ENGINEERING DATA TRANSMITTAL

SEP 20 1996

1. EDT 608433

Page 1 of 1

2. To: (Receiving Organization) IRM	3. From: (Originating Organization) WHC/HFD	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: WHC/FFTF	6. Design Authority/ Design Agent/Cog. Engr.: Sm Kopelund	7. Purchase Order No.: A101133
8. Originator Remarks: THIS EDT TRANSMITS THE ACCEPTANCE TEST FOR THE FIRE ALARM AND REPORTING SYSTEM FOR 313 FACILITY.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 26/313/FFTF
11. Receiver Remarks: 11A. Design Baseline Document? [X] Yes [] No		12. Major Assm. Dwg. No.: ECN 614291
		13. Permit/Permit Application No.:
		14. Required Response Date:

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Trans-mittal	(H) Origi-nator Dispo-sition	(I) Receiv-er Dispo-sition
1	WHC-SD-FF-ATP-012	NA	0	ACCEPTANCE TEST PROCEDURE	S	1	1	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 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Rea-son	(H) Disp	(J) Name (K) Signature (L) Date (M) MSIN	(G) Rea-son	(H) Disp	(J) Name (K) Signature (L) Date (M) MSIN
1	1	Design Authority SM Kopelund 9-16-96 L6-3C	3		RM PITTMAN S2-48
1	1	Design Agent SM Kopelund 9-16-96 L6-3C	3		RA ADAMS E3-96
1	1	Cog. Eng. SMKopelund 9/18/96			
1	1	Cog. Mgr. CWt Hayes 9/18/96			
		QA			
1	1	Safety 9/17/96 N2-10			
		Env.			

18. SM Kopelund 9/18/96 Signature of EDT Originator Date	19. _____ Authorized Representative Date for Receiving Organization	20. WR Hayes 9/18/96 Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (05/96) GEF097

BD-7400-172-1 (07/91)

313 Building FIRE ALARM SYSTEM

SM KORSLUND
WHC, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: ~~609432~~ 618413   UC: YN0100000
Org Code: 8R500   Charge Code: NFMPM
B&R Code: 900   Total Pages: ~~16~~ 17

Key Words: RFAR, FIRE ALARM

Abstract: Acceptance for test for RFAR Installation for facility fire alarm and suppression system.

DATE: HANFORD
STA 4   RELEASE   ID
SEP 20 1996   2.

Released Approval   Date
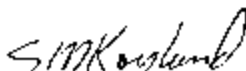
Approved for Public Release

A-6400-073 (10/95) GEF321

ACCEPTANCE TEST PROCEDURE
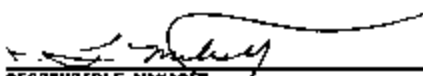
FIRE DETECTION AND SUPPRESSION FOR THE __313__ BUILDING

August, 1996

TEST PROCEDURE APPROVAL:

S. M. Koyluk
AUTHOR/ORIGINATOR   9/3/96
DATE

signature
RESPONSIBLE MANAGER   9/16/96
DATE

signature
FIRE PROTECTION ENGINEERING   9/27/96
DATE

Richard W. Cox
HANFORD FIRE DEPARTMENT
FIRE MARSHAL   9/19/96
DATE

TEST EXECUTION SHEET

TEST EXECUTION

Installer	Date	Recorder/Organization	Date

Test Director/Organization	Date

TEST WITNESS

Witness/Organization	Date	Witness/Organization	Date

Witness/Organization	Date	Witness/Organization	Date

TEST APPROVAL AND ACCEPTANCE

_____ Without Exception   _____ With Exception Resolved   _____ With Exception Outstanding

Design Engineer (Author)	Date	Fire Systems Maintenance	Date

Fire Protection Engineer	Date	Hanford Fire Department	Date

(Title or Department)	Date	(Title or Department)	Date

I

TABLE OF CONTENTS

NOTE: At completion of test, enter pages added during performance of
test to this Table of Contents.

1 PURPOSE

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the Fire Protection system alterations function as required by project criteria. Only the modifications to the system are covered under this test scope.

2 REFERENCES

2.1 Drawings
H-3-70054; H-3-70057, H-3-55896, sheets 1-3; all as modified by ECN 614291.

2.2 Specifications
SDC 7.8

2.3 Engineering Change Notices (ECN)
See 2.4

2.4 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.

3.0 RESPONSIBILITIES

Each company or organization participating in the conduct of this test will designate personnel to assume the responsibilities of duties as defined herein for their respective roles. The names of these designators 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 this test.

3.1 ENGINEER IN CHARGE

+Designate a test director.

3.2 TEST DIRECTOR

+Coordinate all acceptance testing.

3.3 WITNESSES (Provided by Participating Organizations)

+Witness the tests.

3.4 RECORDER

+Observe tests and record test data.

3.5 INSTALLER

•Verify that the system has successfully undergone all necessary pretesting and that the ATP may proceed and be completed in an expeditious manner.

3.6 OCCUPATIONAL SAFETY AND HEALTH

Individuals shall carry out their assigned work in a safe manner to protect themselves and others from hazards and to prevent damage to property and environment.

4 PREREQUISITES AND EQUIPMENT REQUIRED

4.1 Prerequisites

The following conditions shall exist at the start of the testing for that portion of the system being tested.

_____ 4.1.1 Systems have been inspected for compliance with construction documents.

_____ 4.1.2 Reference documents have been verified for correct revision number and outstanding ECNs.

_____ 4.1.3 Appendix A, Operability Test, for this ATP has been satisfactorily completed and signed by installer and witness.

_____ 4.1.4 The RFAR panel has been verified operational and placed in service with alarms bypassed.

_____ 4.1.5 Power is available.

_____ 4.1.6 Test instruments have a valid calibration stamp attached.

_____ 4.1.7 The FACP standby battery has been load tested at the 1 or 2 hour discharge rate and verified to hold at least 100% of the nameplate rated capacity. The battery has been recharged and has been on a charger for at least 48 hours in the past week.

_____ 4.1.8 CO2 system discharge has been disabled or bypassed.

4.2   Equipment and Instruments
Supplied by the Test Operator unless otherwise noted.

    4.2.1   Portable Volt-ohmmeters (VOM): Range 0 - 50 volts DC and 0 - 1 megohm.

            Instrument No. _____ Expiration Date _____

    4.2.2   Portable Ammeter: Range 0 - 10 amperes.

            Instrument No. _____ Expiration Date _____

    4.2.3   Smoke/Heat source.

    4.2.4   Electrical clip leads.

4.3   Abbreviations

    ECN - Engineering Change Notice
    FACP - Fire Alarm Control Panel
    MS   - Manual Pull Station
    RFAR - Radio Fire Alarm Reporting Box
    DP   - Smoke Detector
    DT   - Thermal Detector
    PS   - Pressure Switch
    TS   - Tamper Switch
    EOL - End of Line Device
    FS   - Flow Alarm Switch
    LT   _ Low Temperature Switch

5   **FIRE ALARM SYSTEM TEST**

This ATP will test the __Pyrotronics System 3, CP-35__ fire alarm control panel (FACP), and interfaces with the RFAR, alarm/supervisory initiating devices, and alarm indicating appliances.

5.1   Preparation

_____   5.1.1   Verify prerequisites of Subsection 4.1 have been met.

_____   5.1.2   Request the Hanford Fire Department dispatcher bypass all signals from the RFAR __3620__ and acknowledge all supervisory and alarms received.

_____   5.1.3   Announce to personnel in building that a fire alarm test is in progress; evacuation is not required.

_____   5.1.4   Install RFAR door tamper switch override device.

5.2   Power Transfer and EMI test: This test will verify automatic transfer to battery upon ac power interruption and restoration upon return to normal. It will also verify the absence of EMI induced failure to transmit RFAR signals on AC power and on DC power backup supplies.

_____   5.2.1   At power supply panel, open FACP supply breaker to interrupt ac power to FACP.   __Panel EE, Circuit 7__

_____   5.2.2   Verify FACP ac power LED is OFF and trouble audible is SOUNDING. Silence trouble audible.

_____   5.2.3   At power supply panel, open RFAR supply breaker to interrupt ac power to RFAR. __Panel X, Circuit 1.__

_____   5.2.4   Verify "Local Panel Trouble" message followed after approximately 90 second delay by "Comm Trbl RFAR" message received by dispatcher.

_____   5.2.5   Reset FACP and RFAR.

_____   5.2.6   Cause an alarm on Zone 1 of the FACP, by flowing water, if applicable, jumpering the proper terminals or operating an alarm device.

_____   5.2.7   Verify Zone 1 FACP and RFAR alarm LEDs come ON and system alarm gongs SOUND.

_____   5.2.8   Verify "Zone 1M alarm" message received by dispatcher.

_____   5.2.9   Close breakers to restore ac power to FACP and RFAR.

_____   5.2.10 Verify FACP and RFAR ac power LEDs come ON.

_____ 5.2.11 Silence alarm bells. Do not reset FACP.

_____ 5.2.12 Cause an alarm on all subsequent zones.

_____ 5.2.13 Verify alarm gongs SOUND.

_____ 5.2.14 Verify alarm receipt for each zone by the HFD dispatcher with all
evacuation signals sounding.

_____ 5.2.15 Reset FACP and RFAR.

Table 5.2.14

RFAR signal rec'd	Signature
Zone 1	
Zone 2	
Zone 3	
Zone 4	

5.3 Circuit Supervision: This test will verify RFAR Zone switch position and
both gong and input zone wiring are supervised per
NFPA 72.

5.3.1 RFAR Switch and circuit supervision:

_____ 5.3.1.1 Request Radio Maintenance switch all RFAR zones to OFF.

_____ 5.3.1.2 Verify all RFAR zone trouble LEDs come ON.

_____ 5.3.1.3 Verify "Comm Trouble (RFAR)" message received by dispatcher.

_____ 5.3.1.4 Request Radio Maintenance switch all RFAR zones ON and reset.

_____ 5.3.1.5 Verify all RFAR alarm and trouble LEDs are OFF.

5.3.2 FACP zone supervision: Record the following steps for the items
shown on Data Sheet 5.3.2.

5.3.2.1 Disconnect the end of line (E.O.L) device for the indicated zone. This
may be performed at any point in the circuit if installation wiring
methods were verified during the operability test.

5.3.2.2 Verify FACP system and zone/audible circuit trouble LEDs are ON.

5.3.2.3 Verify "Local Panel Trouble" message for RFAR received by dispatcher.

5.3.2.4 Reconnect the E.O.L device. Reset FACP and RFAR.

5.3.2.5 Verify FACP system, zone/audible circuit, and RFAR trouble LEDs are OFF.

STEP	PERFORM/VERIFY	INPUT/AUDIBLE ZONE						
		Z1	Z2	Z3	Z4	S1	G1	G2
5.3.2.1	Disconnect E.O.L. device							
5.3.2.2	Trouble LEDs are ON							
5.3.2.3	Trouble message received							
5.3.2.4	Reconnect E.O.L. device							
5.3.2.5	Trouble LEDs are OFF							

DATA SHEET 5.3.2

5.3.2.6 Attach an electrical clip lead from any supervised initiating circuit or notification appliance circuit and verify ground fault trouble indication occurs. Remove clip lead.

5.4 Alarm and Supervisory Test: This test will verify the initiation device capability of all alarm and supervisory input circuits.

5.4.1 Record the following steps for each device shown on Data Sheet 5.4.1.

5.4.1.1 Activate the device.

5.4.1.2 Verify FACP Zone alarm/trouble LED is ON.

5.4.1.3 Verify FACP system alarm/trouble LED is ON.

5.4.1.4 Verify RFAR Zone alarm/local trouble LED comes on and appropriate message received by dispatcher.

5.4.1.5 Reset the initiating device

5.4.1.6 Reset FACP and RFAR and verify FACP/RFAR clear of alarm and trouble.

STEP	PERFORM/VERIFY	INPUT DEVICE					
		HD1-1	NS2-1	FS3-1	NS4-1	NS4-2	NS4-3
5.4.1.1	Activate device						
5.4.1.2	Zone alarm/trouble LED is ON						
5.4.1.3	FACP alarm/trouble LED is ON						
5.4.1.4	RFAR alarm LED comes on and message received, OR						
	RFAR local panel trouble LED is ON and message received	NA	NA	NA	NA	NA	NA
5.4.1.5	Reset initiating device						
5.4.1.6	Reset FACP and RFAR						

DATA SHEET 5.4

STEP	PERFORM/VERIFY	INPUT DEVICE						
		MS4 -4	MS4 -5	MS4 -6	MS4 -7	MS4 -8	MS4 -9	LP5- 1
5.4.1.1	Activate device							
5.4.1.2	Zone alarm/trouble LED is ON							
5.4.1.3	FACP alarm/trouble LED is ON							
5.4.1.4	RFAR alarm LED comes on and message received, OR							NA
	RFAR local panel trouble LED is ON and message received	NA	NA	NA	NA			
5.4.1.5	Reset initiating device							
5.4.1.6	Reset FACP and RFAR							

5.5   Battery Draw Down/Alarm Audibility Test: This test will verify battery
      capacity and system recharge capability as well as verify audibility of the
      fire alarm appliances. This test will also verify the absence of EMI-
      induced failure to transmit RFAR signals.

_____   5.5.1   Disconnect one battery lead and verify FACP system trouble LED
                    is ON.

_____   5.5.2   Connect ammeter in battery/panel circuit, reconnect battery to
                    panel, and verify FACP system trouble LED is OFF.

_____   5.5.2.1   Record battery voltage. _____ V dc. (24 V min, 30 V max)

_____   5.5.2.2   Record battery current. _____ A. (0.05 A min, 2 A max)

_____   5.5.3   Open The FACP supply breaker to interrupt ac power.

           Record date/time _____/_____

_____   5.5.3.1   Verify ac power trouble indication.

_____ 5.5.3.2 Record battery voltage. _____ V dc. (21 V min, 30 V max)

_____ 5.5.3.3 Record battery discharge current. _____ A. (0.05 A min, 4.7 A max)

_____ 5.5.4 Cause an alarm on the FACP, by operating a device or jumpering the appropriate terminals.

_____ 5.5.4.1 Verify FACP Zone and RFAR Zone alarm LEDs come ON.

_____ 5.5.4.2 Verify three rounds of fire alarm message "Zone _N" received by the dispatcher.

_____ 5.5.4.3 Verify building alarms SOUND for a minimum of 5 minutes, and perform the following during this period.

5.5.5 Audibility: This test will verify that gong audibility is adequate for the areas covered and required visual signals operate correctly. Record the following steps for the alarms shown on Data Sheet 5.5.6.

5.5.5.1 Verify audible signals are clearly heard and distinguishable thoughout the facility.

STEP	PERFORM/VERIFY	GONG/STROBE				
		G1-1	G1-2	G1-3	H2-1	H2-1
5.5.5.1	gong audible					

DATA SHEET 5.5.6

_____ 5.5.5.3 Record battery voltage. _____ V dc. (21 V min, 30 V max)
Record discharge current. _____ . (0.05 A, min, 4.7 A max)

_____ 5.5.5.4 Silence alarm gongs.

_____ 5.5.5.5 Reset FACP/RFAR.

5.5.6 Recharge Function:

_____ 5.5.6.1 Close and secure breaker.

_____ 5.5.6.2 Record battery charge current. _____ A. (0.05 A min, 2 A max)

_____   5.5.6.3   Remove ammeter from battery circuit, reconnect battery to panel.

_____   5.5.6.4   Remove RFAR door tamper switch override device.

_____   5.5.6.5   Reset FACP and request Radio Maintenance reset and secure RFAR box.

5.7   Secure From Test:

_____   5.7.1   Verify all detection devices have been reset and are in NORMAL condition.

_____   5.7.2   Verify FACP is in NORMAL condition and secured.

_____   5.7.3   Request Hanford Fire Department to restore all zones on the RFAR.

_____   5.7.4   Verify RFAR is in NORMAL condition and secured.

_____   5.7.5   Depress button on front of RFAR Box _3620._

_____   5.7.6   Verify three rounds for the RFAR front button received by the dispatcher.

_____   5.7.7   Advise the dispatcher that testing is complete.

_____   5.7.8   Announce to building personnel that testing is complete.

END OF TEST

APPENDIX A

A. PURPOSE: This appendix is provided as a checklist of activities and verifications
to be performed by the fire alarm system installer to ensure proper
installation and operation. Responsibility for completion of the
following items are the responsibility of the installer.

B. INSTALLER: Prior to terminating conductors that have been laid or pulled outside of
the fire alarm panel, perform and document the following:

_____ 1. Verify that all conductors other than those intentionally
and permanently grounded have been tested for isolation from
ground using an insulation testing device.

_____ 2. Verify that all conductors have been tested for conductor-
to-conductor isolation using an insulation testing device.

_____ 3. Verify that external circuit loop resistance measurements
are within the following limits or as manufacturer
specifies:
a. Maximum 36 ohms for initiating device input circuits.
b. Maximum 1.5 ohms for alarm/bell output circuits.

C. INSTALLER and INSPECTOR: After completing the terminations of the system and
conductors in accordance with the installation drawings, perform and verify the
following:

_____ 1. Verify that the system is installed and wired in accordance
with the installation drawings.

_____ 2. Inspect each initiating device and alarm output device and
verify that the conductors are properly wired.

_____ 3. Verify that each required end-of-line device is in place.

_____ 4. With battery installed and normal power supplied, verify
that the FACP is in a NORMAL supervisory condition as
defined by the manufacturer's manual.

_____ 5. By lifting leads or end-of-line devices, verify that each
supervised zone produces proper trouble indication.

_____ 6. Verify that each alarm/supervisory initiating device
produces proper alarm conditions when activated.

_____ 7. Verify that alarm bells/chimes/strobes operate properly .

_____ 8. Verify that auxiliary functions (eg., HVAC shutdown) operate
correctly per the design.

EXCEPTION SHEET

EXCEPTION NUMBER : _____   DATE: _____

_____
Objecting Party   Date

_____
Organization   Date

EXCEPTION:

PLANNED ACTION:

ACTION TAKEN: DATE: _____

RETEST EXECUTION AND ACCEPTANCE:

                    Retest approved   Exception
_____ and accepted _____ accepted as is _____ Other
                              (Need details)(Need details)

Details:

_____

EXCEPTION SHEET
(Continuation Page)

Page _____ of _____

EXCEPTION NUMBER : _____

DATE: _____

EXCEPTION (cont):

PLANNED ACTION (cont):

ACTION TAKEN (cont):

DETAILS (cont):