Sta. 4

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JAN 07 1997

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 161640

2. To: (Receiving Organization) WRAP 1		3. From: (Originating Organization) WRAP 1		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: W026/Solid Waste Construction		6. Design Authority/ Design Agent/Cog. Engr.: TL Watson		7. Purchase Order No.: N/A	
8. Originator Remarks: For release				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: N/A	
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No				12. Major Assem. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: N/A	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNFS-SD-W026-ATP-018		0	Box Non-Destructive Examination System Plan	Q	2	1	
2	WHC-SD-W026-ATR-018		0	Box Non-Destructive Examination System Report	Q	2	1	

16. KEY					
Approval Designator (F)	Reason for Transmittal (G)		Disposition (H) & (I)		
E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)	1. Approval	4. Review	1. Approved	4. Reviewed no/comment	
	2. Release	5. Post-Review	2. Approved w/comment	5. Reviewed w/comment	
	3. Information	6. Dist. (Receipt Acknow. Required)	3. Disapproved w/comment	6. Receipt acknowledged	

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	DESIGN AUTHORITY: TL Watson	<i>TL Watson</i>	12/18/96	T4-52						
1	1	Proj. Engr.: JB Payne	<i>JB Payne</i>	12/18/96	T4-02						
1	1	Cog. Engr.: KL Humphrey	<i>KL Humphrey</i>	12/18/96	T4-52						
1	1	Cog. Mgr.: RJ Bottenus	<i>RJ Bottenus</i>	12/18/96	T4-52						
1	1	QA: JR McGee	<i>JR McGee</i>	12/18/96	T4-02						
		Safety									
		Env.									

18. JB Payne Signature of EDT Originator <i>JB Payne</i> 12/18/96	19. RJ Bottenus Authorized Representative for Receiving Organization <i>RJ Bottenus</i> 12/20/96	20. RJ Bottenus Design Authority/ Cognizant Manager <i>RJ Bottenus</i> 12/20/96	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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W-026, Acceptance Test Report Box Non-Destructive Examination System (Submittal # 046.2) 5368

TL Watson

Westinghouse Hanford, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: *EDT-1021640* UC: *506*
Org Code: 04E00 Charge Code: P1JF18
B&R Code: 39EW3130020 Total Pages: 27

Key Words: ATR, WRAP 1, NDE, X-Ray

Abstract: This test was satisfactorily performed by V. J. Technologies, Inc., with witnesses from WRAP 1 Engineering, ICF-KEH Acceptance Inspectors, and WHC NDE Radiographers.

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Release Approval

1/7/96
Date

Release Stamp

Approved for Public Release

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ACCEPTANCE TEST PROCEDURE

WASTE RECEIVING AND PROCESSING FACILITY, MODULE 1
BOX NON-DESTRUCTIVE EXAMINATION SYSTEM

KEH-5368(W-026)

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KEH-5368(W026) REV. 0

EXECUTION AND TEST APPROVAL SHEET

EXECUTORS

(SEE ATTACHED FAX)

Director/Organization
S.D. EWING/Y.J.T.

Date

V.J. Technology, Inc.
Operator/Organization
J.A. VESELITZ/Y.J.T.

Date

10/25/96

(SEE ATTACHED FAX)

Recorder/Organization
S.D. EWING/Y.J.T.

Date

WITNESSES

NDE
Witness/Organization
J.K. KEVE/NDE

10-25-96

Date

Witness/Organization FDNW
B.W. YOUNG/A.I.

11-15-96

Date

Witness/Organization
K.L. HUMPHRYS / WRAP 1

10/25/96

Date

Witness/Organization

Date

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company

Without exceptions:

With exceptions resolved: X

With exceptions outstanding:

R.A. TONUS WAAP1 ENG.

11/18/96

Date

P.S. MCELROY FCE

11/19/96

Date

J.B. MCGEE

OAE

11/18/96

Date

Date

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EXECUTION AND TEST APPROVAL SHEET

EXECUTORS

<u><i>D. Eng</i></u> / VJT	<u>10/28/96</u>	<u><i>Daniel A. Hutton</i></u> V.J. Technology, Inc.	<u>10/28/96</u>
Director/Organization	Date	Operator/Organization	Date
<u><i>D. Eng</i></u> / VJT	<u>10/28/96</u>		
Recorder/Organization	Date		

WITNESSES

<u><i>John K. NDE</i></u>	<u>10-25-96</u>		
Witness/Organization	Date	Witness/Organization	Date
<u><i>William A. Thompson</i></u>	<u>10/25/96</u>		
Witness/Organization	Date	Witness/Organization	Date

WRAP 1

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company

Without exceptions:

With exceptions resolved: X

With exceptions outstanding:

_____	Date	_____	Date
_____	Date	_____	Date

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WASTE RECEIVING AND PROCESSING FACILITY, MODULE 1
BOX NON-DESTRUCTIVE EXAMINATION SYSTEM
ACCEPTANCE TEST PROCEDURE

1.0 PURPOSE

The Waste Receiving and Processing Facility, Module 1 (WRAP 1) Box Non-Destructive Examination (NDE) System is designed to use x-ray technology to safely examine boxes containing radioactive and mixed waste. It is designed to meet the requirements of the Code of Federal Regulations, the Washington Administrative Code, and the American National Standards Institute.

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the WRAP 1 Box NDE System will function as intended by the Integrated Construction Forces Kaiser Engineers Hanford Company (ICF KH) procurement requisition KEH-5368. This document is prepared in compliance with Section 13533 and Appendix A of the W-026 Construction Specification.

The test results will be issued as an Acceptance Test Report (ATR) after all testing is complete. The test will be performed in WRAP 1.

2.0 REFERENCES

2.1 DRAWINGS

"Relay Module," J2348, sheet 2
"PCS Inputs," J2348, sheet 3

2.2 SPECIFICATIONS

Contract Number V-W-026-C2, WRAP 1 NDE Systems

Procurement Requisition KEH-5368, WRAP 1 NDE Systems

Construction Specification Section 13533, Box Non-Destructive Examination System.

2.3 CODES AND STANDARDS

Code of Federal Regulations (CFR) - 21 CFR 1020.40, Radiation Protection, Industrial Radiography

American National Standards Institute (ANSI) - ANSI N43.3, 1993, General Safety Standard - Installations using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 Mev.

Washington Administrative Code (WAC) - WAC, 1990, Chapter 246-243, Radiation Protection, Industrial Radiography

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3.0 RESPONSIBILITIES

The test shall be performed by a representative from ICF KH who is technically qualified and knowledgeable of the safety requirements associated with the testing.

Each company or organization participating in the conduct of this test will designate personnel to assume the responsibilities and duties assigned herein. The names shall be provided to the recorder for listing on the recorder's copy of the test execution sheet prior to the performance of any part of the test.

3.1 GENERAL

Each company or organization participating in this ATP will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. The designees shall become familiar with this ATP and the systems involved to the extent that they can perform their assigned duties.

3.2 TEST DIRECTOR

- 3.2.1 Coordinates testing with ICF KH and directs acceptance testing.
- 3.2.2 Acts as liaison between the participants in acceptance testing.
- 3.2.3 Distributes the approved testing schedule before start of testing.
- 3.2.4 Schedules and conducts a pretest kickoff meeting with test participants before start of testing when necessary.
- 3.2.5 Notifies the persons performing and witnessing the test 2 days before the start of testing.
- 3.2.6 Schedules a dry run when necessary.
- 3.2.7 Notifies concerned parties when a change is made in the testing schedule.
- 3.2.8 Takes necessary action to clear exceptions to the test.
- 3.2.9 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed.
- 3.2.10 Stops any test which, in his/her judgement, may cause damage to the system until the problem has been resolved.

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- 3.2.11 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.
- 3.2.12 Ensures that required environmental conditions are maintained.
- 3.2.13 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.
- 3.2.14 Before restarting suspended test, re verifies the test prerequisites.
- 3.2.15 Initiates ECNs** to document required changes to the ATP.
- 3.2.16 Reviews recorded data, discrepancies, and exceptions.
- 3.2.17 Obtains information or changes necessary to clear or resolve objections during the performance of the test.
- 3.2.18 Signs Execution Test and Approval page when test has been performed.
- 3.2.19 Signs Exception form when exception has been resolved.
- 3.2.20 Obtains required signatures on the ATP Master prior to reproduction and distribution.

3.3 WITNESSES

Provided by Participating Organizations. One witness shall be a ICF KH Title III acceptance inspector.

- 3.3.1 Witness the tests.
- 3.3.2 Review results of testing.
- 3.3.3 Assist the Test Director when requested.
- 3.3.4 Sign Execution and Test Approval page when test has been performed.
- 3.3.5 Sign Exception form when exception has been resolved.

3.4 RECORDER

- 3.4.1 Prepares Field copy from the ATP Master.
- 3.4.2 Records names of designated personnel on Field copy of ATP prior to start of testing.

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- 3.4.3 Records test instrument identification numbers and calibration expiration dates.
 - 3.4.4 Initials and dates each test step on the Field copy as it is completed, next to the step number, or on a data sheet when provided. Records Test Data. On data sheets where there is not room for both the initial and date, date may be entered at bottom of column.
 - 3.4.5 Records objections and exceptions on an Exception form. Transfers information in ink or type to an Exception form master. Uses additional Exception forms as needed.
 - 3.4.6 Signs Execution and Test Approval page when test has been performed.
 - 3.4.7 After test is finished, assigns alpha numeric page numbers to added data sheets and Exception forms. Records page numbers in the Table of Contents.
 - 3.4.8 Transfers changes and the final test results with Recorder's signature and dates for each step to the Master ink or type. Submits the completed Master to the Test Director for approval signature routing. Transmits the Field copy to ICF KH when test has been accepted and exceptions closed-out.
 - 3.4.9 Signs Exception form when exception has been resolved, and transmits to Test Director.
- 3.5 TEST OPERATOR
- 3.5.1 Performs tests under direction of the Test director.
 - 3.5.2 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.
 - 3.5.3 Requests in writing from ICF KH those services, materials, or equipment that have been designated as being supplied by others.
 - 3.5.4 Confirms that equipment required for performing test will be available at the start of testing.
 - 3.5.5 Signs the Execution and Test approval page.

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4.0 CHANGE CONTROL

Required changes to this ATP must be processed on ECNs** in accordance with company procedures. If a need for change is discovered in the course of running the test, the test shall be stopped until the ECN is approved. However, this does not prevent the running of another portion of the test unaffected by the change.

5.0 EXECUTION

5.1 OCCUPATIONAL SAFETY AND HEALTH

Individuals shall carry out their assigned work in a safe manner to protect themselves and others from undue hazards and to prevent damage to property and environment. Facility line managers shall assure the safety of activities within their areas to prevent injury, property damage, or interruption of operations. Performance of test activities shall always include safety and health aspects.

5.2 PERFORMANCE

5.2.1 Use ICF KH approved copy of this ATP.

5.2.2 Conduct test meeting responsibility requirements of Section 3 of this ATP.

5.2.3 Perform test in accordance with steps in Section(s) 8 (9, etc) of the ATP.

5.2.4 When test has been completed, obtain signatures of test executioners and witnesses.

5.2.5 Submit the test report to ICF KH for approval.

NOTE 1: At this point, the "procedure" becomes a "report".

NOTE 2: There may be exceptions outstanding.

5.2.6 Clear exceptions and submit to ICF KH for approval.

NOTE: Ideally, the cleared exceptions would be submitted with the report. Coordinate with ICF KH as to allowable delay between test completion and submittals.

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6.0 EXCEPTIONS

6.1 GENERAL

Exceptions to the required test results are sequentially numbered and recorded on individual Exception forms. This enables case-by-case resolution and approval of each exception.

Errors/exceptions in the ATP itself shall NOT be processed as test exceptions (see Section 4).

6.2 RECORDING

6.2.1 Number each exception sequentially as it occurs and record it on attached Exception Form.

6.2.2 Enter name and organization of objecting party for each exception.

6.2.3 Enter planned action to resolve each exception when such determination is made.

6.3 RETEST/RESOLUTION

Record the action taken to resolve each exception. Action taken may not be the same as planned action.

6.3.1 When action taken results in an acceptable retest, sign and date Retest Execution and Acceptance section of the Exception form.

6.3.2 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception form.

6.4 APPROVAL AND ACCEPTANCE

ICF KH provides final approval and acceptance of exceptions by checking one of the following on Exception form:

6.4.1 Retest Approved and Accepted: Applicable when Retest Execution and Acceptance section is completed.

6.4.2 Exception Accepted-As-Is: Requires detailed explanation.

6.4.3 Other: Requires detailed explanation.

ICF KH signs and dates the Exception form and obtains their customer approval, as required.

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6.5 DISTRIBUTION

A copy of the approved Exception form is distributed to each participant. The signed original is attached to the ATP Master.

7.0 PREREQUISITES AND EQUIPMENT REQUIRED

7.1 PREREQUISITES

All Field Tests must be successfully completed prior to execution of this ATP.

7.2 EQUIPMENT

The following equipment is required to complete this ATP:

SC ASTM #50 penetrameter

SC 2.5 inches of steel

SC Waste box containing polybottle of liquid and 7000 pounds

SC A roll of thermal paper

SC A video tape

SC An optical disk

8.0 PLANT CONTROL SYSTEM (PCS) INTERFACE

The Box NDE System receives five inputs from and sends eight outputs to the WRAP 1 PCS computer. The dry contact terminations are shown on drawings J2348, sheets 2 and 3.

exception 001 Verify the dry contacts operate as designed; record results in Table 8.0

9.0 BOX LOAD AND UNLOAD

The system is designed to handle up to a 7000 pound box.

The total available time to load a box on the assembly, scan all points of interest, unload the box and turn it around, reload the box, scan all points of interest, carry out any system checks and return comments to the data management system shall be 45 minutes or less on average. The average scan time is 10 minutes per side, leaving 25 minutes for forklift, vault door and conveyor operations.

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SE

Use forklift and NDE System to simulate examining a waste box containing 7000 pounds into the Box NDE vault.

SE

Record the transit times in Table 9.0

10.0 MANIPULATORS AND CONVEYORS

The system is designed to handle up to a 7000 pound box. The system has a "shake" button which can be used to "jog" a box to detect free liquids.

The system raises and lowers the image intensifier (I.I.) and x-ray tube. The system encodes the positions of the following devices: X-ray generator height, I.I. height, X-ray generator/I.I. lateral position. These positions are encoded within a tolerance of 0.250 inches and are displayed on the examination monitor (switchable on or off) at the remote console in the central control room.

A means is provided to remove the height synchronization and independently raise and lower the X-ray generator and image intensifier in order to permit oblique viewing.

A "joystick" type controller shall be provided for the manipulator motion controls.

SE

Load a box containing 7000 pounds and a poly bottle of water into the Box NDE vault.

SE

Raise and lower the I.I. and the x-ray tube.

SE

Verify that the x-ray generator height can be displayed/not displayed

SE

Verify that the I.I. height can be displayed/not displayed

SE

Verify that the x-ray generator/I.I. lateral position can be displayed/not displayed

SE

Verify that the entire height of the box may be viewed

SE

Shake the box

SE

Verify that the water in the bottle can be seen to slosh

11.0 IMAGE CHAIN

The resolution and penetration of the examination system shall be assessed using the ASTM penetrometer in accordance with ASTM-E-94. The acceptance criterium for the I.I. is the visibility of an ASTM penetrometer of 2-2T

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sensitivity through a steel thickness of 2.5 inches on the live video monitor (no image processing or enhancement).

SE Place a #50 penetrometer behind 2.5 inches of steel; verify that the 2I hole is visible on the monitor

12.0 DATA STORAGE AND RETRIEVAL

12.1 VIDEO CASSETTE RECORDER (VCR)

The I.I. images can be stored on video cassette using the VCR in the control room. The data links from the position encoder record the position data on the VCR. The microphone can be used to record commentary on the video cassette as well.

12.2 OPTICAL DISK

The I.I. images can be stored on optical disk in the control room.

12.3 PRINTER

The I.I. images can be printed onto paper in the control room.

SE Manually load a box into the vault

SE Record an I.I. image with audio commentary using the VCR

SE Play back the recording

SE Write an I.I. image to an optical disk.

SE Read the file back from the optical disk.

SE Print an I.I. image

13.0 MAINTENANCE ACCESSIBILITY

The system was designed to provide access to system components for maintenance purposes. Lighting is provided inside the vault to facilitate maintenance. A manual means to open and close the vault doors in the event of motor failure is provided.

SE Verify that equipment is accessible

SE Verify that there is sufficient lighting inside the vault

SE Verify that the door can be opened and closed manually

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TABLE 8.0 PLANT CONTROL SYSTEM (PCS) INTERFACE

	SIGNAL	VERIFIED
Facility PCS to NDE System	ready to send box	SE
	Box out; Stop Internal Conveyor	—
	Abort Examination	—
	"Closed vault door" enabled	—
	ready to receive box	—
NDE System to Facility PCS	ready to receive box	SE
	start box conveyor	—
	box in NDE vault	—
	request enable to close vault door	—
	Examination in progress	—
	Box NDE Instrument Fault; Examination aborted	?
	Box NDE Instrument Fault; Examination continuing	?
	Box Examination Complete	—

Exception 001

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RETEST
9/5/96

TABLE 8.0 PLANT CONTROL SYSTEM (PCS) INTERFACE

	SIGNAL	VERIFIED
Facility PCS to NDE System	ready to send box	YKH
	Box out; Stop Internal Conveyor	YKH
	Abort Examination	YKH
	"Closed vault door" enabled	YKH
	ready to receive box	YKH
NDE System to Facility PCS	ready to receive box	YKH
	start box conveyor	YKH
	box in NDE vault	YKH
	request enable to close vault door	YKH
	Examination in progress	YKH
	Exam Aborted Box NDE Instrument Fault; Examination aborted	YKH
	Box NDE Instrument Fault; Examination continuing Box NDE Instrument Fault; Examination ^{note 1}	
	Box Examination Complete	YKH

note 1 - deleted from test per RFI 5368-005.

YKH

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TABLE 9.0 BOX LOAD AND UNLOAD

A = Recorded time for forklift operator to load box onto external conveyor.	01:26
B = Recorded time for Box NDE System to load box into vault, close door, open door, and unload vault to external conveyor.	02:33
C = Record time for forklift operator to unload box from external conveyor.	01:43
$D = 2(A) + 2(B) + 2(C)$ D must be less than 25 minutes.	$D = 2(01:26) + 2(02:33) + 2(01:43)$ $D = 2:52 + 5:06 + 3:26$ $= 11:24 < 25:00$

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EXCEPTION SHEET

Exception Number:

Date:

Exception:

Planned Action:

Action Taken:

Date:

Exception/Retest approval:

Retest approved
and accepted

Exception
accepted as is

Other
(Need details)

Details:

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EXCEPTION SHEET (Continuation Page)		PAGE ____ OF ____
Exception Number:	Date:	
Exception (Cont):		
Planned Action (Cont):		
Action Taken (Cont):		
Details (Cont):		

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EXCEPTION SHEET

Exception Number: 001

Date: 06/05/96

Exception: The PCS signals described in Table 8.0 could not be completely tested as the external conveyor is not communicating with the PCS yet.

The signal "Box NDE Instrument Fault; Exam aborted" should be relabeled "Abort Examination" and the signal "Box NDE Instrument Fault, Examination continuing" should be deleted. There is no need for NDE equipment to initiate either of these actions. The NDE equipment will shut itself down so that no x-rays can be generated if any of the safety interlock circuits are triggered. The radiographer will manually signal the PCS if an exam is aborted and will verbally inform the DOS of the reason.

Planned Action: Retest the PCS signals described in Table 8.0 when the external conveyor circuitry is complete. Submit an RFI to ICF-KH to change the signal labels as described above.

Action Taken:

Date: 9/5/96

RFI # 5368-005 WAS SUBMITTED 8/30/96.
PCS SIGNALS WERE SATISFACTORILY RETESTED.

Exception/Retest approval:

✓

Retest approved
and acceptedException
accepted as isOther
(Need details)

Details:

William J. Humphreys 9/5/96
WRAP 1 ENG

John K. Kane 9-5-96
NDE Eng

Bruce Young 11-15-96

RECEIVED

ATTACHMENT A.1

AUG 30 1996

KEH-5366
 "SITE, FACILITY AND PROCESS SYSTEMS"
 PROJECT W-025
 REQUEST FOR INFORMATION (RFI)

ICF KH WRAP 1

PART I: DESCRIPTION OF REQUEST

RFI Short Title Box NDE PCS COMMUNICATIONS RFI No. 5368-005
 Response Due Date _____ Dwg/Spec Ref. 13533 Line/Page Ref. Tables 2 and 3
 Requesting Organization V.J. TECHNOLOGIES, INC.

Request (include applicable references) (1.) REVISE TABLE 2 BY DELETING TWO SIGNALS "BOX NDE INSTRUMENT FAULT; EXAM CONTINUING" AND "BOX NDE INSTRUMENT FAULT; EXAM ABORTED" AND ADDING ONE SIGNAL "BOX NDE EXAM ABORTED." (2.) REVISE TABLE 3 BY CHANGING STEP 23 TO READ, "DURING THE PRE-CHECK SEQUENCE OR AT ANY TIME DURING THE EXECUTION OF AN EXAMINATION, IF ANY FAULTS ARE DIAGNOSED BY THE BOX NDE SYSTEM THAT MAKE THE EXAMINATION UNSAFE TO OPERATE, THE EXAMINATION WILL BE ABORTED BY THE RADIOGRAPHER PUSHING THE LOCAL "ABORT" BUTTON. AN ALARM "BOX NDE EXAM ABORTED" WILL BE SENT TO THE PCS AND DISPLAYED ON AN OPERATOR INTERFACE SCREEN."

Originator [Signature] Date 8/30/96

PART II: RESPONSE TO REQUEST

Responding Organization EMITTECH ENGLS. & CONSTR.
 Response PROPOSED CHANGE IS ACCEPTABLE.

Signature of Respondent [Signature] Title SITE REP Date 9.6.96
 ECN Required X Yes No ECN Reference 1276 Date _____

Attachments _____

Distribution Dates:

UEIC	WHC	KEH	PCL
Site <u>Thomson</u>	<u>8/30/96</u>		
Denver <u>Severson</u>	<u>Boj</u>	<u>Frank</u>	<u>Vijay</u>

ENGINEERING CHANGE NOTICE

ECN No. W026-1276

PAGE 1 of 5

2. ECN Category (mark one)		3. Originator's Name, Organization, MSIN, and Telephone No.		4. Date	
Supplemental	☐	A.N. Watson, Raytheon (303) 843-2332		9/09/96	
Direct Revision	☒	5. Project Title/No./Work Order No.		6. Bldg./Sys./Fac. No.	
Change ECN	☐	WRAP Module 1/W026		WRAP 1	
Temporary	☐	8. Document Numbers Changed by this ECN (includes sheet no. and rev.)		9. Related ECN No(s).	
Standby	☐	(As noted on page 3)		N/A	
Supersede	☐			10. Related PO No.	
Cancel/Void	☐			N/A	
11a. Modification Work		11b. Work Package No.		11c. Modification Work Complete	
☐ Yes (fill out Blk. 11b)		KEH-5368		N/A	
☒ No (NA Blks. 11b, 11c, 11d)		Cog. Engineer Signature & Date		Cog. Engineer Signature & Date	
11d. Restored to Original Condition (Temp. or Standby ECN only)					
N/A					
12. Description of Change					
Revise the referenced design media to accommodate the interfacing signals between the drum and box NDE units and the facility PLC's based on equipment as-found design.					
(Description of Change continued on page 3)					
13a. Justification (mark one)					
Criteria Change	☐	Design Improvement	☐	Environmental	☐
As-Found	☒	Const. Error/Omission	☐	Design Error/Omission	☐
13b. Justification Details					
The above change was initiated in accordance with RFI's 5368-004 and 5368-005.					
14. Distribution (include name, MSIN, and no. of copies)					
Joe Frank - KEH; Ken Iverson - Raytheon - Denver					
Dan Lucas c/o M. Yancy - WHC/DOE					
UE&C					
WRAP I					
RELEASE STAMP					
WRAP I					
INFO ONLY					

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15. Design Verification Required	16. Cost Impact	17. Schedule Impact (days)
☐ Yes ☒ No	ENGINEERING Additional ☐ \$ Savings ☒ \$	CONSTRUCTION Additional ☐ \$ Savings ☒ \$
		Improvement ☐ Delay ☐ N/A

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	ENGINEERING	CONSTRUCTION	Schedule Impact (days)
Functional Design Criteria	☐	☐	Tank Calibration Manual ☐
Operating Specification	☐	☐	Health Physics Procedure ☐
Criticality Specification	☐	☐	Spares Multiple Unit Listing ☐
Conceptual Design Report	☐	☐	Test Procedures/Spec ☐
Equipment Spec.	☐	☐	Component Index ☐
Cost. Spec.	☐	☐	ASME Coded Item ☐
Procurement Spec.	☐	☐	Human Factor Consideration ☐
Vendor Information	☐	☐	Computer Software ☐
OM Manual	☐	☐	Electric Circuit Schedule ☐
FSAR/SAR	☐	☐	ICRS Procedure ☐
Safety Equipment List	☐	☐	Process Control Manual/Plan ☐
Radiation Work Permit	☐	☐	Process Flow Chart ☐
Environmental Impact Statement	☐	☐	Purchase Requisition ☐
Environmental Report	☐	☐	
Environmental Permit	☐	☐	

19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision

Document Number/Revision

Document Number/Revision

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer <i>DE BROZ</i>	<i>10-10-90</i>	PE	_____
Cog./Project Engr. Mgr. DR LUCAS	<i>10/15/90</i>	QA	_____
QA J McGEE	_____	Safety	_____
Safety	_____	Design	_____
Security	_____	Other	_____
Proj. Prog./Dept. Mgr.	_____		_____
	_____		_____
Def. React. Div.	_____	DORSEY THOMPSON	_____
Chem. Proc. Div.	_____	Site Representative <i>D. Thompson</i>	<i>9.23.90</i>
Def. Wst. Mgmt. Div.	_____		_____
Adv. React. Dev. Div.	_____	DEPARTMENT OF ENERGY	_____
Proj. Dept.	_____		_____
Environ. Div.	_____	ADDITIONAL	_____
IRM Dept.	_____		_____
Facility Rep. (Ops.) <i>R. J. Bell</i>	<i>10/17/90</i>		_____
Other <i>K. L. HUMPHREYS</i>	<i>10/17/90</i>		_____

Block 8 (continued) - The following document(s)/revision level have been affected by this ECN.

The following is a list of drawings and specifications that are impacted by this change notice.

Affected Documents:

Specification Sections:

Section 13461	Plant Management System Hardware
Section 13462 Attachment 2	Plant Management System Software - NDE/NDA Internal transport
Section 13462 Attachment 3	Plant Management System Software - Drum NDE
Section 13462 Attachment 13	Plant Management System Software - Box NDE
Section 13532	Drum Non-destructive examination system
Section 13533	Box Non-destructive examination system

Block 12 (continued) -

The following is a list of documents (drawings with new revision level, sketches with rev No. and change requirements to specifications) which are being issued with this ECN.

Specification Sections

Section 13461 Plant Management System Hardware
(Specification not re-issued with this ECN).

1. Appendix B Instrument I/O list.

Revise: ND-06-105/AS: Replace "Interface - fault; Exam abort" with "Exam abort"

Delete: Signal ND-06-105/IF in its entirety.

Revise: ND-06-104A/AS: Replace "Interface - fault; Exam abort" with "Exam abort"

Delete: Signal ND-06-104/IF in its entirety.

Revise: ND-06-104B/AS: Replace "Interface - fault; Exam abort" with "Exam abort"

Delete: Signal ND-06/104B/IF in its entirety.

Revise: the two signals ND-06-104A/ST and ND-06-104B/ST as follows:
Replace "Dr out; stop internal conveyor" with "Stop internal conveyor"

Section 13462 Attachment 2 Plant Management System Software - NDE/NDA Internal transport
(Specification not re-issued with this ECN).

2. Table 2.2

Revise: the two signals ND-06-104A/ST and ND-06-104B/ST as follows:
Replace "Transfer failure; stop internal conveyor" with "Stop internal conveyor"

3. Table 2.3, Drum Transfer from NDE station, step 7

Revise: Replace "...signals the NDE that "drum out; stop internal conveyor" with
"...signals the NDE "stop internal conveyor".

Section 13462 Attachment 3 Plant Management System Software - Drum NDE
(Specification not re-issued with this ECN).

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4. Table 3.1

- Delete: Whole row of signal "Drum NDE fault ; examination continuing"
- Revise: Replace: "Drum NDE Instrument fault; Examination aborted" with "Drum NDE exam aborted".

5. Table 3.3, step 9

- Revise: Replace the whole step to read:

"During the pre-check sequence or at any time during the execution of an exam, if any faults are diagnosed by the Drum NDE system that make it unsafe to operate, the examination will be aborted by the NDE system, shutting itself down. The NDE system will switch on a light which will prompt the radiographer to push the local "Abort" button. An alarm "Drum NDE exam aborted" will be sent to the PCS and be displayed on an operator interface screen. This will cause the icon color of the equipment to change to RED."

Section 13462 Attachment 13 Plant Management System Software - Box NDE
(Specification not re-issued with this ECN).

6. Table 13.1

- Delete: Whole row of signal "Box NDE fault ; examination continuing"
- Revise: Replace: "Box NDE Instrument fault; Examination aborted" with "Box NDE exam aborted".

7. Table 13.3, step 25

- Revise: Replace the whole step to read:

"During the pre-check sequence or at any time during the execution of an exam, if any faults are diagnosed by the Box NDE system that make it unsafe to operate, the examination will be aborted by the NDE system, shutting itself down. The NDE system will switch on a light which will prompt the radiographer to push the local "Abort" button. An alarm "Box NDE exam aborted" will be sent to the PCS and be displayed on an operator interface screen. This will cause the icon color of the equipment to change to RED."

Section 13532 Drum Non-destructive examination system
(Specification not re-issued with this ECN).

8. Table 2:

- Delete: the signal "Drum NDE Instrument fault; Examination continuing"
- Revise: Replace "Drum NDE Instrument fault; Examination aborted" with "Drum NDE exam aborted"
- Revise: the two signals ND-06-104A/ST and ND-06-104B/ST as follows:
Replace "Transfer failure; stop internal conveyor" with "Stop internal conveyor"

9. Table 3, step 21:

- Revise: Replace the whole step to read:

"During the pre-check sequence or at any time during the execution of an exam, if any faults are diagnosed by the Drum NDE system that make it unsafe to operate, the examination will be aborted by the NDE system shutting itself down. The NDE system will switch on a light which will prompt the radiographer to push the local "Abort" button. An alarm "Drum NDE exam aborted" will be sent to the PCS and be displayed on an operator interface screen."

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10. Table 3, step 27:

Revise: Replace "Drum out; stop internal conveyor" with "Stop internal conveyor".

11. Table 3, step 29:

Revise: "Transfer failure; stop internal conveyor" with "Stop internal conveyor".

Section 13533 Box Non-destructive examination system
(Specification not re-issued with this ECN).

12. Table 2:

Delete: the signal "Box NDE Instrument fault; Examination continuing"

Revise: Replace "Box NDE Instrument fault; Examination aborted" with "Drum NDE exam aborted"

13. Table 3, step 23:

Revise: Replace the whole step to read:

"During the pre-check sequence or at any time during the execution of an exam, if any faults are diagnosed by the Box NDE system that make it unsafe to operate, the examination will be aborted by the NDE system, shutting itself down. The NDE system will switch on a light which will prompt the radiographer to push the local "Abort" button. An alarm "Box NDE exam aborted" will be sent to the PCS and be displayed on an operator interface screen."

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