN cover sheets concerning QA applications, seismic analysis requirements, and NCR requirements. These findings were closed following acceptance of corrective action.

- a. NSRS Report No. R-81-14-OEDC (BLN), Item 27, "Inadequate Evaluations and Processing of Engineering Change Notices (ECNs)," dated September 29, 1981
- b. NSRS Report No. R-81-04-YCN, Item 02, "Inadequacies of EP-4.02," dated January 13, 1982
- c. Bellefonte Nuclear Plant - Engineering Change Notice Review and Handling - 10CFR50.55(e) Report No. 7 (Final) - OEDC Quality Assurance Audit MS1-13, dated October 19, 1983

## B. Findings

1. Engineering Change Notice (ECN) Cover Sheet - The ECN cover sheet (form TVA 1057C) has been issued in three different revisions since 1979 as follows:
  - a. The cover sheet format dated July 1979 included six "yes-no" checklist items concerning potential impact of the ECN on PSAR/FSAR requirements, preoperational test requirements, vendor backcharges, seismic analysis requirements, nonconformance report requirements, and quality assurance applications.
  - b. The 1979 ECN cover sheet was revised in February 1983 with the addition of three checklist items concerning impacts of the ECN on security systems, human factor review, and pipe rupture analysis requirements.
  - c. The current revision of the ECN cover sheet dated April 1985 removed entirely from the cover sheet the previous "yes-no" checklist items except the item pertaining to vendor backcharges. However, at the same time (April 1985), the newly issued OEP-11 Change Control Procedure added as Attachment 2, for internal organizational use and review, a separate checklist of 27 items which included all the previous cover sheet items and greatly expanded the overall checklist scope.
2. OEP-11 Checklist - The current change control checklist (OEP-11, Attachment 2, dated April 26, 1985) is titled "Checklist of Potential Effects on Design Documents." It does not require "yes-no" responses and is not procedurally required to be included in the issued ECN package. Its stated purpose is to help identify "potentially affected design documents for consideration" by the responsible engineers from each discipline during the ECN preparation and review cycle.

In accordance with the Watts Bar Engineering Project Procedure, WBEP-EP-43.02, the checklist is to be included by the ECN preparer in the ECN packages when circulated for review within the Office of Engineering. Individuals interviewed stated that the checklists are included prior to ECN issuance as an aid to review and approval of the ECN package. At time of issuance, the checklists are removed and discarded, filed, or returned to the ECN originator.

Reasons expressed for not including the checklists in the issued ECN package included the following:

- a. "Yes-No" checklists might suggest that the engineer's responsibility is limited to the checklist.
- b. No checklist can be up to date and "complete." There are always additional factors to be considered.
- c. Some checklist items from the new listing such as impact on radiation shielding and Appendix R (fire protection) analysis could not be checked "Yes" or "No" until installation was completed. For these reasons, the view was held that the checklists should be a "string-around-the-finger" reminder rather than a requirement for inclusion in the ECN packages.

Additional concern was expressed for the possible need to issue and control revisions to the issued lists if they were required for inclusion. These reservations notwithstanding, it was stated that checklists would be included "if requested by the client." Discussions with Office of Nuclear Power personnel indicated that discussions with OE were in progress to make the issued checklists a part of the NUC PR workplans and record packages for completed work. It was stated that the checklists would help in the formal documentation of the quality assurance program, would help assure consideration of each ECN in a consistent manner, and would help answer questions that might arise later when work was completed. It was learned during the NSRS investigation that agreement had been reached between OE and NUC PR concerning issuance of a checklist. ECN packages for WBN dated from November 8, 1985 were found to contain the completed OEF-11 lists. OE and NUC PR personnel stated that discussions were in progress concerning (1) possible revisions to the checklists; and, (2) evaluations of the pre-November ECN packages. It was stated that no retrospective evaluations had yet been performed and that no memorandum concerning issuance of the checklists had yet been issued.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### Conclusions

The employee's concern is substantiated in that (1) a previous "yes-no" checklist for other affected documents was eliminated from the ECN cover sheet in accordance with Office of Engineering Procedure OEP-11; and, (2) a newly developed checklist was no longer procedurally required for issuance with the ECF packages. However, it was found that the previous ECF cover sheet format was revised with good reason. The old cover sheet checklist was inadequate, and the new list was too extensive to fit reasonably on the cover sheet. Evidence was not identified to support a view that the checklist process itself was not used. During November 1985 NUC PR and OE agreed to issuance of the new checklists. ECN packages dated from November 8, 1985 were found to include the listings. NUC PR and OE discussions concerning the extent of retrospective ECN reviews are in progress.

##### Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-757-WBN  
EMPLOYEE CONCERN EX-85-046-001  
MILESTONE 6

SUBJECT: TESTING OF FIRE DAMPERS

DATES OF INVESTIGATION: December 13-16, 1985

INVESTIGATOR: R. N. Russell  
R. N. Russell

12/17/85  
Date

INTERVIEWED BY: W. D. Stevens  
W. D. Stevens

12/17/85  
Date

APPROVED BY: M. A. Harrison  
M. A. Harrison

12/17/85  
Date

## I. BACKGROUND

NSRS has investigated Employee Concern EX-65-046-001 which was received by Quality Technology Company (QTC) on October 3, 1985 which stated:

CI is concerned that the fire dampers in diesel generator buildings #1 and #5 have never been observed to operate properly or pass the required tests. CI expressed that this could be a problem with the damper design. The only damper number CI could recall is 1-1SD-30-650, which is in building #5. The problem may apply to all diesel generator buildings.

## II. SCOPE

Preoperational test data packages were reviewed to determine if testing had been performed on all fire dampers in the diesel generator buildings.

## III. SUMMARY OF FINDINGS

- A. The fire dampers were tested for the 1-4 diesel generators in preoperational test TVA-24, "Fire Protection-Ventilation System Compartmentation: Fire Dampers." The test results for all dampers were included in the test data package for this preoperational test.
- B. The fire dampers for the fifth diesel generator building were tested in preoperational test TVA-74F, "Fire Protection - Fifth Diesel." The test results for all fire dampers in the fifth diesel building were included in the test data package for this test.
- C. The fire dampers were tested in the preoperational test through observation and measurement. All dampers passed the tests required by test document.

## IV. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions.

The allegation is unsubstantiated. Test data for all fire dampers in the diesel building was included in test data packages for preoperational tests TVA-24 and TVA-74F.

### Recommendations

None.



TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-353-WZN  
EMPLOYEE CONCERN IN-85-850-004  
MILESTONE 3

SUBJECT: PERFORMANCE OF UNAPPROVED WORK

DATES OF INVESTIGATION: December 9-10, 1985

INVESTIGATOR: *P. C. Mann*  
P. C. Mann

12-19-85  
Date

REVIEWED BY: *P. R. Washer*  
P. R. Washer

12-19-85  
Date

APPROVED BY: *for W. S. Stevens*  
M. A. Harrison

12-19-85  
Date

## I. BACKGROUND

NSRS has investigated Employee Concern IN-85-850-004 which Quality Technology Company identified during the Watts Bar Employee Concern Program. The concern is worded:

Top level management promotes the procedure of working from a "bootleg" copy of the work package. Engineer gives an advance copy of the work package, work begins without official approval, approximately 2-3 weeks later package is approved (all the time work is going on) work is completed and reported that job was completed in shorter period of time, giving an illustration that money/man hours had been saved from the estimates. This makes certain management look like extremely efficient managers causing them to receive promotions.

## II. SCOPE

The scope of this concern is similar to that identified in Employee Concern IN-85-847-006 and reported in NSRS Investigation Report No. I-85-360-WBN.

## III. SUMMARY OF FINDINGS

See NSRS Investigation Report No. I-85-360-WBN.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The corrective actions recommended in NSRS Investigation Report No. I-85-360-WBN will be sufficient to resolve this concern.

### Recommendations

Refer to NSRS Investigation Report No. I-85-360-WBN. The line response to NSRS Investigation Report No. I-85-360-WBN should include this report number for tracking purposes.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-530-WBN  
EMPLOYEE CONCERN IN-85-220-003  
MILESTONE 6

SUBJECT: STRUCTURAL INTEGRITY OF RB2 SHIELD WALL

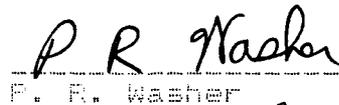
DATES OF INVESTIGATION: October 29-November 8, 1985

INVESTIGATOR:

  
D. R. Bradley

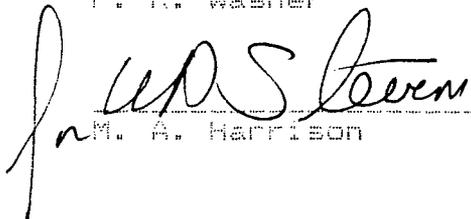
12/17/85  
Date

REVIEWED BY:

  
P. R. Washer

12/18/85  
Date

APPROVED BY:

  
M. A. Harrison

12/18/85  
Date

## I. BACKGROUND

NSRS has investigated employee concern IN-85-220-003 which Quality Technology Company identified during the Watts Bar Employee Concern Program. The concern is worded:

In Unit 2, due to excessive number of hangers being used in reactor bldg. annulus area and air pockets in concrete walls in annulus area from azimuth 292 to 358, the structural integrity of the supporting walls/floors is questionable.

## II. SCOPE

The scope of the investigation was determined from the stated concern to be that the use of an excessive number of hangers and the existence of air pockets in the concrete have made the structural integrity of the Unit 2 reactor building (RB2) shield wall questionable. The following courses of action were taken to investigate this concern.

- A. Review of documentation pertaining to the installation and testing of expansion anchors in the RB2 annulus area in question.
- B. Interview of quality control (QC) inspection personnel involved with the installation and testing of expansion anchors.
- C. Visual inspection of the concrete wall in the RB2 annulus from azimuth 292° to 358°, elevation 702' to 740'.
- D. Review of TVA commitments and Office of Construction (OC) procedures, including:
  1. TVA General Construction Specification G-32, "Bolt Anchors Set in Hardened Concrete"
  2. WBN-QCI-1.02-1, R9, "Inspection Rejection Notice"
  3. WBN-QCP-1.14, R17, "Inspection and Testing of Bolt Anchors Set in Hardened Concrete and Control of Attachments to Embedded Features"

## III. SUMMARY OF FINDINGS

Based upon the review of procedures, documentation, employee interviews, and inspection of the concrete in question NSRS has not substantiated this concern. Specific results are described below.

- A. A review of Expansion Shell Anchor Proof Test Summaries (WBNP-QCP-1.14, Attachment B) was performed for 52 hangers. These hangers were located at various elevations between azimuths 270° and 360° on the 3-foot thick RB2 shield building wall. The hangers were represented by 47 lots in which approximately 140 anchors were pull tested. No failures were identified.

Bolt Anchor Inspection Records (WBNP-QCP-1.14, Attachment F) were also reviewed for the 52 reports. Each record had identified the concrete quality as acceptable.

B. Personnel from the various QC inspection units involved with anchor testing were interviewed. The interviews consisted of three basic questions. The responses received from inspection personnel follow each question.

Q - How are concrete defects handled if encountered during anchor installation?

A - Concrete defects are identified on Inspection Rejection Notices (IRNs) per WBNP-QCI-1.02-1. In accordance with site procedures, the required actions (rework, repair, etc.) are performed to resolve the problem.

Q - Were any significant or unusual concrete problems identified during anchor installation in RB2 annulus?

A - One area was chipped out and pressure grouted around azimuth 90°. No significant concrete defects were identified between 270° and 360°.

Q - What is implied when the concrete quality is checked "acceptable" on the Bolt Anchor Inspection Record?

A - There appears to be no concrete defects around the anchors which would affect their performance.

Office of Engineering personnel were also contacted concerning design loads for the anchors. The proof loads applied during testing of the expansion anchors were approximately 140 percent greater than the design load. In addition, the proof loads were no greater than 50 percent of the ultimate capacity of the anchors.

C. A visual inspection was performed of the concrete wall in the RB2 annulus from elevations 702' to 740' and azimuths 292° to 358°. No visible defects were revealed that would affect anchor performance.

D. The requirements to ensure an adequate expansion anchor program were contained in G-32. These requirements were implemented by the site in WBN-QCP-1.14 which required that concrete quality be verified. Therefore, adequate controls were in place at the site to identify concrete defects during anchor bolt inspections.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### A. Conclusions

The concern was not substantiated based on results of proof-load testing of anchors, interviews of inspection personnel, and inspection of the area in question. Design loads on the anchors are considerably less than the proof loads applied during testing. Therefore, the proof-load test results should provide adequate confidence that the concrete will support the hangers in the RB2 annulus.

##### B. Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-550-WBN  
EMPLOYEE CONCERN IN-85-278-003  
MILESTONE 6

SUBJECT: PLANT RECORDS INCOMPLETE AND LOST

DATES OF INVESTIGATION: December 5-10, 1985

LEAD INVESTIGATOR: John Knightly 12/18/85  
J. J. Knightly Date

INVESTIGATOR: for J. D. Smith 12-18-85  
A. M. Gentry Date

REVIEWED BY: J. D. Smith 12-18-85  
J. D. Smith Date

APPROVED BY: for W. D. Stevens 12-18-85  
M. A. Harrison Date

## I. BACKGROUND

The Nuclear Safety Review Staff (NSRS) investigated Employee Concern IN-85-278-003 which Quality Technology Company (QTC) had identified during the Watts Bar Employee Concern Program. The concern was worded:

Many quality assurance records are illegible, missing required information, or cannot be located. Specific record types indicated are Field Change Requests and Nonconformance Reports. CI would not provide additional details/specifics. Constr. Dept. concern.

## II. SCOPE

NSRS reviewed applicable requirements and procedures, records files, reports of audits and investigations, and correspondence concerning illegible, incomplete, and lost records. Additionally, personnel responsible for records review and maintenance were contacted to discuss the employee's concern.

## III. SUMMARY OF FINDINGS

### A. Applicable Requirements and Commitments

1. ANSI N45.2.7-1974, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants" - "All . . . quality assurance records shall be legible, completely filled out and adequately identifiable to the item involved. . . . These records may be either the original or a reproduced copy. . . . The designated authority or authorities for receiving quality assurance records shall be aware of the value of such records and shall control their safety during the time that the records are in their possession. . . . As a minimum, a receipt control system shall include . . . procedures for receipt and inspection of incoming records."
2. Watts Bar Nuclear Plant Quality Control Instruction QCI-1.06, "Quality Assurance Records"
  - a. "The DCU Supervisor . . . protects records . . . from loss . . . reviews records in accordance with a records review checklist."
  - b. "The Responsible Engineer or Inspector . . . ensures that these records are legible . . . complete. . . ."
  - c. "The Responsible Engineer or Inspector . . . ensures that . . . data spaces are completed or marked N/A. . . . Exempt from this requirement are the blank lines on Fabrication Process Control Operation Sheets and Welding Operation Sheets."
  - d. "The DCU . . . logs out and returns incomplete or questionable records discovered during the (DCU) review to the appropriate unit for resolution."

## B. Findings

### 1. Legibility

This issue was separately investigated and reported in NSRS Investigation Report No. I-85-549-WBN for Employee Concern IN-85-276-002 dated December 1985. Although instances of illegible CONST vault records were identified, illegibility was not found to be a widespread problem. Additionally, microfilmed records transferred to date from CONST to NUC PR were found to have a high level of legibility.

### 2. Incomplete Records

- a. ERT Investigation Report for Employee Concern IN-85-091-001 dated September 16, 1985 summarized 38 instances of missing data elements (37 dates and 1 signature) in DCU cable splice documents prepared in 1977. Review and corrective action are pending. WEN Construction Quality Assurance Audit WB-6-82-20, "Quality Records," dated October 1982 identified blank spaces on cable and instrumentation records. This deficiency was closed March 1983 after records review and correction.
- b. A separate CONST Records Review Unit with its own direct supervision was established in September 1983. Review Unit personnel stated that relatively few incoming records now have problems. Based on NSRS spot checks of current records checklists, records transmittal logs, and several categories of vault documentation, it appears that, in general, any incoming records which were incomplete were being successfully identified during records review and corrected by the submitting organizations.

### 3. Lost Records

CONST Quality Assurance Audit WB-6-82-20 dated October 1982 identified instrumentation test cards which were statused as complete and in the vault but which could not be located. This deficiency was closed September 1983 after location of the missing records. ERT Investigation Report for Employee Concern IN-85-091-001 dated September 1985 determined that "quality assurance documentation relative to electrical construction units was lost or misplaced and regenerated by the cognizant personnel per the project site procedures." Additional evidence of lost records was not identified during the current investigation. NSRS directed additional attention to Field Change Requests (FCRs) and Nonconforming Condition Reports (NCRs) as mentioned in the employee's statement of concern. NCRs are now microfilmed by RIMS at time of closure and in the past have been microfilmed additionally at the time of issuance by CONST and review by EN DES. Since July 1985 FCRs have no longer been microfilmed but are retained by CONST as life-of-construction vault records. A sample check of 50 NCRs and 50 FCRs selected at random found 100 percent to be retrievable.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### Conclusions

Instances of illegible, incomplete, or misplaced records have been documented in the past, and corrective action has been accomplished on several deviations. CONST review of incoming records since September 1983 appears to have been generally thorough. For recent and current records, the employee's concern was not substantiated.

##### Recommendations

Recommendations for corrective action concerning incomplete documentation have been provided previously by NSRS for ERT Investigation Report IN-85-091-001 dated September 1985. There are no additional recommendations.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-680-WBN  
EMPLOYEE CONCERNS IN-86-184-002 AND IN-86-184-004  
MILESTONE 6

SUBJECT: PIPING DESIGN

DATES OF INVESTIGATION: November 12-December 3, 1985

INVESTIGATOR: *for J. D. Smith* \_\_\_\_\_ *12-18-85*  
C. C. Catlin Date

VIEWED BY: *J. D. Smith* \_\_\_\_\_ *12-18-85*  
J. D. Smith Date

APPROVED BY: *for W. D. Steven* \_\_\_\_\_ *12-18-85*  
M. A. Harrison Date

## I. BACKGROUND

The Nuclear Safety Review Staff (NSRS) conducted an investigation regarding two employee concerns received by Quality Technology Company (QTC) on October 19, 1985. The two concerns are interrelated in the field of piping design.

Concern IN-86-184-002 stated: "Classification of stainless steel piping should be of concern. Different grades and different class of pipe are assembled in the same piping system."

Concern IN-86-184-004 stated: "There are different size (guage) pipe welded together in RB1 and the feed water heater storage tank."

## II. SCOPE

The scope of the investigation of the concerns centered about a review of applicable documents and drawings to verify the observations and to place them in the proper context of piping design considerations and requirements.

## III. SUMMARY OF FINDINGS

### A. Requirements and Commitments

1. Codes and Standards in effect at the time of design and construction:
  - a. American Nuclear Society ANS N-18.2, 1970 Draft
  - b. AEC Regulatory Guide 1.26
  - c. ASME Section III, 1971 Edition through Summer 1973 Addenda
  - d. ASME Section IX
  - e. ANSI B16.25
2. TVA Requirements:
  - a. WB-DC-40-36, "Classification of Piping, Pumps, Valves, and Vessels"
  - b. TVA Mechanical Piping System Drawings and Schematic Flow Diagrams

### B. Findings

1. The appropriate safety classes for piping systems and components were based on the evaluation of various criteria such as location (e.g., inside/outside containment), pressure, temperature, auxiliary versus mainline, shutoff capabilities (or orifices) upstream and/or downstream, and redundancy (alternate paths available).
2. In any given piping system, system design change points could be designated where any of the above criteria changed.

3. The pressure and/or temperature used for design purposes could be changes in the same system.
  - a. The pressure/temperature design change points were designated on the system schematic flow diagrams.
  - b. At these design change points the pipe size, schedule (gauge), or material could be changed to meet the changed conditions.
4. At the design change point, the safety classification of the system could also be changed. Such designated class changes could be established either in carbon steel or stainless steel piping systems.
5. An example of a double change point was noted in System 3, Feedwater. At the containment wall, two design change points were shown. Upstream and outside the containment wall the system was Safety Class H, operating at 1185 psi and 465<sup>o</sup>F in an 18-inch pipe. At the containment wall, but still outside, there was a 6-inch deaeration branch line, and the main line conditions were changed to 1185 psi and 535<sup>o</sup>F after the branch. Immediately after the branch, the main line through the wall was then Safety Class B, operating at 1185 psi and 600<sup>o</sup>F in a 16-inch pipe.
6. Similar changes in design conditions could occur at appurtenances such as pumps, valves, heat exchangers, and vessels (tanks).
7. Material grades in any given piping system could be changed so long as the alternative material remained within a single "P" classification of ASME Section IX QW-422.
8. The criteria for preparing and welding different schedule pipe and/or appurtenances were shown in ASME Section III as well as ASME B16.25.
9. When materials to be welded were of different "P" classes, special designs and special procedures were required, such as where stainless steel piping was welded to a carbon steel pressure vessel in the Safety Injection System, System 63.

## IV. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

1. The findings supported the observations noted in the concerns. The various piping systems have been designed with change points where safety classification, pipe size, schedule, or material sometimes changed.
2. Changes in safety classification, pipe size, schedule, or material were made to suit design conditions.
3. Except in specialized instances, any change in material was designed to comply with ASME Section IX QW-4.22.

### B. Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-712-WBN  
EMPLOYEE CONCERN EX-85-059-002  
MILESTONE 6

SUBJECT: CARBON STEEL HANGER ON STAINLESS STEEL PIPE

DATES OF INVESTIGATION: December 6-9, 1985

INVESTIGATOR: *W. M. Berry* 12-18-85  
W. M. Berry Date

VIEWED BY: *W. D. Stevens* 12-18-85  
W. D. Stevens Date

APPROVED BY: *M. A. Harrison* 12-18-85  
M. A. Harrison Date

## I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed concern as received by the Quality Technology Company (QTC) Employee Response Team. The concern of record, as summarized on the employee concern assignment form from QTC and identified as EX-88-059-002, stated:

Stainless steel (S/S) pipe is supported by carbon steel (C/S) hangers without S/S shim stock. Hangers are painted, but paint will wear through and the S/S will be contaminated, eg., Unit 2, Accumulator Room #4, 720 foot elevation where a 4 inch S/S line is supported by an un-shimmed C/S box hanger.

## II. SCOPE

Discussions were conducted with knowledgeable Office of Engineering (OE) personnel to identify the specific requirements which apply to Watts Bar construction in the technical area of concern. The identified construction specification was reviewed to determine the requirements. The area of the plant given as an example in the concern was inspected to determine if there were any peculiarities that would make the routine construction methods inappropriate for that instance.

## III. SUMMARY OF FINDINGS

Discussions with OE personnel revealed that the requirements imposed by General Construction Specification G-29M are probably overly conservative. Although concern over contamination of stainless steel (SS) by contact with carbon steel (CS) has existed over the history of the nuclear industry, OE personnel stated that there is a growing body of industry-wide expert opinion that SS is not harmed by CS contact, particularly at the temperatures applicable to the example given.

General Construction Specification G-29M, "Process Specifications for Welding, Heat Treatment, Nondestructive Examination, and Allied Field Fabrication Operations," Volume IV, Process Specification 4.M.1.1, Section 3.1.4.2.c stated:

Carbon steel brackets, hangers, lugs, or other connections shall not directly contact stainless steel components of safety-related systems. This may be prevented by one of following methods . . . paint applied to the carbon steel before its contact with the stainless steel . . .

An inspection of the Unit 2 reactor containment building loop 4 cold leg accumulator room around the 720-foot elevation revealed some SS pipe runs of the approximate size described in the concern. All of these lines were related to safety injection system functions which would operate at relatively low temperatures. There were no indications that would make the use of normal construction methods inappropriate.

Discussions with OE personnel indicated that there had been previous questions as to the zinc primer wearing through. Wiping the primer tends to polish the zinc which takes on the appearance of bare metal even though the desired protection still exists.

## IV. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

The concern was not substantiated in that the conditions described were in accordance with approved construction specifications. There were no indications that the specification method was inappropriate.

### Recommendations

None.

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-933-WBN  
EMPLOYEE CONCERN IN-85-688-002  
MILESTONE 1

SUBJECT: ISSUING CARs AND DRs

DATES OF INVESTIGATION: November 27-December 2, 1985

LEAD INVESTIGATOR:

*J. D. Smith*  
for A. M. Gentry

*12-18-85*  
Date

INVESTIGATOR:

*John Knightly*  
J. J. Knightly

*12/18/85*  
Date

REVIEWED BY:

*J. D. Smith*  
J. D. Smith

*12-18-85*  
Date

APPROVED BY:

*for W. D. Steven*  
M. A. Harrison

*12-18-85*  
Date

## I. BACKGROUND

NSRS has investigated Employee Concern IN-85-656-002 identified by the Quality Technology Company during the Watts Bar Employee Concern Program that stated:

TVA Management (department known) hesitant or refuses to process deficiency reports or corrective action requests concerning inadequate TVA procedures, unless the inadequacy is based on a higher tier TVA procedure, which itself may be inadequate.

## II. SCOPE

The investigation was conducted by reviewing the report of earlier completed NSRS investigations on the same subject.

## III. SUMMARY OF FINDINGS

- A. A review of the NSRS Trend Report revealed that an investigation of this subject was conducted and documented by NSRS Investigation Report No. I-85-424-WBN. The report addressed four concerns: IN-86-090-002, IN-86-087-003, IN-86-098-001, and IN-85-656-004.
- B. A review of this NSRS report revealed that all four concerns were substantiated. This concern is another which was in line with concerns previously investigated.

## IV. CONCLUSIONS AND RECOMMENDATIONS

### A. Conclusions

The concern is substantiated based on previous investigations of this subject.

### B. Recommendations

None. The recommendations described in NSRS Investigation Report No. I-85-424-WBN are sufficient to address this concern. This report should remain open until all items addressed by I-85-424-WBN are addressed, reviewed, and accepted by NSRS.

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 : **DEC 20 1985**  
SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-525-WBN

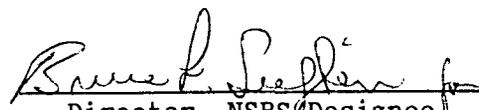
Subject INCORRECT HOLE SIZES IN ORIFICE PLATES

Concern No. NS-85-004-001 and PH-85-022-001

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by January 17, 1985. Should you have any questions, please contact Phil C. Mann at telephone 3660-WBN.

Recommend Reportability Determination: Yes X No     

  
Director, NSRS/Designee

PCM:GDM  
Attachment  
cc (Attachment):  
R. P. Denise, LP6N35A-C  
D. R. Nichols, E10A14 C-K  
QTC/ERT, Watts Bar Nuclear Plant  
H. S. Sanger, E11B33 C-K  
Scott Schum, QTC/ERT, WBN  
E. K. Sliger, LP6N48A-C  
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-85-525-WBN  
Subject INCORRECT HOLE SIZES IN ORIFICE PLATES for action/disposition.

\_\_\_\_\_  
Signature Date



TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS INVESTIGATION REPORT NO. I-85-325-WBN  
EMPLOYEE CONCERNS NS-85-004-001 AND FN-85-022-001  
MILESTONE 1

SUBJECT: INCORRECT HOLE SIZES IN DRIFICE PLATES

DATES OF INVESTIGATION: October 7-November 27, 1985

INVESTIGATOR: *Rip C. Mann* 12-16-85  
R. C. Mann Date

INTERVIEWED BY: *P. R. Washer* 12-16-85  
P. R. Washer Date

APPROVED BY: *for W. A. Stevens* 12-17-85  
W. A. Harrison Date

## I. BACKGROUND

NRSB has investigated Employee Concerns NB-88-004-001 and PH-88-022-001 which Quality Technology Company identified during the Watts Bar Employee Concern Program. The concerns are worded:

Orifice plates installed in many plant systems, both Units 1 and 2 (Watts Bar) have incorrect hole size which will result in false flow reading. This same condition may exist at Sequoyah.

Orifice plates received under contract 83520-1 from Meriam Instrument, Co. are in error because the bore sizes were not calculated using a flow coefficient based on Reynolds number. (Refer to L. K. Spink, 9th Edition, Foxboro Co.) i.e. Meriam Instrument Co used the client equation vs. precise equation when calculating the orifice plates bore sizes on contract 83520-1. These orifice plates have been installed in many systems in both Units 1 and 2.

## II. SCOPE

An initial review of site correspondence files revealed several memorandums, nonconforming condition reports (NCRs), and related documentation that defined the scope of the concern and indicated the issues of incorrect bore sizes in orifice plates had been addressed and discussed by various parties on an ongoing basis since 1978. The scope of the investigation was determined from the stated concern to be that the method used to calculate hole sizes in orifice plates was incorrect and would result in false-flow readings. In addition, NRSB reviewed contract files, electrical control and logic diagrams, mechanical design criteria drawings, Final Safety Analysis Report (FSAR), Safety Evaluation Report (SER), design calculations, scaling and setpoint documents, preoperational test packages, design instrument tabulations, and performed interviews with personnel from Office of Construction, Nuclear Power, and Office of Engineering organizations.

## III. SUMMARY OF FINDINGS

Based upon review of the applicable documents and interviews with personnel involved with instrument calibrations and flow-measurement activities, NRSB has not substantiated the identified concern. However, certain issues associated with the concern were identified and substantiated which will require resolution. Following are the details that led to the investigation results.

A. Watts Bar Construction personnel initiated NCRs 1280R and 1281R to document incorrect bore sizes on orifice plates manufactured by Meriam Instruments on TVA contract 73038-83520-1. The NCRs, in conjunction with site file memorandums, showed that a lack of agreement existed between TVA contract data sheets and the Meriam calculation reports. The reports indicated the vendor had utilized incorrect line sizes and/or temperature data for calculation of plate-bore sizes. In addition, the calculation method used by Meriam was questioned relative to specifying incorrect bore sizes that would result in flow measurement inaccuracies.

The Watts Bar Engineering organization responded to the Construction position by indicating that an invalid comparison was performed. Actual flow elements from the original contract were compared to data sheets for new replacement elements which were procured on a change of contract after portions of the systems had been redesigned.

Watts Bar Construction personnel continued to pursue the contention that Meriam's calculations were incorrect and requested the Engineering organization to replace the Meriam data with data calculated by Construction in the instrument tabulations, which serve as QA records for the plant.

The central point of the calculation-method issue involved which equation should be used to calculate orifice plate bore size and pressure differential for liquid flow. Principles and Practice of Flow Meter Engineering, by L. K. Spink, is the industry-recognized authority on fluid flow and flow-meter design and was listed as a reference in the design procurement document for calculation of orifice plate bore sizes. Two basic methods for calculation of bore size are provided, the "Plant Calculation" and "Precise Equation." Spink states that most plant calculations for liquid flow are performed with the "plant calculation" because the uncertainty of operating conditions on viscosity, specific gravity, and temperature often precludes precise measurements; and most plant operations do not require close measurement tolerances. The "precise equation" incorporates a simple correction factor for the Reynolds number which compensates for the combined effects of the varying parameters.

The Engineering organization discussed the calculation methods with Meriam and were provided with the justification for implementing the "plant calculation" to determine the bore sizes. Meriam stated the "precise equation" would be used for lab-type installations, and refinements of this type would be a waste of time unless precautions not ordinarily found in plant measurements were applied.

Watts Bar Construction personnel stated that the Engineering organization required calibration errors of flow transmitters across orifice plates to be less than 1/2 of 1 percent. They also contended the orifice plate bore-size errors would cause inaccuracies in differential pressure readings as much as 10 percent.

The Engineering organization responded by stating that the 1/2 percent accuracy was not a design requirement. There was no accuracy requirement in the Meriam contract, and Engineering accepted the industry practice of performing "plant calculations" to fulfill the contract. Design stated that if the orifice plates measured the flow within 5 percent of actual flow, they were acceptable and would fully accomplish the intended design functions.

- B. A review was performed on the Meriam contract to determine which plant systems utilized Meriam plates and how the information from the flow elements was utilized by Operations personnel to maintain control of the plant. The following systems contained Meriam orifice plates.

Component Cooling System (71)  
Essential Raw Cooling Water (67)  
Heater Drains (6)  
Raw Cooling Water (24)  
Waste Disposal (77)  
Main Steam (1)  
Feedwater (5)  
High Pressure Fire Protection (25)  
Demineralized water (39)  
Water Treatment (28)  
Condensate (2)

The safety-related systems were further reviewed to determine which flow elements in these systems had corresponding flow transmitters that provided signals to the main control room. In most cases, the signals were used for flow indication and for input to the plant annunciator system (AS) for minimum-flow alarms through various heat exchangers in the essential raw cooling water and component cooling water systems. In other cases, the signals were used for control of some secondary side systems or for startup and testing purposes. No signals were input to any system necessary for safe shutdown of the reactor. However, three flow-measurement signals were provided to the post-accident monitoring (PAM) system utilizing indicators in the main control room. These readouts are provided to the operator to enable him to perform required manual safety functions and to determine the effect of manual actions taken following a reactor trip. The three signals were E90W header flow, CCS flow to residual heat removal heat exchanger headers, and auxiliary feedwater flow to the steam generators.

- C. Several plant preoperational test packages and scaling/setpoint documents were examined to determine the performance of the subject flow elements in conjunction with the establishment of minimum-flow setpoints for certain instrument loops. All measured flows were within the range specified by the Design organization in the preoperational scaling document. However, no clear methodology was identified for use in defining system parameter setpoints. No documentation existed to support the setpoints provided in the instrument tabulation. Allowable tolerances were not included with the setpoints. These deficiencies were identified in the INPO Evaluation of Watts Bar as item DC.5-4.

The Engineering organization response to the previously mentioned INPO finding appears adequate to address some of the deficiencies identified during this investigation. The response provides the following commitments, which should be completed as a closeout to this concern.

1. Develop design standards to clearly direct and control instrument setpoint development.
2. Provide criteria for field personnel to use during initial instrument loop setup and recalibration activities.

D. The basic issue surrounding false-flow reading is one of accuracy. Several sources of error exist in instrument loops including, but not limited to, the flow element, transmitters, signal modifiers, bistable switches and indicators. The statements of required accuracy were not in agreement between Construction and Engineering. However, a design output document was not identified that provided the official design accuracy requirement for instrument loops associated with the plant annunciator system and non-safety-related instrumentation. The FSAR provided accuracy requirements relative to the reactor protection/engineered safety features system and other safety-related display instrumentation. The combined indicated accuracies were within the errors used in the safety analyses for post-accident conditions. The design process for specification of required accuracies was reviewed, and problems were identified in the design calculations. The calculations were performed to determine the demonstrated accuracies of the instrument loops based on input from vendors who supplied the various components that comprise the loops. An isolated error was identified involving the omission of the flow-element error in one calculation. In other loops the flow-element error was assumed to be  $\pm 2$  percent, based on criteria provided in ASME Fluid Meters - Their Theory and Application and Hazenweli Flow Meter Engineering Handbook, which state that nominal orifice core calculations will result in orifice core sizes within  $\pm 2$  percent of the exact core. The Meriam contract did not contain an accuracy requirement to support the assumption used in the design calculation. Documentation was not identified that provided verification of the Meriam calculation or test results to ensure the flow elements would perform within the error assumed by design. Calibrations were performed by Nuclear Power on the remainder of components in the instrument loops to ensure they performed within the errors specified in the design calculations.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### A. Conclusions

The concern as stated was not substantiated, but a lack of documented evidence of meeting the FSAR commitments was substantiated. Based upon the system applications and use of information provided by the subject orifice plates, NSRS believes they will perform their intended design function. However, overall acceptability of those plates providing signals to the PAM system was considered indeterminate pending a documented design evaluation to ensure they will perform within the accuracies assumed in the design calculations. The instrument scaling and setpoint program was inadequate by not providing defined criteria and verification of instrument loop setpoints.

5. Recommendations

I-85-525-W8N-01 - Correction of Design Calculations and FEAR Tables

The identified error in the design calculation (B43 850214 714) must be corrected in conjunction with an associated correction of FEAR Table 7.C-1.

I-85-525-W8N-02 - Verification of Meriam Plate Accuracy

A detailed review of the Meriam calculations, supporting the orifice plates associated with the FAK system, should be performed and documented evidence should be provided to ensure the plate accuracy satisfies the assumptions to implement the FEAR commitments.

I-85-525-W8N-03 - Corrective Action for INFO Finding DC.E-4

The completion of all actions for this INFO finding is necessary for resolution of this recommendation. NERS should be notified of the completion date for these activities.

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 : DEC 20 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-367-WBN  
Subject EXCESSIVE SURVEILLANCE TESTING OF ROTATING EQUIPMENT  
Concern No. IN-86-014-001 and IN-86-208-001

and associated recommendations for your action/disposition.  
It is requested that you respond to this report and the attached  
recommendations by January 17, 1986. Should you have any questions,  
please contact Wayne M. Berry at telephone 3695-WBN.

Recommend Reportability Determination: Yes  No

*Bruce L. Peffer*  
Director, NSRS/Designee

WMB:GDM  
Attachment  
cc (Attachment):  
R. P. Denise, LP6N35A-C  
D. R. Nichols, E10A14 C-K  
QTC/ERT, Watts Bar Nuclear Plant  
H. S. Sanger, E11B33 C-K  
Scott Schum, QTC/ERT, WBN  
E. K. Sliger, LP6N48A-C  
W. F. Willis, E12B16 C-K (4)

-----  
--Copy and Return--  
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To : K. W. Whitt, Director of Nuclear Safety Review Staff, E3A8 C-K  
From: \_\_\_\_\_  
Date: \_\_\_\_\_

I hereby acknowledge receipt of NSRS Report No. I-85-367-WBN  
Subject EXCESSIVE SURVEILLANCE TESTING OF ROTATING EQUIPMENT for action/  
disposition.

\_\_\_\_\_  
Signature Date



TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-367-WBN

EMPLOYEE CONCERNS IN-86-014-001 AND IN-86-208-001

MILESTONE 6

SUBJECT: EXCESSIVE SURVEILLANCE TESTING OF ROTATING EQUIPMENT

DATES OF INVESTIGATION: December 5-10, 1985

INVESTIGATOR:

*W. M. Berry*  
-----  
W. M. Berry

*12-16-85*  
-----  
Date

VIEWED BY:

*W. D. Stevens*  
-----  
W. D. Stevens

*12-17-85*  
-----  
Date

APPROVED BY:

*for W. D. Stevens*  
-----  
M. A. Harrison

*12-17-85*  
-----  
Date

## I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of two similar expressed concerns as received by the Quality Technology Company (QTC) Employee Response Team. The concerns of record, as summarized on the employee concern assignment forms, were as follow:

### IN-86-014-001

The amount of surveillance instruction (SIs) run on essential equipment is too much. Running numerous SIs on certain systems require the pumps, chillers, compressors, etc. to be cycled on and off. The starting duty on the equipment wears it down and causes more frequent failures such as bearing failures. An example is that only 3 of 8 ERCW pumps are presently operational.

### IN-86-208-001

Numerous surveillance instruction (SI) packages are required to be performed, which is detrimental to equipment operation due to an excessive number of start/stops. SIs also require too much time of licensed operator positions (more time spent in paperwork than in monitoring plant performance). Equipment affected are the ERCW pumps, diesel generators and fire pumps.

## II. SCOPE

1985 Electric Power Research Institute (EPRI) reports, "Failures Related to Surveillance Testing of Standby Equipment, Volume 1: Emergency Pumps, and Volume 2: Diesel Generators," were reviewed. Discussions were conducted with the cognizant EPRI manager to determine if the report findings could be extended to other types of equipment. Similar discussions were conducted with onsite maintenance personnel. The current pump testing was discussed with plant Test Unit personnel.

A previous NSRS Investigation Report, I-85-211-WBN, was reviewed to assess its applicability to the "SI Paperwork Load" portion of the concern.

## III. SUMMARY OF FINDINGS

For the purposes of this report, it was productive to partition the findings into diesel generator surveillance testing, other equipment surveillance testing, and surveillance testing paperwork load.

### A. Diesel Generator Surveillance Testing

The following quotes from the EPRI report on this subject summarize the findings.

Surveillance testing was a factor in many diesel generator failures. . . . However it became apparent that other factors also contributed significantly. Those factors involved inadequacies of design, operation, and maintenance whose effects were not easy to distinguish from the effects of surveillance testing. Such (surveillance testing) failures accounted for approximately 12% of the 585 diesel generator failures. . . . NRC has shown increasing awareness of the problem and has attempted to ensure that diesel generator tests are justified, are not arbitrary, and do not contribute unnecessarily to degradation. Changes in testing suggested in NRC generic letter 84-15 (July 2, 1984) would bring procedures more in line with the manufacturers' recommendations. . . .

The current draft technical specifications surveillance testing program was the result of TVA-NRC interaction to develop optimum diesel generator testing within the current state of knowledge.

#### B. Other Equipment Surveillance Testing

The applicable EPRI report scope was limited to emergency pumps and made the following statements.

None of the pump failures reviewed was caused directly by any aspect of the surveillance testing, even though most of those failures occurred during testing (the major portion of emergency pump operating time). The evident vulnerability of standby pumps having steam turbines as prime movers suggests a need to substantially and expeditiously improve the reliability of those drive systems. . . . (There is) independent evidence of a causative relation between pump operation at very low (approximately 10%) flow and damaging vibration or cavitation.

The cognizant EPRI manager did not have any data which would allow extrapolating the emergency pump report to other types of rotating equipment such as chillers or compressors. However, plant maintenance was of the belief that the experience for these various types of equipment was consistent; i.e., that surveillance testing reveals but does not cause failures. In particular for the ERCW and fire pumps mentioned in the concerns, pump-operating experience has demonstrated that it was a problem-prone design (deep draft pumps) rather than excessive testing which was the reason for the marginal availability of these particular pumps. In fact, plant maintenance was planning to increase the pump surveillance (both monitoring and operation for testing) to develop and test out design improvements.

#### C. Surveillance Testing Paperwork Load

The scope of the previous NSRS report and recommendations were found to be entirely sufficient to cover the two present concerns.

#### IV. CONCLUSIONS AND RECOMMENDATIONS

##### Conclusions

- A. With regard to testing of the diesel generator, the concerns were found to be partially substantiated. However, changes to the details of surveillance testing have arrived at an optimum testing requirement.
- B. With regard to the testing of the emergency pumps, the concerns were found to be partially substantiated.
- C. With regard to the paperwork load for surveillance testing, the concern was partially substantiated. However, the recommendation in NSRS Investigation Report No. I-65-211-WBN is sufficient to elicit the needed corrections.

##### Recommendations

##### I-65-367-WBN-01 - Improvement of Emergency Pump Surveillance Testing

Have the engineering unit review the EPRI report and incorporate its applicable recommendations on steam turbine prime movers and low-flow testing.

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 : DEC 23 1985

SUBJECT: CORRECTIVE ACTION RESPONSE EVALUATION

REPORT NO. : IN-85-544-002

SUBJECT : FIRE DOORS - VIOLATION OF PROCEDURE

CONCERN NO.: IN-85-544-002

( X ) ACCEPT                      ( ) REJECT

*R. P. Sauer*  
for K. W. Whitt

BFS:JTH

cc (Attachment):

- R. P. Denise, LP6N35A-C
- D. R. Nichols, E10A14C-K
- QTC/ERT, CONST-WBN--For response to employee.
- E. K. Sliger, LP6N48A
- W. F. Willis, E12B16 C-K (4)

Principally prepared by Bruce F. Siefken.

0204U



UNITED STATES GOVERNMENT

## Memorandum

TENNESSEE VALLEY AUTHORITY

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

FROM : E. R. Ennis, Plant Manager, Watts Bar Nuclear Plant P&E (Nuclear)

DATE : DEC 12 1985

SUBJECT: WATTS BAR NUCLEAR PLANT - RESPONSE TO EMPLOYEE CONCERN INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is P&E Nuclear's response to recommendations Q-85-544-002-01 and Q-85-544-002-02 contained in Nuclear Safety Review Staff (NSRS) employee concern investigation report I-85-544-002.

If you have any questions, please contact W. L. Byrd at 3774, Watts Bar Nuclear Plant P&E (Nuclear).

  
E. R. Ennis

WLB:RRG:NC  
Attachment

This memorandum was principally prepared by R. R. Gibbs.

✓ mah

✓ jch



EMPLOYEE CONCERN # IN-85-544-002

Concern: NSRS Recommendations - Q-85-544-002-01 - "Observations - NCRs" - Identify the doors determined by the UL survey of November 1984 to have had problems in an NCR, or other appropriate corrective action document, to assure all problems were/are addressed and resolved.

Q-85-544-002-02 - "Revision to WP 3553" - WBN Construction should change WP 3553 to reflect the appropriate revision level of NCR 4443 for which corrective action is authorized.

Response: Q-85-544-002-01 - After reviewing this NSRS recommendation, the following findings were determined. The doors found to have problems in the UL survey of November 84 were identified, reworked and documented under the Appendix R program (see ECN 5280). The workplans used to do this work were 4933, 4943, 4945, 4944, and 4947.

Q-85-544-002-02 - We do not feel that it is necessary to revise workplan 3553 to include NCR 4433 R1. NCR 4433 R1 and workplan 3553 have been closed. The doors that were listed in NCR 4433 R0 have been reworked and redocumented using workplan 4933 under the Appendix R program. The doors that were added to R1 have been reworked and redocumented using workplan 4943 under the Appendix R program.

Principally prepared by William A. Bartlett, extension 3287

*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 : DEC 23 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. IN-85-271-001

Subject FSAR COMMITMENTS INCORRECTLY STATED IN LOWER TIER DOCUMENTS

Concern No. IN-85-271-001; IN-85-282-002

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by January 23, 1986. Should you have any questions, please contact W. M. Kemp, Jr. at telephone 3200-WBN.

Recommend Reportability Determination: Yes X No     

*R.C. Sawyer*  
Director, NSRS/Designee

BFS:GDM

Attachment

cc (Attachment):

- R. P. Denise, LP6N35A-C
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- E. K. Sliger, LP6N48A-C
- 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-85-271-001  
Subject FSAR COMMITMENTS INCORRECTLY STATED for action/disposition.

\_\_\_\_\_  
Signature Date



202U

NSRS RECOMMENDATIONS

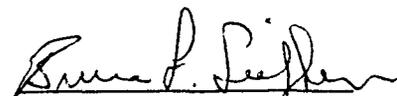
EMPLOYEE CONCERN NUMBER: IN-85-271-001

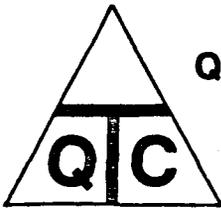
RECOMMENDATIONS

Q-85-271-001-01: FSAR Commitments Incorrectly Stated in Lower Tier Documents

The conflicting statements in the FSAR and in QCP 4.13 should be examined and rectified.

  
Prepared by

  
Reviewed by



**QUALITY  
TECHNOLOGY  
COMPANY**

P.O. BOX 600

Sweetwater, TN 37874

(615)365-4414

ERT INVESTIGATION REPORT

PAGE 1 OF 4

CONCERN NO: IN-85-282-002, IN-85-271-001

CONCERN: Until recently, TVA weld inspectors required all pipe welds to be ground smooth finish. The concern is that smooth grinding may actually mask a surface defect which would otherwise be detectable.

CONCERN NO: IN-85-271-001

Concern: Welds being ground down through out Unit II to satisfy the inspectors. The primary concern at the present time is for the welds to look pretty.

INVESTIGATION

PERFORMED BY: W. M. Kemp, Jr.

---

DETAILS

PERSONNEL CONTACTED:

NA

PROCEDURES/CODE/COMMITMENTS REVIEWED:

ASME III Division 1 1971 Summer 1973  
ANSI B31.1 1973  
AWS D1.1 1972  
QCP 4.13 Rev. 4 Fit Up and Visual Mechanical  
FSAR Requirements for Codes and Standards

SUMMARY OF INVESTIGATION

This concern as stated is not substantiated.

ASME/ANSI requirements for reinforcement of welds are given as "maximum" height with caution given as to grinding below minimum wall thickness. Welds can and are ground down for uniformity/NDE and inspection. These are acceptable methods and addressed in applicable procedures. It is noted that the applicable procedures do not address the correct code/standards required by the FSAR commitments which would question the validity of inspection and requirements implemented.

DOCUMENTS REVIEWED:

WBN QCP 4.13 Fitup and Visual Mechanical (FU & VM)

Addresses/References ASME/ANSI B31.1

ASME III 1971 thru Summer 1973 Addenda thru 1974 Addenda thru Winter 1976.

ASME Section I & VIII same years and addenda

ANSI B31.1 1973 Edition and Winter 1973 thru the 1977 Edition and Winter 1977.

CONCERN NO: IN-85-282-002

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DETAILS, continued

## FINDINGS

The FSAR commits of the following Codes/Standards (pages 3.8-4, 3.8.3-8c & 3.8.3-9)

- \* American Institute of Steel Construction (AISC)  
  
"Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings," adopted February 12, 1969.
- \* American Society of Mechanical Engineers, Boiler and Pressure Vessel Code Sections II, III, V, VIII and IX, 1971 Editions, as amended through summer 1972 addenda.
- \* American Welding Society (AWS)  
  
"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 Concrete Connections," AWS D12.1-61.  
  
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  
  
Recommended Practice for Welding Reinforcing Steel, Metal Inserts, and Connections in Reinforced Concrete Connections, AWS D12.1-61

However on Page 3.8.3-8c in the FSAR it 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.

- (1) The FSAR commitment to ASME II, III, V, VIII, and IX is for the 1971 Edition through Summer 1972 Addenda. QCP4.13 lists different years and addenda of the code than what the FSAR commits to, which questions the validity of inspections satisfying the code of record for WBNP.

CONCERN NO: IN-85-282-002

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DETAILS, continued

FINDINGS, continued

- (2) The FSAR states G-29C conforms to the criteria in AWS D1.1-72. However, in other sections, the FSAR states "G29C modifies AWS D1.1". These are conflicting statements within the FSAR.
- (3) Procedures and lower tier documents do not reflect TVA commitments per FSAR.

ATTACHMENT "A" in QCP 4.13, is Process Specification 3.M.5.1 (R5) which states the following:

B.2 Contour and finish of outside surface of welds.

B.2.1 states: "The surface of welds shall be sufficiently free from coarse ripples, grooves, abrupt ridges and valleys to perform other nondestructive test without masking possible discontinuities.

B.2.2 "If grinding has been performed for surface finishing operations the weld and adjacent surfaces shall be examined for thinning to below minimum design thickness".

B.6.1, for piping Table 3 addresses maximum reinforcement.

B.6.2 Vessels, pumps, valves and component supports, Table 4 addresses maximum reinforcement.

Attachment "A", addresses in Table 4, ASME III Div. 2, ASME III Div. 1 and ASME I & VIII Div. I

The reference to ASME Section III Div. 2 in Table 4 is wrong for the following reasons:

1. The Code of Record, is ASME III Div. 1 1971 through 1973 Summer Addenda. ASME III Div. 2, Concrete Construction was not a code until 1975.
2. All welding to ACI (concrete) references AWS D1.1 for welding, not ASME.
3. ASME III Div. 2 is not applicable to WBNP per FSAR.

CONCERN NO: IN-85-282-002

DETAILS, continued

FINDINGS, continued

Throughout QCP 4.13 Attachments, there appears to be requirements ranging from ASME III Div. 1 and Div. 2 from 1971 through Winter 1980.

Findings:

The FSAR states the Code of Record as ASME III Div. 1 1971 through the Summer Addenda of 1973.

ASME III Div. 2 is not addressed nor in the 1971 Edition through the Summer 73 Addenda was Div. 2 established.

CONCLUSION:

This concern is not substantiated.

Based on this investigation "TVA inspectors required all pipe welds to be ground smooth" is a true statement. It is noted that the applicable code and standards address maximum reinforcement not minimum however caution is given to required minimum wall thickness. Grinding/cleaning of weld surfaces will not mask surface conditions.

Codes/standards reference "masking indications" in the as welded condition and cleaning by grinding/flapper wheel is an acceptable method to prepare weld for visual inspection and NDE.

This investigation has determined that lower tier procedures do not reflect the FSAR commitments.

*Reviewed & Accepted*  
12/19/85  
*Russ P. Dyer*

PREPARED BY *Antemp* 12/10/85  
DATE

REVIEWED BY *D. P. News* 12/13/85  
DATE

**FINAL**

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-85-282-002, IN-85-271-001 \_\_\_\_\_  
(ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: Welding  
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)  
Until recently, TVA weld inspectors required all piping welds to be ground smooth.
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

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: OD Theis 365-4464  
ERT Group Manager Phone Ext.

OD Theis for 365-4464  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

Jerry D Smith Date 12-19-85 Time 3:55 PM  
Signed

*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 : DEC 23 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. IN-85-445-004

Subject FOS TRACABILITY

Concern No. IN-85-445-004; IN-85-445-X15

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by January 23, 1986. Should you have any questions, please contact T. Hough at telephone 365-7135.

Recommend Reportability Determination: Yes X No     

*R.C. Sauer*  
 \_\_\_\_\_  
 Director, NSRS/Designee

BFS:GDM

Attachment

cc (Attachment):

- R. P. Denise, LP6N35A-C
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- E. K. Sliger, LP6N48A-C
- 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-85-445-004  
 Subject FOS TRACABILITY for action/disposition.

\_\_\_\_\_  
 Signature Date



9203U

## NSRS RECOMMENDATIONS

EMPLOYEE CONCERN NUMBER: IN-85-445-004

### RECOMMENDATIONS

Q-85-445-004-01: FOS TRACABILITY

The need for better tracability between the FOS and the hangers fabricated under it should be studied. The conclusions of this study should be justified by the study and any corrective actions which may be needed to improve tracability should be implemented. Please notify NSRS of your projected timetable and scope for this review.

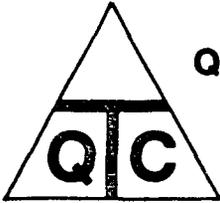
Q-85-445-004-02: REJECTED INSTRUMENT SUPPORTS

An NCR or similar corrective action document should be initiated to correct the noted deficiencies on the instrument supports which failed the reinspection performed during the investigation.

Q-85-445-004-03: PROGRAMMATIC IMPROVEMENTS

A review of the instrument support program should be undertaken to reveal the reasons why the high rejection rate was noted in this investigation. This study should justify why corrective actions may or may not be needed. Please inform NSRS of the timetable and scope of this study.

Principally prepared by Bruce F. Siefken.



QUALITY  
TECHNOLOGY  
COMPANY

P.O. BOX 600

Sweetwater, TN 37874

(615)365-4414

ERT INVESTIGATION REPORT

PAGE 1 OF 5

CONCERN NO: IN-85-445-004  
IN-85-445-X15

CONCERN: 004: Instrument line supports (numbers known) had inspection requirements incorrectly signed off by individual other than the inspector (names known). No action by TVA, or any disciplinary action to the individual has been relayed to this CI. Construction Department concern.

X15: Instrument line support inspection requirements falsified.

INVESTIGATION  
PERFORMED BY: T. Hough

-----  
DETAILS:

PERSONNEL CONTACTED:

CONFIDENTIAL

DOCUMENTS REVIEWED:

1. TVA Investigation Report: (No. Known)
2. Support Fabrication Operation Sheets (FOS's): (Various)
3. Installation Operation Sheets (IOS's) for above FOS's:  
(Various)

CONCERN NO: IN-85-445-004  
IN-85-445-X15

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DETAILS:

4. WBN-QCP 1.28 R4 "Preparation and Documentation of Seismic Support Variance"  
  
WBN-QCI 1.28 R0 "Preparation and Documentation of Seismic Support Variance"

SUMMARY OF INVESTIGATION:

This concern is substantiated. The investigation involved comprehensive review of handwriting samples (from vaulted quality records), reinspection of suspect supports and review of the allegation investigation performed by TVA. In addition, during the investigation several observations were made concerning conditions that appear adverse to quality.

FINDINGS:

By comparing several sample signatures and initials of the supposed inspector and the alleged forger, it was determined that there are handwriting characteristics sufficient to indicate that the initials and dates on the suspect documents were not prepared by the supposed inspector. Without additional suspect initials and dates prepared by the alleged forger, it is not possible to positively determine that the alleged forgeries were made by this individual; however, there are characteristics sufficient enough to conclude that the alleged forgeries could have been prepared by this individual.

Although TVA investigated this incident (Ref: TVA investigation-No. Known) and also substantiated the allegation (and indicated that it was safety-related) no action was taken concerning the forged signatures. The TVA investigation centers around the hardware adequacy aspects of the incident and does not adequately address the fact that someone (not the inspector) signed an inspection attribute illegally.

CONCERN NO: IN-85-445-004  
IN-85-445-X15

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DETAILS:

The TVA investigation report stated that "this allegation appears to be an improper transfer of initials,...". However, there is no objective evidence supporting a reason or need for a "transfer of initials", thus rendering the suspect initials and dates as an intentional wrongdoing. The TVA investigation report sites NCR (No. Known) as the closure mechanism for this allegation, yet this NCR does not address illegal signing of inspection attributes. In addition, the NCR Block 4A states that the welds were reinspected and found to be acceptable. However, no reinspection documentation was found or referred to on the original FOS's, and the original FOS's (with the indeterminate initials and dates) are still the only records for these supports in the vault. Also, block 4A of the NCR states that the two (2) FOS's involved, contained only one hanger each, when in actuality, the FOS's involved a total of four (4) hangers, (two each). As a result, this renders the remaining two hangers indeterminate.

A review of the personnel file of the alleged forger (as identified by CI) revealed that this incident was never addressed to this individual in a documented format.

OBSERVATIONS:

1. There is no traceability between the FOS(s) and item(s) inspected. This is contrary to 10CFR50, Appx. B, Criterion XVII.
2. With respect to item #1 above, an attempt was made to identify the supports associated with the FOS sample. As a result, of 89 hangers fabricated on 13 randomly selected FOS's only 41 hangers could be accounted for by the NSB Instrumentation Group. This is contrary to 10CFR50, Appx. B, Criterion XVII.
3. Within the FOS sample, one vaulted FOS indicates that two 47A051-42 hangers were fabricated and inspected. However, the attendant drawings depict 47A051-42A hangers and something similar to a 47A051-42C hanger. In addition, the IOS drawing shows something different than all the above typicals. This is contrary to 10CFR50, Appx. B, Criterion V & XVII.

CONCERN NO: IN-85-445-004  
IN-85-445-X15

-----  
DETAILS:

4. Another vaulted FOS indicated that two 47A051-42 hangers were fabricated and inspected. However, the attendant drawings depict 47A051-42A hangers and again something similar to a 47A051-42C hanger. The IOS associated with this FOS ("Material Description" section) calls for 2 each 47A051-42 hangers, yet the drawing depicts something similar to a 47A051-42C hanger typical. This is contrary to 10CFR50, Appx. B, Criterion V & XVII.

5. Items 3 & 4 above, present the following questions:

a. These hangers are installed in safety-related systems and the typical details are designated as Seismic Category I structures, therefore the typical as drawn have been analyzed for worst case loads, moments and seismic effects. Have the as-built configurations been so analyzed? If not, this is contrary to 10CFR50, Appx. B, Criterion III.

b. For all typical supports throughout the plant, where changes were made by the craft, were deviations from the typicals analyzed for actual loads, actual moments, and seismic effects, and was this addressed in the Watts Bar responses to NRC-OIE Bulletins 79-02 and 79-14?

NOTE: Items 5a & 5b have resulted in the following concern; IN-85-445-X17.

6. Field verification of the random sample performed by ERT Investigator and TVA I-QC Inspector, revealed that 6 of 7 supports inspected failed to meet acceptance criteria. Noted discrepancies include:

- \* Insufficient weld
- \* Incorrect material (structural members)
- \* Supports fabricated contrary to "typical" detail
- \* No support variances for noted deviations

This is contrary to 10CFR50, Appx. B, Criterion X.

CONCERN NO: IN-85-445-004  
IN-85-445-X15

-----  
DETAILS:

7. Two vaulted FOS's (Ref. OBSV #3 & 4) provide documentation for instrument supports that appear to be similar to 47A051-42C typical supports. These FOS's were signed and dated 5-1-80, yet the 47A051-42C typical did not exist until 6-24-81. This is contrary to 10CFR50, Appx. B, Criterion III, V, X, XV, XVI, XVII.

CONCLUSION:

This concern is substantiated.

This conclusion is based on the following:

- \* Comprehensive review of vaulted handwriting samples
- \* The TVA Allegation Investigation only marginally addresses the forgery.
- \* An investigation was performed, but no formal accusations were made and the TVA Personnel File of the alleged forger does not document this incident.
- \* Discrepancies noted on vaulted FOS documents
- \* Discrepancies noted on IOS's
- \* Discrepancies noted during the field walkdown.
- \* Support Variance Logs and Records do not support deviations noted during field walkdown.

Prepared By *W. Dough* 11-25-85  
DATE

Reviewed By *O. J. Shero* 11/25/85  
DATE

**FINAL**

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-85-445-004 (ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: Seismic Cat I Instrument Supports  
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)  
Construction of unapproved instrument supports.
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: Construction of unapproved instrument supports.
- 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: Quality inspection and approval of unapproved instrument supports.
- 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 X If Yes, Explain: Construction of unapproved instrument supports.
- 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 X If Yes, Explain: Construction of unapproved instrument supports.

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 X 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:

OK Heio  
ERT Group Manager      365-4464  
Phone Ext.

W. M. M. M.  
ERT Project Manager      365-4416  
Phone Ext.

Acknowledgment of receipt by NSRS

Signed \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

**FINAL**

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. IN-85-445-004 (ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: Seismic Cat I Instrument Supports  
(Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.)  
Inspection and acceptance of unapproved and nonconforming instrument supports.

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: Inspection and acceptance of unapproved and nonconforming instrument supports.

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: Inspection and acceptance of unapproved and nonconforming instrument supports. Failure to identify nonconforming construction during inspection.

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: Unapproved support design, constructed and installed.

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 X If Yes, Explain: Inspection and acceptance of unapproved and nonconforming instrument supports, unapproved support design, constructed and installed.

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 X 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:

[Signature]  
ERT Group Manager

365-4464  
Phone Ext.

[Signature]  
ERT Project Manager

365-4416  
Phone Ext.

Acknowledgment of receipt by NSRS

Signed \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. TN-85-445-004 (ERT Concern No.) (ID No., if reported)

2. Identification of Item Involved: Seismic Cat I Instrument Supports (Nomenclature, system, manuf., SN, Model, etc.)

3. Description of Problem (Attach related documents, photos, sketches, etc.) Inadequate traceability from Q.A. record to items inspected.

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: Inadequate traceability from Q.A. record to items inspected.

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: Inadequate traceability from Q.A. record to items inspected.

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

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:

O. J. Shaw  
ERT Group Manager

365-4464  
Phone Ext.

W. M. R.  
ERT Project Manager

365-4416  
Phone Ext.

Acknowledgment of receipt by NSRS

Signed \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_



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 X If Yes, Explain: Illegal signing of inspection attributes (forgery) - intentional wrongdoing.

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 X 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:

OT Meis  
ERT Group Manager

365-4464  
Phone Ext.

[Signature]  
ERT Project Manager

365-4416  
Phone Ext.

Acknowledgment of receipt by NSRS

Signed \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

*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 : **DEC 23 1985**

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. PH-85-014-002

Subject CONDUIT DISCREPANCIES

Concern No. PH-85-014-002

and associated recommendations for your action/disposition.

It is requested that you respond to this report and the attached recommendations by January 23, 1986. Should you have any questions, please contact W. Pickering or W. Vadlamani at telephone 365-7134 or 365-9755 (WBN) respectively.

Recommend Reportability Determination: Yes X No     

*R.C. Sauer*  
Director, NSRS/Designee

BFS:GDM

Attachment

cc (Attachment):

- R. P. Denise, LP6N35A-C
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- E. K. Sliger, LP6N48A-C
- 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. PH-85-014-002  
Subject CONDUIT DISCREPANCIES for action/disposition.

\_\_\_\_\_  
Signature Date



NSRS RECOMMENDATIONS

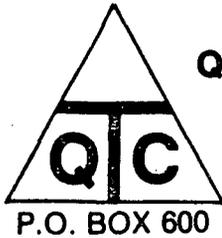
EMPLOYEE CONCERN NUMBER: PH-85-014-002

RECOMMENDATIONS

Q-85-014-002: Conduit Discrepancies

An NCR should be initiated to track and correct the conduit installations noted in observations 1 and 2 of the investigation report.

Principally prepared by Bruce F. Siefken.



**QUALITY  
TECHNOLOGY  
COMPANY**

Sweetwater, TN 37874

(615)365-4414

ERT INVESTIGATION REPORT

PAGE 1 OF 6

CONCERN NO: PH-85-014-002

CONCERN: Inspector had documented some inspections with no physical inspection of hardware. Occurred in Summer of 1984, work release on conduit in Unit 1 throughout plant. Individual known who can substantiate.

INVESTIGATION

PERFORMED BY: W. Pickering  
K. Vadlamani

---

DETAILS

PERSONNEL CONTACTED: CONFIDENTIAL

DOCUMENTS REVIEWED:

TVA General Construction Specification, G-40, Revision 7, dated 2/7/85, "Installing Electrical Conduit Systems and Conduit Boxes," with SRN-G-40-9, dated 2/1/85.

QCP-3.03, Revision 18, dated 2/27/85, "Inspection of Electrical Conduit and Junction Boxes."

QCP-3.06-3, Revision 7, dated 4/26/85, "Inspection of Cable Termination."

CONCERN NO: PH-85-014-002

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DETAILS, continued

DOCUMENTS REVIEWED, continued

WBNP Unit 1 Conduit and Grounding Drawings:

Drawing	Revision	Date
45N860-5	26	6/22/84
45N862-8	26	7/11/84
45W860-9	10	1/23/84
45N862-10	35	1/31/85
45W862-19	21	3/28/85
45W862-15	20	Not Legible

## SUMMARY OF INVESTIGATION:

This concern, as stated, is not substantiated. The subject concern was investigated from 6/28/85 to 11/15/85. The scope of this investigation was to determine: 1) which inspector(s) was involved in submitting inspection documents without actually performing the inspection, and 2) which work releases were affected. A brief overview of the investigation results are as follows:

1. Several interviews were held with the concerned individual and these interviews did not reveal any specific inspector's name or specific installations which were documented without an inspection being performed.
2. Personnel interviews conducted during the course of this investigation did not identify any particular individual's name relative to the subject concern.
3. Personnel interviews revealed that, some individuals had heard jokes and rumors about other inspectors who would accept inadequate conduit installations. No specific instances were provided by the individuals who were contacted.
4. Work Releases pertinent to the concern were reviewed and a field walkdown was performed.
5. The field walkdown inspections revealed inadequacies per the acceptance criteria specified for conduit installations, and a nonconformance report, NCR 6464, was generated.

CONCERN NO: PH-85-014-002

---

DETAILS, continued

## FINDINGS:

1. Several initial attempts were made with the concerned individual (CI) to obtain specific information relative to this concern. The CI did not provide any name of individuals who might possibly be involved in documenting inspections that they had not performed. The CI claimed that the concern was originated from hearsay knowledge of conduit installation inspections in the Unit 1 Reactor Building which were performed during the Summer of 1984. The CI indicated no witnesses were known.
2. Thirty (30) work release forms, generated during the Summer of 1984, were reviewed. Six (6) of these work releases were related to conduit rework and QC inspections in the Unit 1 Reactor Building.
3. A listing of all inspectors employed in the Electrical Quality Control (EQC) Unit from June 1984 to the present time was obtained, to compare the names referenced in the work releases selected. The purpose of this comparison was to establish a list of inspectors who could possibly have been involved in the alleged inspections.
4. A further contact was made with the CI in which the list of inspectors included in the work releases was presented to help identify the alleged inspector(s). The CI did not identify any of the inspectors listed as the alleged individual(s). Therefore, it was decided to interview all cognizant EQC personnel. The purpose of this interview was to determine if EQC inspectors were knowledgeable of any incident similar to the subject concern. During these interviews no specific names and/or incidents relative to the subject concern were revealed. However, some of the interviewees indicated that they heard rumors in the area of the subject concern, but nothing specific relative to names and/or work affected. Some interviewees expressed that they heard jokes about other inspectors, which would imply that some inspectors would accept any installation in order to maintain good management relationship. Based on the interviews with the cognizant personnel, knowledge of specific incidents or names of inspectors relative to the subject concern, were not revealed or known.

CONCERN NO: PH-85-014-002

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DETAILS, continued

FINDINGS, continued

5. Since no names or incidents were revealed, it was decided to review and investigate all work releases applicable to the conduit installation in the Reactor Building during the Summer of 1984. This review indicated that 6 of the 30 work releases that were selected for review, were relative to the rework of conduits in the Reactor Building and are documented in Attachment 1.
6. EQC personnel had performed and accepted inspections of the hardware identified in the six related work releases.
7. A walk down inspection of the six (6) work releases revealed deviations/deficiencies which are documented in Attachment 2.
8. The deficiencies noted during the field verification were initially listed on a reply memo, but was later decided by EQC personnel to generate a Construction Nonconformance Report. (NCR 6464, Revision 0, dated 11/14/85).
9. During the review of work releases it was noted that some of the work releases and corresponding inspection test cards indicated that the inspection sign-off dates were inconsistent. It appears that the work release inspection sign off was accomplished without actually having or obtaining an appropriate inspection test level card(s). Investigation of this item revealed that the responsible engineer would not always issue a work release and a corresponding test level card for inspection, at the same time. Therefore, in the absence of an appropriate inspection test level card, the inspectors would document their inspections on some unofficial document and release the work release by initialing and dating in the appropriate block. Later, when the appropriate inspection test level card corresponding to a work release was received it would be filled-out by the inspector. It was stated by cognizant inspection personnel that the above practice is no longer being implemented. The current practice is that any inspection performed without an appropriate test level card (corresponding to a work release) would be documented on an IRN, "Inspection Rejection Notice" in accordance with QCI 1.2-1. The following examples reflect the previous inspection documentation practice:

CONCERN NO: PH-85-014-002

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DETAILS, continued

FINDINGS, 8, continued

- a) W.R. 18473 was signed-off by the inspector on 6/30/84. The inspection test document (Test 25B) was signed-off on 7/9/84. Conduit 1-3VC-293-3448-B.
- b) W.R. 19022 was signed-off by the inspector on 7/28/84. The inspection test documents (Test 25B) were signed-off on 8/4/84 and 10/10/84. Conduits 1-2PM-293-6566-E and 1-1CR-293-4406
- c) W.R. 18732 was signed-off by the inspector on 8/14/84 and the inspection test document (Test 25C) was signed-off on 9/5/84. Conduit 1-4PLC-293-1136-A

## CONTACT WITH CI:

On 11/22/85, the CI was contacted to discuss the results of the subject investigation. The CI has no further question in the area of this concern.

## CONCLUSIONS:

The concern, that an inspector had documented inspections without performing an inspection, cannot be substantiated. Even though this investigation could not decisively determine those inspections which were documented without performing a physical inspection, it did identify that some of the inspections documented in the area of the subject concern were inadequate and did not meet the inspection acceptance criteria listed in the applicable drawings and procedures.

This concern is not substantiated for the following reasons :

1. The CI did not provide any specific inspector's name or a specific installation that was accepted by the alleged inspector(s) in the manner that was expressed during the initial interview. The CI did not provide any objective evidence relative to this concern.
2. Interviews with cognizant inspection personnel did not reveal any specific information relative to the subject concern, other than that there were some jokes/rumors about inspections performed by some inspectors.

CONCERN NO: PH-85-014-002

DETAILS, continued

OBSERVATIONS:

The following are a list of observations made during the course of field inspections:

1. A 1" flex conduit connected to a conax connector was found to be loose, and requires torquing per site procedures.

Details: Location. RZ250 /716' Accumulator Room #3, Reactor Building 1.  
 Instrument: 1-LT-3-164-A  
 Panel: 1-L-184B

2. An unidentified, non-divisional conduit was observed, by the EQC inspector, to be entering valve, 1-TCV-67-108-B. The field configuration is as shown in detail "D15" Subdetail "M" of drawing #45W862-15, Revision 20. There are only 5 "B" train conduits specified and no non-divisional conduit is specified in the drawing.

Note: Observations 1 & 2 need to be addressed for corrective action.

3. During the walkdown, a piping insulation on System 68 was found to have been damaged. Details of observations are as follows:

WBNP Unit :	1
Date of Observation:	10/25/85
System #:	68
Floor Elevation:	716 Feet
AZIMUTH:	73 Degrees
Building Location	Heat Exchanger Room
Insulation Identifiers:	67-21,22,23,24
Item Damaged	Insulation on pipe elbow located 4' to 5' above the grating.

This has been identified on NucPwr Engineering on 10/30/85 for necessary corrective action.

PREPARED BY     *Christina Mohan Vadlamani*         12/14/85      
 DATE

REVIEWED BY     *OJ Thero*         12/14/85      
 DATE

## ATTACHMENT 1 OF 2

## SHEET 1 OF 1

ERT FILE NO. PH-85-014-002

WORK RELEASES REVIEWED BY ERT

WBNP UNIT 1

WORK PLAN#	SYSTEM	WORK RELEASE #	INITIATION DATE	COMPLETION DATE
4575	68&30	19022	7/23/84	7/30/84
4471	61	18473	6/19/84	9/30/84
4480	77	18710	7/3/84	9/29/84
4225	30	18732	7/6/84	8/4/84
E293B-09	293	18799	7/11/84	10/17/84
4483	62,70,74	18627	6/24/84	7/26/84
E293B-09	293	18538	6/25/84	7/13/84
3768	290	18260	6/6/84	7/6/84
?	293	18276	6/7/84	6/28/84
E290E01	290	18598	6/27/84	8/3/84
4451	293	18599	6/27/84	7/18/84
4487	292	19004	7/20/84	7/25/84
4411	292	19011	7/21/84	9/7/84
4480	293	18854	7/12/84	8/1/84
4411	290&293	18943	7/19/84	8/5/84
4411	290	18961	7/20/84	8/3/84
4540	43	19014	7/22/84	8/28/84
4213	293	18661	6/30/84	7/25/84
E290E01	290	18614	6/28/84	7/12/84
4411	292	19056	7/25/84	8/6/84
4487	290	19149	8/1/84	9/21/84
E290E04	290	18724	7/5/84	7/30/84
E290E01	290	18820	7/10/84	7/19/84
4364	65	18436	6/18/84	6/27/84
4359	292	18392	6/14/84	8/9/84
4359	292	18391	6/14/84	8/8/84
4393	290	18689	7/2/84	10/31/84
E290E01	290	18613	6/28/84	7/12/84
4273	292	18603	6/27/84	8/31/84
4273	292	18602	6/27/84	7/6/84

ATTACHMENT 2 OF 2

SHEET 1 OF 2

ERT FILE: PH- 85-014-002

RESULTS OF FIELD WALKDOWN INSPECTION

- 1.A Work Release : 19022  
Location : RB1  
Coordinates : AZ 340 Degrees/El.716'  
AZ 038 Degrees/El.716'  
Conduit Number: 1-2PM-293-6566-E  
Size : 3/4" I  
Procedure : QCP 3.03 rev. 17  
Findings : Damaged Flexible Conduit  
Results : Unsatisfactory
  
- 1.B Work Release : 19022  
Location : RB1  
Coordinates : AZ 20 degrees/El.703'  
AZ 18 degrees/El.703'  
Conduit Number: 1-1CR-293-4406  
Size : 3/4" I  
Procedure : QCP 3.03 Rev. 17  
Findings : None  
Results : Satisfactory
  
- 2. Work Release : 18710  
Location : RB1  
Coordinates : AZ 279 degrees/El.716'  
Conduit Number: 1-3VC-293-1404-B  
Size : 3/4" I  
Procedure : QCP 3.03 Rev. 17  
Findings : Conduit Installed is 1" I  
Results : Unsatisfactory
  
- 3. Work Release : 18627  
IRN : REC. 138  
Location : RB1  
Coordinates : AZ 301 degrees/El.716'  
AZ 333 degrees/El.716'  
Conduit Number: 1-4VC-293-1498-B  
Size : 1 1/2" I  
Procedure : QCP 3.03 Rev. 17  
Findings : Conduit not identified as it enters the wall.  
Results : Unsatisfactory

ATTACHMENT 2 OF 2  
PH-85-014-002  
SHEET 2 OF 2

4. Work Release : 18473  
IRN : GLR 133  
Location : RBl  
Coordinates : AZ 300 degrees/El. 756' or 803'  
Conduit Number: 1-3VC-293-3448-B  
Size : 2"I  
Procedure : QCP 3.03 Rev. 17  
Findings : (a) Span violation near 2-JB-293-TEE-B END, i.e.,  
between 1st and 2nd support relative to Tee,  
is found to be 11'4"  
(b) Field identification of the conduits at Tee  
is incorrect. The actual field condition  
indicates conduits 3448B 3455B

3460B

instead of 3448B 3465B

3460B

Results : Unsatisfactory

5. Work Release : 18732  
Location : RBl  
Coordinates : AZ 250 degrees/El. 738'  
: R53' 10 3/4"  
Conduit Number: 1-3PLC-293-1136-A  
Size : 2"I  
Procedure : QCP 3.03 Rev. 16  
Findings : (a) Flex conduit is loose and needs torquing;  
(b) Respective penetration not identified;  
(c) 1st support with respect to penetration not  
identified;  
(d) Violation of dimension "A" per drawing  
47A056-102, i.e., "A" is found to be 32" in  
the field.

6. Work Release : 18799  
Location : RBl - Accumulator #3  
Coordinates : AZ 250 Degrees/El. 725'  
Conduit Number : 1-3T-293-3792  
Size : 1 1/2" I  
Procedure : QCP 3.03, Rev. 17  
Findings : None  
Results : Satisfactory



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 X 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 X 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:

O. H. Shew  
ERT Group Manager

365-4464  
Phone Ext.

O. H. Shew for  
ERT Project Manager

365-4414  
Phone Ext.

Acknowledgment of receipt by NSRS

Signed \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

NRC

UNITED STATES GOVERNMENT

## Memorandum

TENNESSEE VALLEY AUTHORITY

TO : H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant

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

DATE : **DEC 23 1985**

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. XX-85-028-001

Subject HP ADJUSTMENT OF RWP RADIATION EXPOSURE ALLOWANCE

Concern No. XX-85-028-001

and associated prioritized recommendations for your  
action/disposition.

It is requested that you respond to this report and the attached  
Priority 2 [P2] recommendation by January 17, 1986. Should you  
have any questions, please contact R. G. Sauer at telephone 2277.

Recommend Reportability Determination: Yes  No

R. G. Sauer  
Director, NSRS/Designee

RCS:JTH

Attachment

cc (Attachment):

R. P. Denise, LP6N35A-C  
R. J. Griffin, SQN, E-18  
G. B. Kirk, SQN  
D. R. Nichols, E10A14 C-K  
QTC/ERT, Watts Bar Nuclear Plant  
H. S. Sanger, WBN  
Eric Sliger, LP6N48A-C  
J. H. Sullivan, SQN  
W. F. Willis, E12B16 C-K (4)



NSRS RECOMMENDATIONS

EMPLOYEE CONCERN NUMBER: XX-85-028-001

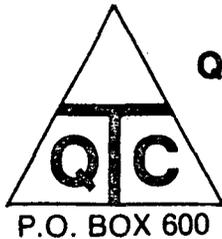
RECOMMENDATIONS

X-85-028-001: Correction of Deficiencies with Identified 1984 Radiation Work Permits

Correct or provide justification why discrepant Health Physics QA records involving 1984 RWP timesheets should not receive corrective action. In addition, provide NSRS those program measures Health Physics has taken to better account for RWP timesheets as inferred in the OBSERVATIONS portion of the QTC report and how these measures will prevent recurrence of the problems identified with the 1984 timesheets. [P2]

  
Prepared by 12/20/85

  
Reviewed by 12/20/85



**QUALITY  
TECHNOLOGY  
COMPANY**

Sweetwater, TN 37874

(615)365-4414

ERT INVESTIGATION REPORT

PAGE 1 OF 14

CONCERN NO: XX-85-028-001

CONCERN: While at another TVA facility individual was exposed to the maximum amount of radiation. RWP was adjusted by Health Physics to reflect an increase in radiation allowance.

INVESTIGATION

PERFORMED BY: G. Pohlmann  
T. Hough  
M. Shannon

---

DETAILS

Personnel Contacted:

Documents Reviewed or  
References:

- A. Radiological Control Instruction RCI-14 Revision 3 dated 6/27/84
- B. Radiological Control Instruction RCI-3 Revision 19 dated 5/13/85
- C. Radiological Control Instruction RCI-10 Revision 19 dated 8/23/84
- D. Regulatory Guide 8.8 Revision 1 dated 9/75
- E. ANSI N45.2.9 - 1974
- F. Administrative Instruction AI-7 Revision 33 dated 6/1/84
- G. 10 CFR 19 Revision 1/82
- H. 10 CFR 20 Revision 1/82
- I. Special Instruction MS/DCU-6 Revision 0  
(No date available)
- J. Radiation Work Permits (RWP)/RWP timesheet logs/RWP timesheets issued for year 1984 (See Microfilm - TVA Roll Nos. 743,744,745,746,747,748, and 749).

CONCERN NO: XX-85-028-001

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DETAILS, continued

## SUMMARY OF INVESTIGATION:

The concern is not substantiated. A review of the Radiation Work Permit (RWP) timesheets did not indicate that the concerned individual (CI) was exposed to the maximum amount of radiation. In order to verify the CI's total radiation exposure, a review was performed on Thermoluminescent Dosimeter (TLD) badge reading data and personal dosimetry data, both supplied by Health Physics.

This investigation took place from August 8, 1985 to October 19, 1985.

## FINDINGS:

RWP timesheets for September/October, 1984, were reviewed. Eighteen of the RWP timesheets involved the CI entering into a radiation work area. Of the eighteen timesheets, none indicated that the CI was exposed to the maximum amount of radiation. A review of personal dosimetry data, obtained from Health Physics, was used to verify that the CI had not exceeded maximum allowable dosages on any of the RWP timesheets. TLD badge reading was also obtained and the information presented, further verified that there was not any evidence of the CI being overexposed.

The CI was contacted and shown the applicable RWP timesheets. The CI was made aware of discussions with Health Physics and the procedural requirements that apply to the timesheets, (Radiological Control Instruction RCI-14). The CI pointed out that the concern centered around item 2 of the special instructions of the RWP timesheet, Form TVA 7903A (DNP 8-84), which states "Do not exceed \_\_\_\_\_ MREM per entry or 50% of RAD\* without Health Physics approval." \*(RAD meaning "Remaining Allowable Dose"). One of the RWP timesheets presented to the CI did indicate that the exposure requirements under item 2 on the RWP timesheets was changed (writeover). It should be noted that the writeover on this RWP timesheet was not handled in accordance with site procedures. Reference Observation Number 5.

The CI questioned why Health Physics would change the "\_\_\_\_\_ MREM per entry" requirements once they were listed on the RWP timesheet. The CI was made aware of the procedural requirements for Health Physics to modify the special instruction requirements as work conditions changed.

CONCERN NO: XX-85-028-001

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DETAILS, CONTINUED

## FINDINGS, continued

Although the change (writeover) was made to the RWP timesheet, the CI was not put in a situation that would have allowed him to be exposed to the maximum amount of radiation. This is evidenced by the fact that the CI did not violate the exposure limits on a "per entry" basis.

The concerned individual expressed an understanding of the information and agreed with what was presented.

## OBSERVATIONS:

During the course of the investigation, it was observed that most of the RWP timesheets for the year 1984, contained discrepancies. Listed below are requirements from Administrative Instruction AI-7 and Radiological Control Instruction RCI-14 which apply to the RWP timesheets.

It must be noted that the discrepancies listed were discussed with Health Physics and that there was no evidence of any corrective action. Health Physics indicated that they were unaware of any corrective actions taken to enforce the requirements of site procedures relative to the completion and handling of the 1984 RWP timesheets. However, Health Physics did point out that they were aware of the problems and that steps were taken in 1985 to better account for the RWP timesheets. Reference RWP 02-1-85116, timesheets 0002, 0003, and 0004 as examples.

## I. Administrative Instruction: AI-7:

## A. Paragraph 3.1: Quality Assurance (QA) Records

"Those records which furnish documentary evidence of the quality of items and of activities affecting quality of the CSSC. For the purposes of this instruction, a document is considered a QA record when the document has been completed. QA records may be in the form of originals, xerox copies, microfilm, or computer tape or disc. QA records are valid only if stamped, initialed, signed, or otherwise authenticated and dated by authorized personnel."

CONCERN NO: XX-85-028-001

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DETAILS, continued

OBSERVATIONS, continued

## I. Administrative Instruction AI-7, continued

## B. Paragraph 4.2 A:

"Records shall be traceable to the individual(s) responsible for their preparation and shall provide adequate information to permit identification between the record and items or activities to which they apply."

## C. Paragraph 4.2 B:

"Records shall be typed or written in ink (preferably black) and shall be legible."

## D. Paragraph 4.2 F:

"Corrections to QA records are permitted and shall be accomplished by drawing a single line through errors in the record and affixing the persons initials making the correction and date adjacent to each correction. Supplemental information shall also be initialed and dated."

## II. Radiological Control Instruction RCI-14:

## A. Section III. I:

"The RWP and RWP timesheet are QA documents and must be treated as such."

## B. Section V. C.4:

"The Health Physics representative shall total each worker's time and dose received in the area, and calculate and record all MPC hours and noble gas skin dose according to Health Physics HPSIL-8."

## C. Section VI. G.6:

"Each employee entering an RWP area shall record his name (signature should be used), social security number, section, craft, and date of entry on the appropriate RWP timesheet. The employee shall also record the time and his dosimeter reading in the proper spaces each time he enters and exits the work area."

CONCERN NO: XX-85-028-001

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DETAILS, continued

## II. Continued

## D. Section VII. B.1:

"Upon termination of an RWP timesheet, the Health Physics Shift Supervisor will review the white copy for technical accuracy and completeness. Completeness includes totaling individual exposure, time, skin dose and MPC hours, and verifying Health Physics HPSIL-8 requirements have been met. The Health Physics Shift Supervisor shall also verify that all RWP timesheets are accounted for and no duplicate numbers have been issued, indicate review and approval by signature, and forward the form to the ALARA Data Processor."

Listed below are the types of discrepancies that were noted during the investigation and examples of each.

(1) RWP timesheets which contains incorrect information. This violates the intent of AI-7 paragraph 3.1 and RCI-14 Section VII. B.1

## A. RWP 02-2-00250 No. 0009:

See date under "Time(T)/Dosimeter(D) Record". First four dates are transposed (i.e., 2/10 in lieu of 10/2).

## B. RWP 02-2-00257 No. 0018:

See "Job Description" which states in part "...work according to attached drawing..." Drawing is not attached or referenced on microfilm.

## C. RWP 02-2-00630 No. 0161:

See last page of timesheet - "Total MREM rec'd" not shown.

## D. RWP 02-2-00731 No. 0002:

See second page of timesheet which states "names on back" under "signature of worker" - there are no names shown.

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DETAILS, continued

## II. continued

(2) RWP timesheets contain information which is incorrectly transferred from another RWP timesheet making them technically inaccurate and incomplete. This violates the intent of AI-7 paragraph 3.1 and RCI-14 Section VII B.1.

A. RWP 02-2-00253 No. 0082 (Ref. RWP 02-2-00253 No. 0056):

On timesheet 0056 an employee had two entries which totaled up to 8 MREM (5+3) received. When the information was rewritten on timesheet 0082, both entries were recorded showing only a total of 5 MREM received.

(3) RWP timesheets that contain information which is not directly traceable to the activity it represented. This violates AI-7 paragraph 4.2.A.

A. RWP 02-2-00234 No. 0030:

See the third page of the timesheet which indicates RWP 02-2-00234 No. 031.

B. RWP 02-0-0046 No. 0040:

See the third page of the timesheet which indicates RWP 02-1-00413 No. 0011.

C. RWP 02-0-00576 No. 0131:

See Microfilm 000747 sheets 0275 and 0276 which are filed with RWP 02-0-00576 No. 0131. No traceability exists for these two sheets.

(4) RWP timesheets that are missing or unaccounted for. This violates RCI-14 Section VII.B.1.

A. RWP 02-1-00142 No. 0289.

Timesheet 0289 is not present on the microfilm. A review of the timesheet log for RWP 02-1-00142 does not indicate that

CONCERN NO: XX-85-028-001

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DETAILS, continued

## II. continued

## (4) A. continued

timesheet 2089 is part of RWP 02-1-00142. However, RWP 02-1-00142 contains timesheets up to number 0291. The discrepancy between the existing timesheets and the RWP timesheet log are identified in Observation 7H and 7I.

## B. RWP 02-2-00630 No. 0167:

See timesheet log for RWP 02-2-00630.

## C. RWP 02-0-00917 No. 0004 through 0014:

See timesheet log for RWP 02-0-00917

## (5) RWP timesheets which contain writeover that are not initialed and dated, improper corrections, or timesheets that are illegible. This violates AI-7 paragraph 4.2.B and 4.2.F and RCI-14 Section VII.B.1.

## A. RWP 02-2-00215 No. 0005:

See "Date" and "In/Out" under "Time(T)/Dosimeter(D) Record" - writeovers.

## B. RWP 02-2-00215 No. 0009:

See "Date" and "In/Out" under "Time(T)/Dosimeter(D) Record" - writeovers and improper corrections.

## C. RWP 02-2-00215 No. 0010:

See "Special Instructions" and "In/Out" under "Time(T)/Dosimeter(D) Record - writeover.

## D. RWP 02-2-00215 No. 0016:

See "In/Out" under "Time(T)/Dosimeter(D) Record" - improper correction.

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DETAILS, continued

II. continued

(5) continued

E. RWP 02-2-00215 No. 0023:

See "Radiological Information" and "In/Out" under "Time(T)/Dosimeter(D) Record" - writeovers and improper correction.

F. RWP 02-2-00215 No. 0030:

See "System" on the upper right hand corner of timesheet and "In/Out" under "Time(T)/Dosimeter(D) Record" - improper correction and writeover.

G. RWP 02-2-00244 No. 0006:

See "In/Out" under "Time(T)/Dosimeter(D) Record" - writeovers.

H. RWP 02-2-00250 No. 0030:

See "Protective Requirements" - writeover (Obliteration).

I. RWP 02-1-85116 No. 0008:

See Page 1 - Left side illegible.

See Page 4 - Right side illegible.

See "I.D. No. (Sl,MR,WP)" on 1st. page - improper correction.

See "Special Instructions" - improper correction.

See second page - improper corrections and writeovers under each section.

See "In/Out" under "Time(T)/Dosimeter(D) Record" on third page - writeover and improper correction.

J. RWP 02-1-85116 No. 0011:

See "Special Instructions" and "In/Out" under "Time(T)/Dosimeter(D) Record" - writeover.

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DETAILS, continued

## II. continued

- (6) RWP timesheets which contains information or requirements that have been changed after the RWP timesheet has been sent to the Health Physics Shift Supervisor for review and approval, thus making the quality of the record indeterminate. This violates the intent of AI-7, paragraph 3.1.

## A. RWP 02-2-00257 No. 0018:

See "Protective Requirements," "Special Instructions", and "Radiological Information" - all information changed 10/17/84, report was returned to H.P. on 10/15/84. All personnel entries took place prior to 10/16/85.

## B. RWP 02-2-00635 No. 0001:

Per the RWP timesheet log and RWP timesheet - it was issued on 10/14/84. On 12/3/84 the issue date on the timesheet was changed to 10/13/84.

- (7) RWP timesheets that do not agree with the RWP timesheet logs.

Note: Although the RWP timesheet log is not considered a QA record by procedure, the information the log sheet provides, helps to account for the timesheets in the file.

This violates the intent of AI-7 paragraph 4.2.A.

## A. RWP 02-1-00111 No. 0001 and 0002:

RWP timesheet log shows an issue date of 8/12/84 for timesheets 01 and 02. Timesheet 0001 indicates an issue date of 12/31/84. Timesheet 0002 indicates issuance of 3/5/84. (No. 0002 was originally RWP 02-1-00142 timesheet 0055.)

## B. RWP 02-1-00114 No. 0043 and 0044:

RWP timesheet log shows an issue date of 8/12/84 for timesheet 0043 through 0050. Timesheet 0043

CONCERN NO: XX-85-028-001

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DETAILS, continued

## II. continued

## (7) B. continued

indicated an issue date of 3/25/84. (No. 0043 was originally RWP 02-1-00114 timesheet 0007 then changed to RWP 02-1-0142 timesheet 0066). Timesheet 0044 indicates an issue date of 3/16/84. (No. 0044 was originally RWP 02-1-00142 timesheet 0101).

## C. RWP 02-1-00115 No. 0012:

RWP timesheet log shows an issue date of 2/24/84 for timesheet 0012. Timesheet 0012 indicates an issue date of 12/31/84.

## D. RWP 02-1-00134 No. 0019:

RWP timesheet log shows an issue date of 2/26/84 for timesheet 0019. Timesheet 0019 indicates an issue date of 8/12/84.

## E. RWP 02-1-00134 No. 0037:

RWP timesheet log shows an issue date of 3/3/84 for timesheet 0037. Timesheet 0037 indicates an issue date of 8/12/84.

## F. RWP 02-1-00134 No. 0130:

RWP timesheet log shows an issue date of 8/12/84 for timesheet 0130. Timesheet 0130 indicates an issue date of 3/2/84. (No. 0130 was originally RWP 02-1-00110 timesheet 0016 then changed to RWP 02-1-00103 timesheet 0048).

## G. RWP 02-1-00134 No. 0134:

RWP timesheet log shows an issue date of 10/7/84 for timesheet 0134. Timesheet 0134 indicates an issue date of 12/31/85.

## H. RWP 02-1-00142 No. 0286 through 0288:

RWP timesheet log does not indicate that these reports exist in the file.

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DETAILS, continued

II. continued

(7) continued

I. RWP 02-1-00142 No. 0290 and 0291:

RWP timesheet log does not indicate that these reports exist in the files.

J. RWP 02-1-0164 No. 0026 through 0034:

Timesheets 0026 through 0034 do not match the information found on microfilm file 00744 2056.

Note: There are two (2) timesheet logs for timesheet 0026 through 0034 with different information.

K. RWP 02-2-00200 No. 0173:

RWP timesheet log has timesheet 0173 lined out (as if it were voided or not used). However, microfilm file 000744 - 2751 contains timesheet 0173.

L. RWP 02-2-00210 No. 0014 and 0017:

RWP timesheet log has timesheets 0014 and 0017 lined out (Note on log sheet states: "It appears that #'s 14 & 17 were not issued"). Timesheets 0014 and 0017 can be found on microfilm file 000744 3694 & 000744 3699.

Note: RWP 02-2-00206 timesheet 0003 was originally RWP 02-2-00210 timesheet 0014.

M. RWP 02-2-00211 No. 0008 through 0015:

RWP timesheet log does not indicate that these reports exist in the files.

Note: There are two (2) timesheet logs in the file for RWP 02-2-00211 with different information.

N. RWP 02-2-00215 No. 0016:

RWP timesheet log shows an issue date of 10/5/84 for timesheet 0016. Timesheet 0016 indicates an issue date of 11/3/84. (No. 0016 was originally RWP 02-2-00242 timesheet 0054).

CONCERN NO: XX-85-028-001

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DETAILS, continued

II. continued

(7) continued

O. RWP 02-2-00220 No. 0003 through 0005:

RWP timesheet log shows issue dates of 10/2/84, 10/11/84 and 10/26/84 for timesheets 0003, 0004 and 0005, respectively. Timesheets 0003, 0004, and 0005 all indicate issue dates of 12/31/84.

(8) RWP timesheets which contain errors in the technical data making them incomplete records. This violates the intent of AI-7 paragraph 3.1 and RCI-14 Section VII.B.1

A. RWP 02-1-00103 No. 0063:

RWP timesheet 0063 was issued on 2/26/84 and returned on 3/6/84. An employee signed in on the "register" on a date of 4/2 (Note: Employees signed-in on 3/2 above this entry and signed-in on 3/3 below this entry).

B. RWP 02-2-00215 No. 0030:

RWP timesheet 0030 indicates addition errors in the "Total MREM Rec'd." column. One employee's "Total MREM Rec'd" is listed as "2" MREM, while his dosimetry reading indicates "50" to "70" and "70" to "72" MREM - thus giving him a total dose of 22 MREM. Another employee's "Total MREM Rec'd" is listed as "43" MREM, while his dosimetry reading indicates "25" to "42" and "0" to "8" MREM, giving him a total of 25 MREM.

(9) RWP timesheets which have information, relative to individual exposure rates, lined out. The RWP does not indicate if this information was transferred to another RWP or if this information was considered "void". It must be noted that one of the lines contained exposure information. This makes the completeness of this record indeterminate.

A. RWP 02-1-00102 No. 0163.

CONCERN NO: XX-85-028-001

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DETAILS, continued

II. continued

- (10) RWP timesheets which have the employee's name, social security number, section craft, and time/dosimeter record recorded by someone other than the employee. This violates the intent of RCI-14, Section VI. G.6.

RWP 02-2-00225	No. 0014.
RWP 02-2-00247	No. 0005.
RWP 02-2-00247	No. 0020.
RWP 02-2-00630	No. 0169.

- (11) Administrative Instruction AI-7 Paragraph 3.1 states in part "...QA records are valid only if stamped, initialed, signed or otherwise authenticated and dated by authorized personnel."

Contrary to this requirement, Radiological Control Instruction RCI-14, Section VII.B.1 requires only the signature of the Health Physics Shift Supervisor for review and approval of the RWP timesheet. The Shift Supervisor is not required by RCI-14 and does not date the form.

- (12) RWP timesheets are not traceable from front to back or to each sheet within a given timesheet. This makes the acceptability of the records indeterminate. Examples of this are as follows:

- A. RWP 02-2-00215 No. 0005.
- B. RWP 02-2-00215 No. 0016.
- C. RWP 02-2-00250 No. 0009.
- D. RWP 02-2-00630 No. 0161.

## CONCLUSIONS:

This concern is not substantiated.

This conclusion is based on the following:

CONCERN NO: XX-85-028-001

DETAILS, continued

CONCLUSIONS, continued

- (A) RWP timesheets involving the CI did not indicate that the CI was exposed to the maximum amount of radiation.
- (B) TLD badge reading data and personal dosimetry data supplied by Health Physics did not indicate any overexposures at any time for the CI.
- (C) The RWP timesheets, as noted in the observations, contain inaccurate/incomplete or missing information, improper corrections, inconsistencies in the handling of the records, accountability errors, and procedural noncompliance, all of which make the status of the RWP timesheets indeterminate. These observations must be addressed by TVA.

PREPARED BY Randy Fohlman 11/22/85  
DATE

REVIEWED [Signature] 11/22/85  
DATE

**FINAL**

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. XX-85-028-001  
(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.)  
While at another TVA facility, individual was exposed to the maximum  
amount of radiation. RWP was adjusted by Health Physics to reflect an  
increase in radiation allowance.
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

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:

[Signature] 365-4416  
ERT Group Manager Phone Ext.

[Signature] 365-4416  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

R.P. Saier Date 12/20/85 Time 1000  
Signed

NRC

UNITED STATES GOVERNMENT

# Memorandum

TENNESSEE VALLEY AUTHORITY

TO : H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant

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

DATE : DEC 24 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. I-85-772-SQN

Subject SNUBBERS NOT INSTALLED PER DESIGN DRAWINGS

Concern No. XX-85-070-007

No response or corrective action is required for this report. It is being transmitted to you for information purposes only. Should you have any questions, please contact R. C. Sauer at telephone 2277.

Recommend Reportability Determination: Yes        No X

  
 Director, NSRS/Designee

RCS:JTH  
 Attachment  
 cc (Attachment):  
 R. P. Denise, LP6N35A-C  
 R. J. Griffin, SQN E-18  
 G. B. Kirk, SQN  
 D. R. Nichols, E10A14 C-K  
 QTC/ERT, Watts Bar Nuclear Plant  
 Eric Sliger, LP6N48A-C  
 J. H. Sullivan, SQN  
 W. F. Willis, E12B16 C-K (4)



TENNESSEE VALLEY AUTHORITY

NUCLEAR SAFETY REVIEW STAFF

NSRS INVESTIGATION REPORT NO. I-85-772-SQN

EMPLOYEE CONCERNS: XX-85-070-007

SUBJECT: SNUBBERS NOT INSTALLED PER DESIGN DRAWINGS

DATES OF INVESTIGATION: NOVEMBER 19-25, 1985

LEAD INVESTIGATOR:

*E. F. Harwell*  
E. F. HARWELL

12/17/85  
DATE

REVIEWED BY:

*M. W. Alexander*  
M. W. ALEXANDER

12/17/85  
DATE

APPROVED BY:

*R. C. Sauer*  
R. C. SAUER

12/20/85  
DATE

## I. BACKGROUND

A Nuclear Safety Review Staff (NSRS) investigation was conducted to determine the validity of an expressed employee concern as received by the Quality Technology Company (QTC)/Employee Response Team (ERT). The concern of record, as summarized on the Employee Concern Assignment Request Form from QTC and identified as XX-85-070-007, stated:

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.

No further information was requested from the ERT follow-up group.

## II. SCOPE

- A. The scope of this investigation was determined from the concern of record to be two specific issues requiring investigation:
1. On unit 2, are there widespread instances where installed pipe snubber supports do not agree with the associated design drawing and there has been no concerted effort to correct?
  2. If these exist, what is the safety significance of such a situation?
- B. To accomplish the investigation, NSRS reviewed construction hanger inspection records, IE bulletin responses, NUC PR correspondence, and FCRs related to changing the 47A053 series support drawings. Two mechanical maintenance engineers (Individuals A and B) were interviewed concerning the number of drawings effected and the process of resolving drawing discrepancies.

## III. SUMMARY OF FINDINGS

### A. Requirements and Commitments

1. NQAM, Part II, Section 3.2, "Plant Modification, After Licensing."
2. NQAM, Part III, Section 1.1, "Document Control."
2. NRC Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operations)."

### B. Findings

1. The integrity of piping supports for safety class piping systems 2-1/2" and larger has been confirmed by the extensive reinspection program and corrective actions carried out to implement IE bulletin 79-14 (over 4000 supports per unit) (refs. 8 and 9). From the nature of the stated concern and discussions with

cognizant personnel, it was determined that this concern related to seismic supports for safety class process piping 2" or less as delineated on typical support drawings of the 47A053 series.

2. The 47A053 series of support drawings detail "typical" seismic supports for process pipe 2" and less as designed by the Office of Engineering (OE). Deviations from these design drawings, when encountered during installation by the Office of Construction, were documented on Support Variance Sheets (Attachment A of ref. 7) and approved by OE. The actual configuration for these typical supports, therefore, was either that shown on the appropriate 47A053 drawing (when there were no variances) or the appropriate 47A053 drawing as amended by its associated Support Variance Sheet.
3. During routine inservice inspection and/or surveillance testing activities, NUC PR identified numerous instances on units 1 and 2 where the operational configuration did not agree exactly with the design drawings. These discrepancies generally related to clarification of "hot" and "cold" setting dimensions (which could not easily be determined during design) and other locational measurements. To prevent confusion and provide clarification for future inservice inspection and surveillance testing, NUC PR initiated a program for drawing update to provide better base-line drawings.
4. For unit 2, twenty-nine FCRs have been prepared by NUC PR which effect 128 snubber supports. However, these were placed on hold and not processed until money was budgeted (funded) for the required drawing revisions and engineering analysis. Reference 5 provided an estimate of the work scope and requested Design Services to budget for the task in order to complete all 47A053 snubber drawings in fiscal year 1986.
5. Individuals A and B, when interviewed, stated that even though the installed supports in many cases are different from the typical design supports shown on the drawings, they are acceptable since Support Variance Sheets were prepared and approved for each in accordance with applicable construction procedures (ref. 7). Individual B stated that the primary reason for generating a new drawing for each of the supports which reflects the as-constructed condition is to eliminate future confusion as to exact configuration when performing inservice inspections or surveillance testing of snubber supports.
6. Individual B stated that actual rework or modification of the installed supports is not anticipated since the discrepancies are minor, but some design reanalysis may be required.
7. A random sample of seven supports was reviewed for documented Support Variance Sheets. Variances were found for five. For the other two, only minor dimensional changes were involved such as clarification of hot and cold settings and other locational measurements.

8. Individual A is presently reviewing the unit 1 snubber supports and making sketches which will be used to prepare FCRs similar to the unit 2 effort. This work is also scheduled for completion in FY 86 (ref. 5).

#### IV. CONCLUSIONS AND RECOMMENDATIONS

The concern of record was substantiated by virtue of the fact that several snubber supports are known not to be installed exactly like the typical design drawings, and no rework has yet been done. However, it appears that no safety issue exists since variances for these supports have been reviewed and approved by engineering. The supports are acceptable and the as-constructed drawings, when prepared, will provide clarification for future use.

DOCUMENTS REVIEWED IN INVESTIGATION I-85-772-SQN  
AND REFERENCES

1. TVA Topical Report (TVA-TR75-1A), Rev. 3, Section 17.2.3, Modification Control
2. NRC Regulatory Guide 1.33, Rev. 2, Feb. 1978, "Quality Assurance Program Requirements (Operations)"
3. NQAM, Part II, Section 3.2, Rev. 12/31/84, "Plant Modifications: After Licensing"
4. SNP Administrative Instruction (AI) - 19 (Part IV) Rev. 12, dated October 31, 1985, "Plant Modifications: After Licensing"
5. Memorandum from P. R. Wallace to H. B. Rankin dated March 27, 1985. Sequoyah Nuclear Plant - Design Change Request (DCR) 1246, Engineering Change Notice (ECN) L6237 - As-Constructed 47A053 Series Snubber Drawings (S53 850326 956)
6. NQAM, Part III, Section 1.1, Rev. May 2, 1985, "Document Control - Mechanism for Requesting Correction of Drawing Discrepancies"
7. SNP Construction Procedure No. P-30, Rev. 5, dated May 26, 1981, "Fabrication and Installation of Seismic Supports"
8. Letter from L. M. Mills, Manager, Nuclear Regulation and Safety, to James P. O'Reilly, Director NRC Office of Inspection and Enforcement, dated July 9, 1981, Final Response to IE Bulletin 79-14 for Unit 2 (A27 810709 005)
9. Preliminary Report CEB-84, no date, Sequoyah Nuclear Plant Report on IE Bulletin 79-14 SQN/Unit 1, prepared by Civil Engineering Support Branch, EN DES

NPC

UNITED STATES GOVERNMENT

# Memorandum

TENNESSEE VALLEY AUTHORITY

TO : H. L. Abercrombie, Site Director, Sequoyah Nuclear Plant

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

DATE : DEC 24 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF INVESTIGATION REPORT TRANSMITTAL

Transmitted herein is NSRS Report No. XX-85-038-001

Subject CORRECTION OF IDENTIFIED CARBON STEEL/STAINLESS STEEL SEPARATION DEFICIENCIES

Concern No. XX-85-038-001

and associated prioritized recommendations for your action/disposition.

It is requested that you respond to this report and the attached Priority 2 [P2] recommendation by January 17, 1986. Should you have any questions, please contact R. C. Sauer at telephone 2277.

Recommend Reportability Determination: Yes X No     

  
 Director, NSRS/Designee

RCS:JTH

Attachment

cc (Attachment):

- R. P. Denise, LP6N35A-C
- R. J. Griffin, SQN E-18
- G. B. Kirk, SQN
- D. R. Nichols, E10A14 C-K
- QTC/ERT, Watts Bar Nuclear Plant
- Eric Sliger, LP6N48A-C
- J. H. Sullivan, SQN
- W. F. Willis, E12B16 C-K (4)

0211U



NSRS RECOMMENDATIONS

EMPLOYEE CONCERN NUMBER: XX-85-038-001

RECOMMENDATIONS

X-85-038-001: CORRECTION OF IDENTIFIED CARBON STEEL/STAINLESS STEEL SEPARATION DEFICIENCIES

Evaluate and correct noted deficiencies identified in the Observations section of the QTC report. Provide NSRS with plans and schedule for corrective action.

In addition, a reportability determination should be made of the noted deficiencies identified in Corrective Action Report (CAR) SQ-CAR-85-10-015 as a result of the QTC requested walkdown. [P2]

Principally prepared by R. C. Sauer.



P.O. BOX 600

• SWEETWATER, TN. 37874 •

(615)365-4414

ERT INVESTIGATION REPORT

PAGE 1 OF 5

CONCERN NO.: XX-85-038-001

CONCERN: SEQUOYAH - 1976; Stainless steel pipe permitted to contact carbon steel structural steel with no stainless steel insert ("Shim"); if the structural steel is painted with a particular paint that prevents chemical reaction. This paint can be rubbed off by hand and is throughout the plant.

Investigation

Performed by: Michael P. Mills

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Details:

Individuals Contacted: Confidential

Documents Reviewed:

General Construction Specification #G-55 Rev. 4  
Technical Instruction TI-70 Rev. 3  
General Drawing Notes `050 Series  
Maintenance Instruction MI-10.14  
Process Specification 4.M.1.1 Rev. 9  
Standard Practices Manual SQA - 45

Summary of Investigation:

The first item of concern (paint used in lieu of stainless steel shim for carbon steel/stainless steel separation) is substantiated, however, the separation criteria is documented and allowed by site procedures and instructions. No violation or discrepancy exists.

The second item of concern (paint used for carbon steel/stainless steel can be rubbed off) is not substantiated. This determination is based on a walkdown which failed to identify this problem on any carbon steel hangers which supported stainless steel pipe. This investigation was begun on 9-13-85 (7 man days).

CONCERN NO: XX-85-038-001

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DETAILS:

## Findings:

This concern addressed activities which occurred in 1976. The investigation compared procedures and instructions which existed in 1976 and followed the evolution of these instructions and procedures to the present. The concern also stated two (2) specific points; (1) In those situations where carbon steel hangers support stainless steel piping, paint was often used in lieu of a stainless steel insert (shim material) to provide separation and; (2) The paint used to provide separation of carbon steel hangers and stainless steel piping could be rubbed off by hand (This implies that any hanger/pipe movement could result in the protective barrier being removed.)

Several procedures and instructions were reviewed to determine what was required and/or allowed in the area of carbon steel - stainless steel separation. It was noted that Construction and Nuclear Power utilize different procedures specify which address the same activities (Ref "Documents Reviewed"). The construction procedures were reviewed for the fabrication and installation phase of the hangers, and the Nuclear Power Procedures reviewed for the maintenance aspects (repair, paint touch-up, etc.).

A review of Process Specification 4.M.1.1 Revision 9 (Material Fabrication and Handling Requirements) Austenitic Stainless Steel, lists the following as acceptable methods of separating carbon steel hangers from stainless steel pipe:

- 3.1.4.2 Carbon steel brackets, hangers, lugs, or other connections shall not directly contact stainless steel components of safety-related systems. This may be prevented by one of the following methods:
  - a. Austenitic stainless steel shim wrapping between carbon steel and stainless steel.
  - b. Silicon coating applied to carbon steel material prior to its contact with stainless steel. An acceptable coating is Thermalox 70 Silicon Coating (W.R. Grace and Company).

CONCERN NO: XX-85-038-001

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DETAILS:

- c. Paint applied to the carbon steel before its contact with stainless steel. Such paint shall be low in halogen content and suitable for the operating temperature of the stainless steel. Total halogens shall be less than 1000 ppm and leachables no more than 100 ppm for chloride and no more than 100 ppm for fluoride.

For temperatures less than or equal to 750 degrees F., one such satisfactory paint is inorganic zinc when procured to the requirements of PF-1067.

Paints that have been shown to meet these requirements previously are listed below.

Ameron D-6  
Carboline CZ 11  
Dimetcote EZ  
Dimetcote EZ IIA  
Mobil Zinc 7

- d. Stainless steel weld metal buildup on carbon steel.

This general wording is reiterated in Technical Instruction TI-70 (para 9.10, Rev. 9). Several other documents were reviewed (see "Documents Reviewed") and all support the use of paint in lieu of stainless steel shims or stainless steel build-up on carbon steel hangers.

On 9-18-85, a meeting was held with Doug Craven (Supervisor-Quality Assurance) where both the concern and observations noted during this investigation were presented. Mr. Craven offered to provide any assistance required, and directed that a walkdown be performed by the Quality Department. This walkdown was done per a checklist which included ERT "Observations" (see the Observation section of this report) and the second item of concern (paint being rubbed off).

The SQNP walk-down results were reviewed. As a result of this walk-down, the following documents have been generated:

CONCERN NO: XX-85-038-001

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DETAILS:

- \* Corrective Action Report (CAR) SQ-CAR-85-10-015 (See Attachments "A1 and A2")
- \* Drawing Change Request (See Attachments "B1 thru B6")
- \* Maintenance Request (MR) A-562956 (See Attachment "C")

## Observations:

The first phase of this investigation involved the review of pertinent documentation and personnel interviews to determine carbon steel/stainless steel separation requirements. During this review phase, several observations were made:

- \* Several employees stated that TVA would sometimes use black paint over the inorganic zinc to make it "look better." There is no document which allows inorganic zinc, which is used for the separation of carbon/stainless steel, to be covered with any other paint.
- \* Several employees stated that the stainless steel pipe had overspray in some places. This is in violation of TI-70 Rev 9, para 8.2.1.3 (pg 13) and para 9.10.1 (pg #28).
- \* TI-70 (Cleaning & Decontamination of Plant Equipment) references SQA-45, part III, sect. 1.6, for acceptable separation of material. SQA-45 has been revised and part III, sect 1.6 no longer exists.
- \* There is no documentation to indicate carbozinc and carboweld are equivalent, even though carboweld is required by Construction "050" drawing notes and carbozinc was used instead.

## Conclusions:

The first item of this concern is substantiated in that:

- \* The concern is true as stated.

Even though this concern is substantiated, no discrepancy or violation exists and no further action is recommended.

CONCERN NO: XX-85-038-001

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DETAILS:

The second item of this concern (paint rubbed off) was not substantiated in that the walkdown performed by the SQNP Quality Assurance Department failed to identify any examples of this problem.

10/7/85  
*[Handwritten initials]*

Prepared by *OJ Hew* for MP Mills 10/10/85  
date

Reviewed by *OJ Hew* 10/10/85  
date

SQNP  
AI-12

# CORRECTIVE ACTION REPORT

Page 14 of 16 Rev. 20

REPORT NO. 50 CAR 185 10 015 INITIATED BY C. A. Crownover DATE \_\_\_\_\_  
PLT. CAR YR MO NO  
 REQUESTED BY (IF APPLICABLE) D. C. Craven  
 SIGNIFICANT (CIRCLE ONE)  YES  NO ASSIGNED TO \_\_\_\_\_

ADVERSE CONDITION: Contrary to the requirements of SQA160 Rev. 2, TI-70 Rev. 3, and DPM N73M2, stainless steel piping is not being adequately protected to prevent contact or contamination with detrimental or unapproved materials. (See attachment)

ROOT CAUSE (CAUSE ANALYSIS REQUIRED  NOT REQUIRED 

CORRECTIVE ACTION (1) REMEDIAL CORRECTIVE ACTION(S)  
 ESTIMATED COMPLETION DATE \_\_\_\_\_

(2) ACTION(S) TO PREVENT RECURRENCE  
 ESTIMATED COMPLETION DATE \_\_\_\_\_

PROPOSED \_\_\_\_\_  
 CONCURRED \_\_\_\_\_  
 RESP SUPV \_\_\_\_\_  
 QA SUPV \_\_\_\_\_

APPROVAL: THE RESOLUTION OF THE ABOVE DESCRIBED ADVERSE CONDITION IS ACCEPTABLE.

RECOMMENDED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 (FOR SIGNIFICANT PLANT CARS ONLY)  
 PORC CHAIRMAN

APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_  
 PLANT MGR/SITE DIRECTOR

COMPLETION - CORRECTIVE ACTION WAS COMPLETED ON \_\_\_\_\_ AND IS READY FOR VERIFICATION BY QA.

RESPONSIBLE SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

VERIFICATION - CORRECTIVE ACTION TAKEN AS DESCRIBED ABOVE OR WITH THE FOLLOWING DEVIATIONS

VERIFIED BY \_\_\_\_\_ / \_\_\_\_\_ DATE \_\_\_\_\_  
 QA REP \_\_\_\_\_  
 CLOSED BY \_\_\_\_\_  
 QA SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

ATTACHMENT TO SQ-CAR-85-~~09~~<sup>10-015</sup>

1. Stainless steel piping for Systems 62, 63, 87, 72, 77, 78, and 67 has been partially coated with black enamel, Phenoline 305, or Carbozinc 11 paint in numerous areas of the auxiliary building.
2. Stainless steel safety related piping has been allowed to contact black enamel paint (unapproved per SQA160) which has been applied to piping supports. Examples: Systems 87, 62, 63, 72, 77, 78, and 67.
3. System 67 stainless steel piping has been allowed to contact carbon steel (piping supports) material without the addition of an approved barrier material (approved protective coating, stainless steel shim, silicon coating, or stainless steel weld buildup).
4. Material which is unapproved per SQA160 (masking tape) was found applied to a system 72 pipe in the auxiliary building, unit 2, 714 elevation, penetration room.

Note: Corrective action should address not only correction of the listed examples, but also the identification and correction of other similar problems.

\* Added page

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Attachment C  
Page 1 of 1  
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ATTACHMENT  
B 1

"AS CONSTRUCTED" DRAWING DEVIATION

Drawing No.(s) 47A055-1 AND 47A055-1A

Description of Deviation from Plant Configuration:

Notes 9 AND 12 do NOT Agree with  
MI 10.14, Drawings 46W466-1 thru 7, OR  
SNP CONSTRUCTION SPECIFICATION N2A-931.

Notes 9 AND 12 Require Coating of Support  
with CARBOWELD 11 PRIMER RATHER THAN CARBOZINC-11  
STA Notified: Date 9/24/85 Time 0828C

PRO # N/A

Submitted by: Clifford A. Crowner 1 9/24/85

Disposition (include FCR No. or DCR No. when applicable)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OM&MM Engineer 1

OM&MM Supervisor 1

Completion Date \_\_\_\_\_







\* Added page

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AI-25  
Attachment C.  
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Rev 9

ATTACHMENT  
B5

"AS CONSTRUCTED" DRAWING DEVIATION

Drawing No.(s) 47A058-1

Description of Deviation from Plant Configuration:

NOTE 8 does not agree with MZI 10.14  
DRAWINGS 46W466-1 thru 7 OR SNP  
CONSTRUCTION SPECIFICATION N2A-93/NOTE 8  
Requires that supports be coated with CARBOWELD 11  
PRIMER RATHER THAN CARBOZINC 11

STA Notified: Date 9/24/85 Time 0826<sup>c</sup>

PRO # N/A m. Cooper

Submitted by: Clifford A. Crowner 1 9/24/85

Disposition (include FCR No. or DCR No. when applicable)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OM&MM Engineer 1

OM&MM Supervisor 1

Completion Date \_\_\_\_\_





REQUEST FOR REPORTABILITY EVALUATION

FINAL

1. Request No. XX-85-038-001 (ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: Carbon Steel/stainless steel interface  
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)

Stainless steel pipe supported by carbon steel hangers with no stainless steel insert if the hanger is painted with inorganic zinc. This paint can be rubbed off by hand and is used throughout the plant.

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

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 X 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 X 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:     D. J. News     365-4464  
ERT Group Manager Phone Ext.

    D. J. News for     365-4414  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

    D. C. Sauer      
Signed

Date 12/25/85 Time 1430



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 X 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 X 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: OD Thew 365-4464  
ERT Group Manager Phone Ext.

OD Thew for 365-4414  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

R.C. Sawyer  
Signed

Date 12/23/85 Time 1430



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 X 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 X 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: O.A. Shub 365-4464  
ERT Group Manager Phone Ext.

O.A. Shub for 365-4414  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

R.C. Sawyer  
Signed

Date 12/23/85 Time 1430



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 X 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 X 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:     O. J. Shaw         365-4464      
ERT Group Manager Phone Ext.

    O. J. Shaw for         365-4444      
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

    R.C. Lauer      
Signed

Date     12/23/85     Time     1430

REQUEST FOR REPORTABILITY EVALUATION

1. Request No. XX-85-038-001 (ERT Concern No.) (ID No., if reported)
2. Identification of Item Involved: Stainless Steel pipe in contact with enamel paint.  
(Nomenclature, system, manuf., SN, Model, etc.)
3. Description of Problem (Attach related documents, photos, sketches, etc.)  
(Observation) Stainless steel piping has been allowed to contact unapproved black enamel paint which has been applied to piping supports. Examples: Systems 87, 62, 63, 72, 77, 78, and 67.

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: Continued contact of the SS pipe with the black enamel paint could lead to possible defects in the pipe i.e. IGSCC  
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: Stainless steel pipe was allowed to contact unapproved black enamel paint, without properly being identified by the inspection or nonconformance program. Criteria X & XV.  
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: \_\_\_\_\_

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:

OT Shew 365-4464  
ERT Group Manager Phone Ext.

OT Shew Jr 365-4414  
ERT Project Manager Phone Ext.

Acknowledgment of receipt by NSRS

RC Sawyer  
Signed

Date 12/25/85 Time 1430