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Document Title: Acceptance Test Report, Plutonium Finishing Plant
Life Safety Upgrade

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**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

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WHC Information Release Administration Specialist:

Kara M. Broz

February 2, 1995

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TEST TITLE Fire Alarm SystemLOCATION Building 234-5Z, 200-West AreaPROJECT NUMBER B-631 WORK ORDER CR1343 P56802PROJECT TITLE Fire Alarm System Improvements

Prepared By
ICF Kaiser Hanford Company
Richland, Washington

For the U.S. Department of Energy
Contract DE-AC06-93RL12359

PROCEDURE APPROVAL

ICF KAISER HANFORD COMPANY (ICF KH)

C.H. Mc Goughky CDE 12/2/94 J E Breed 12-2-94
Originator Date Technical Documents Date

C.D. Eggen 12/2/94 C.D. Eggen 12/2/94
Checker Date Safety Date

R L Newell 12-2-94 J Schults 12/2/94
Environmental Date Quality Engineering Date

Russell D. [Signature] 12/2/94
Project Management Date

Westinghouse Hanford Company (WHC)

[Signature] 12/2/94 J Schults 12-2-94
Projects Department Date Quality Assurance Date

David M. Watt 12/2/94 Ilse Nauenberg 12/2/94
PFP Safety Date PFP Cognizant Engineer Date

W.M. Knight [Signature] For 12/2/94
Hanford Fire Department Date

EXECUTION AND TEST APPROVAL

EXECUTED BY

<u>Huey Nguyenhuan</u>	<u>1-3-95</u>	<u>R. m m</u>	<u>1/3/95</u>
Test Director/Organization	Date	Test Operator/Organization	Date
Huey Nguyenhuan/EE ICF KH		R m muse HFD	
<u>D.O. Wallace</u>	<u>1-3-95</u>		
Recorder/Organization	Date		
D.O. Wallace ICF KH			

WITNESSES

<u>Michael D. Batterson</u>	<u>1-3-95</u>	<u>D.O. Wallace</u>	<u>1-3-95</u>
Witness/Organization	Date	Title III Inspector	Date
Mike Batterson WHC		D.O. Wallace	
<u>Kevin J. Norton</u>	<u>1-3-95</u>	<u>Dennis J. Bryne</u>	<u>1-17-95</u>
Witness/Organization	Date	Witness/Organization	Date
Kevin Norton WHC		DJ. Bryne HFD	

A-E APPROVAL

ICF Kaiser Hanford Company

Without exceptions _____ With exceptions resolved X With exceptions outstanding _____

<u>G.S. Chinery</u>	<u>1-20-95</u>	<u>C.D. Eggen</u>	<u>1/31/95</u>
Acceptance Inspection	Date	Design Engineer	Date
<u>Russell D. Wright</u>	<u>1/30/95</u>		
Project Manager	Date		

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company

Without exceptions _____ With exceptions resolved X With exceptions outstanding _____

<u>E. Hodge</u>	<u>1/31/94</u>	<u>D.M. Wyatt</u>	<u>2/1/95</u>
<Title or Department>	Date	<Title or Department>	Date
Huey H. Nguyen		PPF SAFETY	
<Title or Department>	Date	<Title or Department>	Date
PPF ENGINEERING	2/1/95		

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APPENDIX

A Pretest Approval

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 modifications to the Fire Protection systems function as required by project criteria.

The ATP will test the Fire Alarm Control Panels, Flow Alarm Pressure Switch, Heat Detectors, Smoke Detectors, Flow Switches, Manual Pull Stations, and Gong/Door By Pass Switches.

2 REFERENCES

2.1 DRAWINGS

H-2-24174, Sh 1 through 4 Fire Protection - Alarm and Detection, Floor Plans
H-2-24175, Sh 1 & 2 Fire Protection - Hood & Glove Box Loc/Water Spray Press SW
H-2-24176, Sh 1 Fire Protection - RFAR 2780/2781 Block Diag
H-2-97481, Sh 1 through 58 Fire Protection - Alarm and Detection FCP Wiring Diagrams & Misc

2.2 SPECIFICATIONS

B-631-C7, Rev 0 Construction Specification

2.3 ENGINEERING CHANGE NOTICES (ECN)

Prior to final test approval, enter ECNs written against this ATP.

3 RESPONSIBILITIES

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 WHC PROJECT ENGINEER

- 3.2.1 Designates a Test Director.
- 3.2.2 Coordinates testing with the Building Manager and Hanford Fire Department. Provide 10 day advance notification.
- 3.2.3 Acts as liaison between the participants in acceptance testing.
- 3.2.4 Distributes the approved testing schedule before start of testing.
- 3.2.5 Schedules and conducts a pretest kickoff meeting with test participants when necessary.

- 3.2.6 Notifies the persons supporting the test 2 days before the start of testing.
 - 3.2.7 Schedules a dry run.
 - 3.2.8 Notifies concerned parties when a change is made in the testing schedule.
 - 3.2.9 Signs Execution and Test Approval page when test is approved and accepted.
 - 3.2.10 Takes necessary action to clear exceptions to the test.
 - 3.2.11 Signs Exception Form when exception has been resolved.
 - 3.2.12 Provides a distribution list for the approved and accepted ATP(ATR).
- 3.3 TEST DIRECTOR
- 3.3.1 Coordinates and directs acceptance testing.
 - 3.3.2 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed.
 - 3.3.3 Stops any test which, in his or her judgment, may cause damage to the system until the problem has been resolved.
 - 3.3.4 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.
 - 3.3.5 Ensures that required environmental conditions are maintained.
 - 3.3.6 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.
 - 3.3.7 Before restarting suspended test, re-verifies the test prerequisites.
 - 3.3.8 Initiates ECNs to document required changes to the ATP.
 - 3.3.9 Reviews recorded data, discrepancies, and exceptions.
 - 3.3.10 Obtains information or changes necessary to clear or resolve objections during the performance of the test.
 - 3.3.11 Signs Execution and Test Approval page when test has been performed.
 - 3.3.12 Signs Exception Form when exception has been resolved.
 - 3.3.13 Obtains required signatures on the ATP Master prior to reproduction and distribution.
 - 3.3.14 Notifies the Hanford Fire Department (HFD) before each testing day that the tests will begin on time or that the tests will be delayed. Gives the expected time of delay when possible.

- 3.3.15 Assures the safety of activities within the test area to prevent personnel injury or property damage.
- 3.4 WITNESSES (Provided by Participating Organizations. One witness shall be a Title III acceptance inspector.)
 - 3.4.1 Witness the tests.
 - 3.4.2 Review results of testing.
 - 3.4.3 Assist the Test Director when requested.
 - 3.4.4 Sign Execution and Test Approval page when test has been performed.
 - 3.4.5 Sign Exception Form when exception has been resolved.
- 3.5 RECORDER (Provided by ICF KH)
 - 3.5.1 Prepares a Field copy from the ATP Master.
 - 3.5.2 Records names of all designated personnel on Field copy of ATP prior to start of testing.
 - 3.5.3 Records test instrument identification numbers and calibration expiration dates as required.
 - 3.5.4 Initials and dates every 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.
 - 3.5.5 Records objections and exceptions on an Exception form. Uses additional Exception forms as needed. Notifies the Test Director at time the objection is made.
 - 3.5.6 Signs Execution and Test Approval page when test has been performed.
 - 3.5.7 After test is finished, assigns alpha numeric page numbers to added data sheets and Exception forms. Records page numbers in the Table of Contents.
 - 3.5.8 Transfers Field copy entries for each step to the Master in ink or type, signs, and dates. Transmits the completed Master to the Test Director for approval signature routing. Transmits the Field copy to Construction Document Control for inclusion in the official project file.
 - 3.5.9 Signs Exception Form when exception has been resolved and transmits to Test Director.
- 3.6 TEST OPERATOR
 - 3.6.1 Performs test under direction of the Test Director.

3.6.2 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.

3.6.3 Confirms that all equipment required for performing test will be available at the start of testing.

3.6.4 Signs the Execution and Test Approval page.

3.7 A-E ACCEPTANCE INSPECTION, DESIGN ENGINEER, AND PROJECT MANAGER

3.7.1 Evaluate results.

3.7.2 Sign for A-E Approval on Execution and Test Approval page.

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.

5 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 operation. Performance of test activities shall always include safety and health aspects.

5.2 PERFORMANCE

5.2.1 Conduct testing in accordance with ICF KH Procedure CON 3.5 (Performance and Recording of Acceptance Test Procedures).

5.2.2 Perform test following the steps and requirements of this procedure.

NOTE: Tests may be run without completing an entire section before proceeding to the next.

6 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 CHANGE CONTROL).

6.2 RECORDING

- 6.2.1 Number each exception sequentially as it occurs and record it on an Exception Form (KEH-428), sample appended.
- 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

The customer provides final approval and acceptance of exceptions by checking 1 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.

The customer signs and dates the Exception Form and obtains other customer internal approvals, if required.

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 PREREQUISITES, EQUIPMENT/INSTRUMENTS, AND ABBREVIATIONS

7.1 PREREQUISITES

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

- 7.1.1 Systems have been inspected for compliance with construction documents, installed and modified by Project B-631, Appendix A, and the following.
- a) All wiring contains no T-taps
 - b) All system modules in place
 - c) All EOL's verified in place on zones that were high voltage
 - d) System has power and is operating normally
- 7.1.2 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.
- 7.1.3 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted.
- 7.1.4 Test instruments have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 7.2, if applicable.
- 7.1.5 Methods of water disposal have been approved by Facilities Management.
- 7.1.6 Power is available.
- 7.1.7 Water is available to the sprinkler systems.
- 7.1.8 Test has been coordinated with the Hanford Fire Department.
- 7.1.9 The FCP 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 was recharged. _____ (Date)
- 7.1.10 Battery fully charged. Verify it has been on charger for at least 48 hours within past week.

7.2 EQUIPMENT/INSTRUMENTS

Supplied by Test Operator unless otherwise noted.

- 7.2.1 Voltohmmeters (VOM): Portable, 0-50 V dc, 0-1 megohm.
Instrument No. _____ Expiration Date _____
- 7.2.2 Ammeters: 0-10 A.
Instrument No. _____ Expiration Date _____
- 7.2.3 Shorting jumpers.
- 7.2.4 Shorting jumpers with ON-OFF switch.
- 7.2.5 Heat Source: For example, heat gun.
- 7.2.6 Smoke Source.
- 7.2.7 Calculator.

7.2.8 10 kilohm Resistor.

7.3 ABBREVIATIONS

ADM	Administration
ATP	Acceptance Test Procedure
ATR	Acceptance Test Report
ECN	Engineering Change Notice
EOLR	End of Line Resistor
FCP	Fire Alarm Control Panel
FAS	Flow Alarm Pressure Switch
FS	Flow Switch (vane type)
HD	Heat Detector
HFD	Hanford Fire Department
LED	Light Emitting Diode
ME	Master Element
MFCP	Master Fire Alarm Control Panel (Gamewell Flex 500)
MS	Manual Pull Station
PIV	Post Indicator Valve
RFAR	Radio Fire Alarm Reporting Box
SCP	Supervisory Control Panel
SD	Smoke Detector
TS	Tamper Switch

FIRE ALARM SYSTEM TEST FOR FCP 1412

.1 PREPARATION

- ~~W11-2095~~ 8.1.1 All prerequisites of Para 7.1 have been met.
- ~~W12-694~~ 8.1.2 Request the Hanford Fire Department dispatcher bypass all signals from Box 2780/2781 and acknowledge all supervisory and alarm signals received at 200 Area Fire Station, as requested.
- ~~W12-694~~ 8.1.3 Install RFAR door tamper switch override device.
- ~~W12-694~~ 8.1.4 Verify FCP door is lockable and keyed with Cat 60 set key only.
- ~~W12-694~~ 8.1.5 Have Operations announce to personnel in building that a fire alarm test is in progress; evacuation is not required.
- 8.1.6 Gong/Door Bypass
- NOTE: Notify Security of this Step
- ~~W12-694~~ 8.1.6.1 At Fire Alarm Gong Relay and Bypass Enclosure (FCP500-GONG) switch security door interlock bypass switch and gong silence switch to "BYPASS."
- ~~W12-694~~ 8.1.6.2 Verify FCP system trouble LEDs are ON.
- ~~W12-694~~ 8.1.6.3 Verify "LOCAL PANEL" trouble message for box 2780/2781 received at 200 Area Fire Station.
- ~~W12-694~~ 8.1.6.4 Trip Manual Pull Station 1-1 in Building 234-SZ.
- ~~W12-694~~ 8.1.6.5 Verify audible devices are not sounding and security doors do not unlock.
- ~~W12-694~~ 8.1.6.6 Reset manual pull station and FCP.

CIRCUIT SUPERVISION

8.2.1 FCP Zone Circuit Supervision

Record the following steps for the zones shown on Data Sheet 8.2.1.

8.2.1.1 At FCP 1412-1, move zone switch to OFF.

8.2.1.2 Verify FCP 1412-1 zone trouble LEDS are ON.

8.2.1.3 Move zone switch to ON.

8.2.1.4 Verify FCP 1412-1 zone trouble LEDS are OFF.

DATA SHEET 8.2.1

STEP	PERFORM/VERIFY	ZONE						
		1	2	3	4	5	6	7
8.2.1.1	Move zone switch to OFF	ON	ON	ON	ON	ON	ON	ON
8.2.1.2	Zone trouble LEDS are ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.3	Move zone switch to ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.4	Zone trouble LEDS are OFF	ON	ON	ON	ON	ON	ON	ON

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DATA SHEET 8.2.1

STEP	PERFORM/VERIFY	ZONE						
		8	9	10	11	12	13	14
8.2.1.1	Move zone switch to OFF	ON	ON	ON	ON	ON	ON	ON
8.2.1.2	Zone trouble LEDS are ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.3	Move zone switch to ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.4	Zone trouble LEDS are OFF	ON	ON	ON	ON	ON	ON	ON

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DATA SHEET 8.2.1

STEP	PERFORM/VERIFY	ZONE							
		15	16	17	18	19	20	21	22
8.2.1.1	Move zone switch to OFF	ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.2	Zone trouble LEDS are ON	ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.3	Move zone switch to ON	ON	ON	ON	ON	ON	ON	ON	ON
8.2.1.4	Zone trouble LEDS are OFF	ON	ON	ON	ON	ON	ON	ON	ON

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3

ALARM FUNCTION: This test will verify initiation circuit alarm and supervisory function.

8.3.1 Heat Detectors

Record the following steps for detectors shown on Data Sheet 8.3.1.

8.3.1.1 Activate detector with a heating appliance.

8.3.1.2 Verify RFAR "Zone *M Fire" Box 2780/2781 message received at 200 Area Fire Station.

8.3.1.3 Verify FCP system and FCP, ME, and MFCP zone alarm LEDs are ON.

8.3.1.4 Verify alarm in Power Control Room (Room 321 1A).

8.3.1.5 Remove heat source and allow detector to cool.

8.3.1.6 Reset FCP.

8.3.1.7 Verify FCP system, FCP, ME, and MFCP zone alarm LEDs are OFF.

DATA SHEET 8.3.1												
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS										
		2-1	2-23	3-7	3-8	3-9	4-1	4-15	4-38	5-1	5-2	5-3
8.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8.3.1.3	Message received	OK	NA	OK	NA	NA	OK	NA	NA	OK	NA	NA
8.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
8.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

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DATA SHEET 8.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		5-4	5-5	5-6	6-1	6-2	6-3	6-4
8.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
8.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
8.3.1.3	Message received	NA	NA	NA	OK	NA	NA	NA
8.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
8.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
8.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
8.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

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*Denotes zone number

DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		6-5	6-6	6-7	6-8	8-2	8-3	8-4
8.3.1.1	Activate detector	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.2	Alarm LEDs are ON	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.3	Message received	NA	NA	NA	NA	ODW	NA	NA
8.3.1.4	Verify alarm	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.5	Allow detector to cool	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.6	Reset FCP	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.7	Alarm LEDs are OFF	ODW	ODW	ODW	ODW	ODW	ODW	ODW

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DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		8-5	8-6	8-7	8-8	8-9	9-1	10-1
8.3.1.1	Activate detector	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.2	Alarm LEDs are ON	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.3	Message received	NA	NA	NA	NA	NA	ODW	ODW
8.3.1.4	Verify alarm	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.5	Allow detector to cool	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.6	Reset FCP	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.7	Alarm LEDs are OFF	ODW	ODW	ODW	ODW	ODW	ODW	ODW

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DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		11-1	14-1	15-1	15-2	15-3	15-4	15-5
8.3.1.1	Activate detector	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.2	Alarm LEDs are ON	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.3	Message received	ODW	ODW	ODW	NA	NA	NA	NA
8.3.1.4	Verify alarm	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.5	Allow detector to cool	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.6	Reset FCP	ODW	ODW	ODW	ODW	ODW	ODW	ODW
8.3.1.7	Alarm LEDs are OFF	ODW	ODW	ODW	ODW	ODW	ODW	ODW

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DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		15-6	15-7	15-8	15-9	15-10	15-11	15-12
8.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
8.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
8.3.1.3	Message received	NA	NA	NA	NA	NA	NA	NA
8.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
8.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
8.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
8.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-8-94

DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		15-13	15-14	15-15	15-16	15-17	15-18	15-19
8.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
8.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
8.3.1.3	Message received	NA	NA	NA	NA	NA	NA	NA
8.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
8.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
8.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
8.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

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DATA SHEET 8.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		15-20	15-21	15-22	20-1	21-1	Deleted per ECU-2	
8.3.1.1	Activate detector	OK	OK	OK	OK			
8.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK			
8.3.1.3	Message received	NA	NA	NA	OK			
8.3.1.4	Verify alarm	OK	OK	OK	OK			
8.3.1.5	Allow detector to cool	OK	OK	OK	OK			
8.3.1.6	Reset FCP	OK	OK	OK	OK			
8.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK			

12-8-94

8.3.2 Manual Pull Stations

Record the following steps for manual pull stations shown on Data Sheet 8.3.2.

8.3.2.1 Trip MS.

8.3.2.2 Verify MFCP, ME, FCP zone and FCP system alarm LEDs are ON.

8.3.2.3 Verify RFAR "Zone *M Fire - Box 2780/2781" message received at 200 Area Fire Station.

8.3.2.4 Verify alarm at Power Control Room.

8.3.2.5 Reset MS and FCP. Verify clear of alarm.

DATA SHEET 8.3.2							
STEP	PERFORM/VERIFY	ZONE/MANUAL PULL STATION					
		1-1	3-4	8-1	8-10	13-1	13-2
8.3.2.1	Trip MS	OK	OK	OK	OK	OK	OK
8.3.2.2	Zone and system LEDs are ON	OK	OK	OK	OK	OK	OK
8.3.2.3	Message received	OK	OK	OK	NA	OK	NA
8.3.2.4	Verify alarm	OK	OK	OK	OK	OK	OK
8.3.2.5	Reset MS and FCP	OK	OK	OK	OK	OK	OK

12-8-94

*Denotes zone number

8.3.3 Low Pressure Switches (Water Bottles)

DOW 8.3.3.1 Activate zone 18 by placing a jumper across zone terminals.

DOW 8.3.3.2 Verify FCP 1412-1 system and zone alarm LEDs are ON.

DOW 8.3.3.3 Verify alarm in Power Control Room.

DOW 8.3.3.4 Reset FCP 1412-1.

DOW 8.3.3.5 Verify FCP 1412-1 system and zone alarm LEDs are OFF.

2-16-94

FLOW SWITCHES: This test will verify the operation of the flow switches.

8.4.1 Flow Alarm Pressure Switch (Wet-Pipe Sprinkler System)

Record the following steps for the switches shown on Data Sheet 8.4.1.

NOTE: May be done in conjunction with Section 15.4.

- 8.4.1.1 Open Inspector's test valve quickly and completely.
- 8.4.1.2 Verify water is flowing immediately at Inspector's test valve.
- 8.4.1.3 Record elapsed time to system panel, signaling devices _____ (90 seconds max)
- 8.4.1.4 Verify FCP system, MFCP, FCP, and ME Zone ____*____ alarm LEDs are ON.
- 8.4.1.5 Close Inspector's test valve.
- 8.4.1.6 Verify RFAR "Zone *M Fire" message for Box 2780/2781 received at 200 Area Fire Station.
- 8.4.1.7 Verify alarm in Power Control Room.
- 8.4.1.8 Reset FCP.

NOTE: Zone 12 will also alarm on FCP-TC-66 Zone 1 and RFAR 2785 located in Building TC-66. These will require reset.

- 8.4.1.9 Verify FCP system, MFCP, FCP, and ME zone alarm LEDs are OFF.

DATA SHEET 8.4.1

STEP	PERFORM/VERIFY	Zone/Flow Alarm Pressure Switch				
		1-1	**12-1	13-1	22-1	***64-1
8.4.1.1	Open test valve	OK	OK	OK	OK	OK
8.4.1.2	Water flow	OK	OK	OK	OK	OK
8.4.1.3	Record time	30 sec	8 sec	25 sec	16 sec	60 sec
8.4.1.4	LEDs are ON	OK	OK	OK	OK	OK
8.4.1.5	Close test valve	OK	OK	OK	OK	OK
8.4.1.6	Message received	OK	OK	OK	OK	OK
8.4.1.7	Verify alarm	OK	OK	OK	OK	OK
8.4.1.8	Reset FCP	OK	OK	OK	OK	OK
8.4.1.9	LEDs are OFF	OK	OK	OK	OK	OK

12-22-94

*Denotes zone number

**Test this switch using the inspectors test in TC-66.

*** Zone 64 FAS, which does not come into (FCP1412-1) panel, will light master element and MFCP LEDs only.

5 BATTERY DRAW DOWN AND POWER TRANSFER: This test will verify battery load and system recharge capability. This test will verify automatic transfer to battery upon ac power interruption and restoration upon return to normal.

- ~~12-20-94~~ 8.5.1 At Alarm Gong Relay and Bypass Enclosure, switch Gong Bypass Switch to NORMAL.
- ~~12-20-94~~ 8.5.2 Verify FCP system trouble LEDs are OFF.
- ~~12-20-94~~ 8.5.3 Disconnect 1 battery lead. Verify battery trouble LED is ON.
- ~~12-20-94~~ 8.5.4 Connect ammeter in battery/panel circuit. Reconnect battery to panel. Verify battery trouble LED is OFF.
- ~~12-20-94~~ 8.5.5 At Power Panel EP-1, open Breaker 11 to interrupt ac power to FCP.
- ~~12-20-94~~ 8.5.6 Verify ac power trouble indication. Do not silence trouble buzzer.
- ~~12-20-94~~ 8.5.7 Verify "Local Panel Trouble" message for Box 2780/2781 received at 200 Area Fire Station.
- ~~12-20-95~~ 8.5.7a ~~Place gong/door bypass switches to BYPASS.~~ *ECN-8-631-30*
- ~~12-20-94~~ 8.5.8 Record battery supervisory current. (Is) = .32 A.
- ~~12-20-94~~ 8.5.9 Put the system into alarm by placing a momentary short between zone terminals.
- ~~12-20-95~~ 8.5.10 *Revised per ECN-8-631-30*
~~Verify building alarm signaling appliances OPERATE until alarm message acknowledged at Fire Station.~~
- ~~12-20-94~~ 8.5.11 Verify alarm message received at 200 Area Fire Station.
- ~~12-20-94~~ 8.5.12 Record battery alarm current. (Ia) = .34 A.
- ~~ECN-30~~ 8.5.13 ~~Silence alarm gongs and trouble buzzer.~~ *Deleted per ECN-8-631-30*
- ~~12-20-94~~ 8.5.14 Close and secure Breaker 11.
- ~~12-20-94~~ 8.5.15 Remove ammeter from battery circuit, reconnect battery to panel.
- ~~12-20-94~~ 8.5.16 Reset the manual pull station (if used).
- ~~12-20-94~~ 8.5.17 Reset FCP.
- ~~ECN-30~~ 8.5.18 ~~At Alarm Gong Relay and Bypass Enclosure, switch Security Door Interlock switch to NORMAL.~~ *Deleted per ECN-8-631-30*
- ~~12-20-94~~ 8.5.19 Verify FCP is in NORMAL condition. All LEDs are OFF.

8.5.20 Using the test results obtained in Steps 8.5.8 and 8.5.12, calculate the battery requirement using the following formula:

$$(H_s \times I_s) + (H_a \times I_a) = \text{Battery requirement in ampere hours}$$

H_s = hours of standby (60)

H_a = hours of alarm (.083)

I_s = standby current in amperes

I_a = alarm current in amperes

122094 8.5.20.1 Calculated requirement

$$(60 \times \underline{.32}) + (.083 \times \underline{.34}) = \underline{19.23} \text{ Ah}$$

122094 8.5.21 Record the nameplate ampere hour rating of the batteries.
33 Ah.

122094 8.5.22 Verify the battery requirement calculated is less than the nameplate rating of the batteries.

END OF SECTION 8

1 PREPARATION

- 012085 9.1.1 All prerequisites of Para 7.1 have been met.
- 012694 9.1.2 Request the Hanford Fire Department dispatcher bypass all signals from Box 2780/2781 and acknowledge all supervisory and alarm signals received at 200 Area Fire Station, as requested.
- 012694 9.1.3 Install RFAR door tamper switch override device.
- 012694 9.1.4 Verify FCP door is lockable and keyed with Cat 60 set key only.
- 012694 9.1.5 Have Operations announce to personnel in building that a fire alarm test is in progress; evacuation is not required.
- 9.1.6 Gong/Door Bypass
- NOTE: NOTIFY SECURITY OF THIS STEP.
- 012694 9.1.6.1 At Fire Alarm Gong Relay and Bypass Enclosure (FCP500-GONG) switch security door interlock bypass switch and gong silence switch to "BYPASS."
- 012694 9.1.6.2 Verify FCP system trouble LEDs are ON:
- 012694 9.1.6.3 Verify LOCAL PANEL trouble message for box 2780/2781 received at 200 Area Fire Station.
- 012694 9.1.6.4 Trip Manual Pull Station 1-1 in Building 234-5Z.
- 012694 9.1.6.5 Verify audible devices are not sounding and security doors do not unlock.
- 012694 9.1.6.6 Reset manual pull station and FCP.

CIRCUIT SUPERVISION

9.2.1 FCP/Zone Circuit Supervision

Record the following steps for the zones shown on Data Sheet 9.2.1.

9.2.1.1 At FCP 1415-1, move zone switch to OFF.

9.2.1.2 Verify FCP 1415-1 zone trouble LEDS are ON.

9.2.1.3 Move zone switch to ON.

9.2.1.4 Verify FCP 1415-1 zone trouble LEDS are OFF.

DATA SHEET 9.2.1

STEP	PERFORM/VERIFY	ZONE						
		23	24	25	26	27	28	29
9.2.1.1	Move zone switch to OFF							
9.2.1.2	Zone trouble LEDS are ON							
9.2.1.3	Move zone switch to ON							
9.2.1.4	Zone trouble LEDS are OFF							

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DATA SHEET 9.2.1

STEP	PERFORM/VERIFY	ZONE						
		30	31	32	33	34	35	36
9.2.1.1	Move zone switch to OFF							
9.2.1.2	Zone trouble LEDS are ON							
9.2.1.3	Move zone switch to ON							
9.2.1.4	Zone trouble LEDS are OFF							

12-13-94

DATA SHEET 9.2.1

STEP	PERFORM/VERIFY	ZONE						
		37	38	39	40	41	42	43
9.2.1.1	Move zone switch to OFF							
9.2.1.2	Zone trouble LEDS are ON							
9.2.1.3	Move zone switch to ON							
9.2.1.4	Zone trouble LEDS are OFF							

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DATA SHEET 9-2-1									
STEP		PERFORM/VERIFY					ZONE		
9.2.1.1	Move zone switch to OFF
9.2.1.2	Zone trouble LEDs are ON
9.2.1.3	Move zone switch to ON
9.2.1.4	Zone trouble LEDs are OFF

ALARM FUNCTION: This test will verify initiation circuit alarm and supervisory function.

9.3.1 Heat Detectors

Record the following steps for detectors shown on Data Sheet 9.3.1.

- 9.3.1.1 Activate detector with a heating appliance.
- 9.3.1.2 Verify RFAR "Zone *M Fire" Box 2780/2781 message received at 200 Area Fire Station.
- 9.3.1.3 Verify FCP system and FCP, ME, and MFCP zone alarm LEDs are ON.
- 9.3.1.4 Verify alarm in Power Control Room.
- 9.3.1.5 Remove heat source and allow detector to cool.
- 9.3.1.6 Reset FCP.
- 9.3.1.7 Verify FCP system, FCP, ME, and MFCP zone alarm LEDs are OFF.
- 9.3.1.8 ~~Restore SM-30 and RM-30 to Modules to DISC. (This step only involves Zone/Heat Detectors 46-1 and 46-5, and is not included on any other data sheet.) Deleted per ECN-3631-30~~

DATA SHEET 9.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		23-1	23-2	23-3	23-4	23-5	23-6	24-1
9.3.1.1	Activate detector	ON	ON	ON	ON	ON	ON	ON
9.3.1.2	Alarm LEDs are ON	ON	ON	ON	ON	ON	ON	ON
9.3.1.3	Message received	ON	NA	NA	NA	NA	NA	ON
9.3.1.4	Verify alarm	ON	ON	ON	ON	ON	ON	ON
9.3.1.5	Allow detector to cool	ON	ON	ON	ON	ON	ON	ON
9.3.1.6	Reset FCP	ON	ON	ON	ON	ON	ON	ON
9.3.1.7	Alarm LEDs are OFF	ON	ON	ON	ON	ON	ON	ON

12-21-94

*Denotes zone number

DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		24-2	24-3	24-4	24-5	24-6	24-7	24-8
9.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
9.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
9.3.1.3	Message received	NA	NA	NA	NA	NA	NA	NA
9.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
9.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
9.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
9.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-13-94

DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		24-9	24-10	24-11	24-12	24-13	24-14	24-15
9.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
9.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
9.3.1.3	Message received	NA	NA	NA	NA	NA	NA	NA
9.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
9.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
9.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
9.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-13-94

DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		25-1	25-2	25-3	25-4	25-5	25-6	25-11
9.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
9.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
9.3.1.3	Message received	OK	NA	NA	NA	NA	NA	NA
9.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
9.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
9.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
9.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-16-94

DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		26-17	26-18	26-19	26-20	26-21	26-22	26-23
9.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
9.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
9.3.1.3	Message received	OK	NA	NA	NA	NA	NA	NA
9.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
9.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
9.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
9.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-14-94

DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS											
		26-24	27-1	27-2	27-16	27-25	27-32	28-33	28-5	28-1	28-2	29-1	29-2
3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3.1.3	Message received	NA	OK	NA	OK	OK	OK	OK	OK	OK	NA	OK	NA
3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

12-14-94

1-20-95

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DATA SHEET 9.3.1

STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		30-1	30-2	30-3	30-4	31-3	31-4	31-5
9.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
9.3.1.2	Alarm LEDs are ON	OK	OK	OK	OK	OK	OK	OK
9.3.1.3	Message received	OK	NA	NA	NA	OK	NA	NA
9.3.1.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK
9.3.1.5	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
9.3.1.6	Reset FCP	OK	OK	OK	OK	OK	OK	OK
9.3.1.7	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-13-94

DATA SHEET 9.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		31-6	31-7	31-8	32-5	34-1		
9.3.1.1	Activate detector	000	000	000	000	000		
9.3.1.2	Alarm LEDs are ON	000	000	000	000	000		
9.3.1.3	Message received	NA	NA	NA	000	000		
9.3.1.4	Verify alarm	000	000	000	000	000		
9.3.1.5	Allow detector to cool	000	000	000	000	000		
9.3.1.6	Reset FCP	000	000	000	000	000		
9.3.1.7	Alarm LEDs are OFF	000	000	000	000	000		

12-14-94

DATA SHEET 9.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		39-1	40-1	42-2	43-2	43-3	43-4	43-5
9.3.1.1	Activate detector	000	000	000	000	000	000	000
9.3.1.2	Alarm LEDs are ON	000	000	000	000	000	000	000
9.3.1.3	Message received	000	000	000	000	NA	NA	NA
9.3.1.4	Verify alarm	000	000	000	000	000	000	000
9.3.1.5	Allow detector to cool	000	000	000	000	000	000	000
9.3.1.6	Reset FCP	000	000	000	000	000	000	000
9.3.1.7	Alarm LEDs are OFF	000	000	000	000	000	000	000

1-3-95

DATA SHEET 9.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		46-1	46-5					
9.3.1.1	Activate detector							
9.3.1.2	Alarm LEDs are ON							
9.3.1.3	Message received	NA						
9.3.1.4	Verify alarm							
9.3.1.5	Allow detector to cool							
9.3.1.6	Reset FCP							
9.3.1.7	Alarm LEDs are OFF							
9.3.1.8	Restore Modules to NORM	NA	NA					

Table Deleted per ECN-B631-30

9.3.2 Manual Pull Stations

Record the following steps for manual pull stations shown on Data Sheet 9.3.2.

9.3.2.1 Trip MS.

9.3.2.2 Verify MFCP, ME and FCP zone and FCP system alarm LEDs are ON.

9.3.2.3 Verify RFAR "Zone *M Fire - Box 2780/2781" message received at 200 Area Fire Station.

9.3.2.4 Verify alarm in Power Control Room.

9.3.2.5 Reset MS and FCP. Verify clear of alarm.

DATA SHEET 9.3.2

STEP	PERFORM/VERIFY	ZONE/MANUAL PULL STATION <i>Deleted per ECU-8-631-30</i>						
		26-11	27-7	27-14	27-50	28-14	28-26	31-1
9.3.2.1	Trip MS	OK	OK	/	OK	OK	OK	OK
9.3.2.2	Zone and system LEDs are ON	OK	OK	/	OK	OK	OK	OK
9.3.2.3	Message received	OK		/				OK
9.3.2.4	Verify alarm	OK	OK	/	OK	OK	OK	OK
9.3.2.5	Reset MS and FCP	OK	OK	/	OK	OK	OK	OK

12-8-94

DATA SHEET 9.3.2.

STEP	PERFORM/VERIFY	ZONE/MANUAL PULL STATION <i>35</i>								
		31-2	32-2	33-2-1	35-14	37-17 <i>ECU-8-631-30</i>	38-1	41-14	42-1	43-1
9.3.2.1	Trip MS	OK	OK	OK	OK	OK	OK	OK	OK	OK
9.3.2.2	Zone and system LEDs are ON	OK	OK	OK	OK	OK	OK	OK	OK	OK
9.3.2.3	Message received	NA	OK	OK	OK	OK	OK	OK	OK	OK
9.3.2.4	Verify alarm	OK	OK	OK	OK	OK	OK	OK	OK	OK
9.3.2.5	Reset MS and FCP	OK	OK	OK	OK	OK	OK	OK	OK	OK

12-14-94

1-20-95

*Denotes zone number

4 FLOW SWITCHES: This test will verify the operation of the flow switches.

9.4.1 Flow Alarm Pressure Switch (Wet-Pipe Sprinkler System)

Record the following steps for the switches shown on Data Sheet 9.4.1.

NOTE: May be done in conjunction with Section 15.4.

- 9.4.1.1 Open Inspector's test valve quickly and completely.
- 9.4.1.2 Verify water is flowing immediately at Inspector's test valve.
- 9.4.1.3 Record elapsed time to system panel, signaling devices _____
(90 seconds max)
- 9.4.1.4 Verify FCP system, MFCP, FCP, and ME Zone ____*____ alarm LEDs are ON.
- 9.4.1.5 Close Inspector's test valve.
- 9.4.1.6 Verify RFAR "Zone *M Fire" message for Box 2780/2781 received at 200 Area Fire Station.
- 9.4.1.7 Verify alarm in Power Control Room.
- 9.4.1.8 Reset FCP.
- 9.4.1.9 Verify FCP system, MFCP, FCP, and ME zone alarm LEDs are OFF.

DATA SHEET 9.4.1			
STEP	PERFORM/VERIFY	Zone/Flow Alarm Pressure Switch	
		37-1	48-1
9.4.1.1	Open test valve	00W	00W
9.4.1.2	Water flow	00W	00W
9.4.1.3	Record time	28 sec	35 sec
9.4.1.4	LEDs are ON	00W	00W
9.4.1.5	Close test valve	00W	00W
9.4.1.6	Message received	00W	00W
9.4.1.7	Verify alarm	00W	00W
9.4.1.8	Reset FCP	00W	00W
9.4.1.9	LEDs are OFF	00W	00W

1-3-94

* Denotes zone number

SMOKE DETECTORS: This test will verify the operation of the smoke detectors.

Record the following steps for detectors shown on Data Sheet 9.5.

- 9.5.1 Activate detector with approved aerosol smoke source.
- 9.5.2 Verify FCP system and FCP, MFCP, and ME zone alarm LEDs are ON.
- 9.5.3 Verify detector base LED is ON.
- 9.5.4 Verify "RFAR "Zone * M Fire - Box 2780/2781" message received at 200 Area Fire Station.
- 9.5.5 Verify alarm in Power Control Room.
- 9.5.6 Clear detector and reset FCP.
- 9.5.7 Verify FCP system, FCP, MFCP, and ME alarm LEDs are OFF.
- 9.5.8 Verify detector base LED is OFF.

DATA SHEET 9.5

STEP	PERFORM/VERIFY	SMOKE DETECTORS		
		27-1A	27-1B	27-1C
9.5.1	Activate detector	oow	oow	oow
9.5.2	Alarm LEDs are ON	oow	oow	oow
9.5.3	Detector base LED is ON	oow	oow	oow
9.5.4	Message received	oow	NA	NA
9.5.5	Verify alarm	oow	oow	oow
9.5.6	Clear detector. Reset FCP.	oow	oow	oow
9.5.7	Alarm LEDs are OFF	oow	oow	oow
9.5.8	Detector base LED is OFF	oow	oow	oow

12-13-94

*Denotes zone number

6 FLOW SWITCHES: This test will verify the operation of the flow switches.

9.6.1 Flow Switches (Vane type)

Record the following steps for the switches shown on Data Sheet 9.6.1.

- 9.6.1.1 Open Inspector's test valve quickly and completely.
- 9.6.1.2 Verify water is flowing at inspection test valve.
- 9.6.1.3 Verify FCP system, MFCP, FCP, and ME zone alarm LEDs are ON.
- 9.6.1.4 Verify alarm in Power Control Room.
- 9.6.1.5 Close Inspector's test valve.
- 9.6.1.6 Verify RFAR "Zone *M Fire" message for Box 2780/2781 received at 200 Area Fire Station.
- 9.6.1.7 Reset FCP.
- 9.6.1.8 Verify FCP system, MFCP, FCP, and ME zone alarm LEDs are OFF.

DATA SHEET 9.6.1						
STEP	PERFORM/VERIFY	Zone/Flow Switch				
		26-1	27-2	28-3	32-4	per ECM-5431-30
9.6.1.1	Open test valve	000	000	000	/	
9.6.1.2	Water flow	000	000	000		
9.6.1.3	LEDs are ON	000	000	000		
9.6.1.4	Verify alarm	000	000	000		
9.6.1.5	Close test valve	000	000	000		
9.6.1.6	Message received	000	000	000		
9.6.1.7	Reset FCP	000	000	000		
9.6.1.8	LEDs are OFF	000	000	000		

17 Sec 8 Sec 7 Sec
12-22-94

*Denotes zone number

BATTERY DRAW DOWN AND POWER TRANSFER: This test will verify battery load and system recharge capability. This test will verify automatic transfer to battery upon ac power interruption and restoration upon return to normal.

- 12-22-94 9.7.1 At Alarm Gong Relay and Bypass Enclosure, switch Gong Bypass Switch to NORMAL.
- 12-22-94 9.7.2 Verify FCP system trouble LEDs are OFF.
- 12-22-94 9.7.3 Disconnect 1 battery lead. Verify battery trouble LED is ON.
- 12-22-94 9.7.4 Connect ammeter in battery/panel circuit. Reconnect battery to panel. Verify battery trouble LED is OFF.
- 12-22-94 9.7.5 At Power Panel E, open Breaker 13 to interrupt ac power to FCP.
- 12-22-94 9.7.6 Verify ac power trouble indication. Do not silence trouble buzzer.
- 12-22-94 9.7.7 Verify "Local Panel Trouble" message for Box 2780/2781 received at 200 Area Fire Station.
Place gong/door bypass switches to BY Pass, Added per ECN-B-631-30
- 12-22-94 9.7.8 Record battery supervisory current. (Is) = .36 A.
- 12-22-94 9.7.9 Put the system into alarm by placing a momentary short between zone terminals.
- 12-20-95 9.7.10 Verify ~~building alarm signaling appliances OPERATE~~ until alarm message acknowledged at Fire Station. *Revised per ECN-B-631-30*
- 12-22-94 9.7.11 Verify alarm message received at 200 Area Fire Station.
- 12-22-94 9.7.12 Record battery alarm current. (Ia) = .39 A.
- 10-30 9.7.13 ~~Silence alarm gongs and trouble buzzer.~~ *Deleted per ECN-B-631-30*
- 12-22-94 9.7.14 Close and secure Breaker 13.
- 12-22-94 9.7.15 Remove ammeter from battery circuit, reconnect battery to panel.
- 12-22-94 9.7.16 Reset the manual pull station (if used).
- 12-22-94 9.7.17 Reset FCP.
- 10-30 9.7.18 ~~At Alarm Gong Relay and Bypass Enclosure, switch Security Door Interlock switch to NORMAL.~~ *Deleted per ECN-B-631-30*
- 12-22-94 9.7.19 Verify FCP is in NORMAL condition. All LEDs are OFF.

9.7.20 Battery Calculation: Using the test results obtained in Steps 9.7.8 and 9.7.12, calculate the battery requirement using the following formula:

$$(H_s \times I_s) + (H_a \times I_a) = \text{Battery requirement in ampere hours}$$

H_s = hours of standby (60)

H_a = hours of alarm (.083)

I_s = standby current in amperes

I_a = alarm current in amperes

~~20122949~~ 9.7.20.1 Calculated requirement

$$(60 \times \underline{.36}) + (.083 \times \underline{.39}) = \underline{21.63} \text{ Ah}$$

~~20122949~~ 9.7.21 Record the nameplate ampere hour rating of the batteries.
33 Ah.

~~20122949~~ 9.7.22 Verify the battery requirement calculated is less than the nameplate rating of the batteries.

END OF SECTION 9

FIRE ALARM SYSTEM TEST FOR FCP 1416

1 PREPARATION

- 012095 10.1.1 All prerequisites of Para 7.1 have been met.
- 0127694 10.1.2 Request the Hanford Fire Department dispatcher bypass all signals from Box 2780/2781 and acknowledge all supervisory and alarm signals received at 200 Area Fire Station.
- 0127694 10.1.3 Install RFAR door tamper switch override device.
- 0127694 10.1.4 Verify FCP door is lockable and keyed with Cat 60 set key only.
- 0127694 10.1.5 Have Operations announce to personnel in building that a fire alarm test is in progress; evacuation is not required.
- 10.1.6 Gong/Door Bypass
- NOTE: NOTIFY SECURITY OF THIS STEP.
- 0127694 10.1.6.1 At Fire Alarm Gong Relay and Bypass Enclosure (FCP500-GONG) switch security door interlock bypass switch and gong silence switch to "BYPASS."
- 0127694 10.1.6.2 Verify FCP system trouble LEDs are ON.
- 0127694 10.1.6.3 Verify "LOCAL PANEL" trouble message for box 2780/2781 received at 200 Area Fire Station.
- 0127694 10.1.6.4 Trip Manual Pull Station 1-1 in Building 234-5Z.
- 0127694 10.1.6.5 Verify audible devices are not sounding and security doors do not unlock.
- 0127694 10.1.6.6 Reset manual pull station and FCP.

10.2.1 FCP Zone, Circuit Supervision

Record the following steps for the zones shown on Data Sheet 10.2.1.

- 10.2.1.1 At FCP-1416-1, move zone switch to OFF.
- 10.2.1.2 Verify FCP-1416-1 zone trouble LEDS are ON.
- 10.2.1.3 Move zone switch to ON.
- 10.2.1.4 Verify FCP-1416-1 zone trouble LEDS are OFF.

DATA SHEET 10.2.1								
STEP	PERFORM/VERIFY	ZONE						
		49	50	51	52	53	54	55
10.2.1.1	Move zone switch to OFF							
10.2.1.2	Zone trouble LEDS are ON							
10.2.1.3	Move zone switch to ON							
10.2.1.4	Zone trouble LEDS are OFF							

12-6-94

DATA SHEET 10.2.1								
STEP	PERFORM/VERIFY	ZONE						
		56	57	58	59	60	61	62
10.2.1.1	Move zone switch to OFF							
10.2.1.2	Zone trouble LEDS are ON							
10.2.1.3	Move zone switch to ON							
10.2.1.4	Zone trouble LEDS are OFF							

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DATA SHEET 10.2.1								
STEP	PERFORM/VERIFY	ZONE						
		63						
10.2.1.1	Move zone switch to OFF							
10.2.1.2	Zone trouble LEDS are ON							
10.2.1.3	Move zone switch to ON							
10.2.1.4	Zone trouble LEDS are OFF							

12-6-94

ALARM FUNCTION: This test will verify initiation circuit alarm and supervisory function.

NOTE: Signalling devices may be silenced after alarm message received at 200 Area Fire Station.

10.3.1 Heat Detectors

Record the following steps for detectors shown on Data Sheet 10.3.1.

10.3.1.1 Activate detector with a heating appliance.

10.3.1.2 Verify RFAR "Zone *M Fire" Box 2780/2781 message received at 200 Area Fire Station.

10.3.1.3 Verify alarm in Power Control Room.

10.3.1.4 Remove heat source and allow detector to cool.

10.3.1.5 Reset FCP.

10.3.1.6 Verify FCP system, FCP, ME, and MFCP zone alarm LEDs are OFF.

DATA SHEET 10.3.1								
STEP	PERFORM/VERIFY	ZONE/HEAT DETECTORS						
		49-6	49-7	49-8	49-9	49-10	49-11	50-1
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	OK	NA	NA	N/A	NA	NA	OK
10.3.1.3	Verify alarm	OK	NA	NA	NA	NA	NA	OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

Revised per ECU-B-631-30
12-6-94

*Denotes zone number

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECU-B-63130</i>	ZONE/HEAT DETECTORS <i>ECU-B-63130</i>						
		51-1	51-2	51-3	51-4	51-5	51-6	52-1
10.3.1.1	Activate detector	OK	OK	OK	OK	OK		OK
10.3.1.2	Verify message received	OK	NA	NA	NA	NA		OK
10.3.1.3	Verify alarm	OK	NA	NA	NA	NA	NA	OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK		OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK		OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK		OK

12-21-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECU-B-63130</i>	ZONE/HEAT DETECTORS						
		52-2	52-3	52-4	52-5	53-1	53-2	53-3
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	NA	OK	NA	NA
10.3.1.3	Verify alarm	NA	NA	NA	NA	OK	NA	NA
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-8-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECU-B-63130</i>	ZONE/HEAT DETECTORS <i>ECU-B-63130</i>						
		53-4	53-5	54-1	54-2	54-3	54-4	54-5
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	
10.3.1.2	Verify message received	NA	NA	OK	NA	NA	NA	
10.3.1.3	Verify alarm	NA	NA	OK	NA	NA	NA	NA
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	

12-21-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-0-63130</i>	ZONE/HEAT DETECTORS						
		54-6	54-7	54-8	54-9	54-10	55-40	55-41
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	NA	NA	OK	NA
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	NA OK	NA OK	OK	NA OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-21-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-0-63130</i>	ZONE/HEAT DETECTORS						
		55-42	55-43	55-44	56-2	56-3	56-4	56-5
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	OK	NA	NA	NA
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	OK	NA OK	NA OK	NA OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-7-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-0-63130</i>	ZONE/HEAT DETECTORS						
		56-6	56-7	56-8	56-9	56-10	56-11	57-1
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	NA	NA	NA	OK
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	NA OK	NA OK	NA OK	OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-8-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-B-63130</i>	ZONE/HEAT DETECTORS						
		57-2	57-3	57-4	57-5	57-6	57-7	58-2
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	NA	NA	NA	OK
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	NA OK	NA OK	NA OK	OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-16-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-B-63130</i>	ZONE/HEAT DETECTORS						
		58-3	58-4	58-5	58-6	60-1	61-1	63-1
10.3.1.1	Activate detector	OK	OK	OK	OK	OK	OK	OK
10.3.1.2	Verify message received	NA	NA	NA	NA	OK	OK	OK
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	NA OK	OK	OK	OK
10.3.1.4	Allow detector to cool	OK	OK	OK	OK	OK	OK	OK
10.3.1.5	Reset FCP	OK	OK	OK	OK	OK	OK	OK
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK	OK	OK	OK

12-19-94

DATA SHEET 10.3.1

STEP	PERFORM/VERIFY <i>Revised per ECN-B-63130</i>	ZONE/HEAT DETECTORS						
		63-2	63-3	63-4	63-5			
10.3.1.1	Activate detector	OK	OK	OK	OK			
10.3.1.2	Verify message received	NA	NA	NA	NA			
10.3.1.3	Verify alarm	NA OK	NA OK	NA OK	NA OK			
10.3.1.4	Allow detector to cool	OK	OK	OK	OK			
10.3.1.5	Reset FCP	OK	OK	OK	OK			
10.3.1.6	Alarm LEDs are OFF	OK	OK	OK	OK			

12-19-94

10.3.2 Manual Pull Stations

Record the following steps for manual pull stations shown on Data Sheet 10.3.2.

10.3.2.1 Trip MS.

10.3.2.2 Verify MFCP, ME and FCP zone and FCP system alarm LEDs are ON.

10.3.2.3 Verify alarm in Power Control Room.

10.3.2.4 Verify RFAR "Zone *M Fire - Box 2780/2781" message received at 200 Area Fire Station.

10.3.2.5 Reset MS and FCP. Verify clear of alarm.

DATA SHEET 10.3.2

STEP	PERFORM/VERIFY	ZONE/MANUAL PULL STATION							
		49-1	55-2	55-14	55-29	56-1	58-1	59-1	59-2
10.3.2.1	Trip MS	OK	OK	OK	OK	OK	OK	OK	OK
10.3.2.2	Zone and system LEDs are ON	OK	OK	OK	OK	OK	OK	OK	OK
10.3.2.3	Verify alarm	OK	OK	OK	OK	OK	OK	OK	OK
10.3.2.4	Message received	OK	OK	NA	NA	OK	OK	OK	NA
10.3.2.5	Reset MS and FCP	OK	OK	OK	OK	OK	OK	OK	OK

12-14-94

*Denotes zone number

10.4 FLOW SWITCHES: This test will verify the operation of the flow switches.

10.4.1 Flow Alarm Pressure Switch (Wet-Pipe Sprinkler System)

Record the following steps for the switches shown on Data Sheet 10.4.1.

NOTE: May be done in conjunction with Section 15.4.

10.4.1.1 Open Inspector's test valve quickly and completely.

10.4.1.2 Verify water is flowing immediately at Inspector's test valve.

10.4.1.3 Verify alarm in Power Control Room.

10.4.1.4 Record elapsed time to system panel, signaling devices _____
(90 seconds max)

10.4.1.5 Verify FCP system, MFCP, FCP, and ME Zone ____*____ alarm LEDs are ON.

10.4.1.6 Close Inspector's test valve.

10.4.1.7 Verify RFAR "Zone *M Fire" message for Box 2780/2781 received at
200 Area Fire Station.

10.4.1.8 Reset FCP.

10.4.1.9 Verify FCP system, MFCP, FCP, and ME zone alarm LEDs are OFF.

DATA SHEET 10.4.1

STEP	PERFORM/VERIFY	Zone/Flow Alarm Pressure Switch					
		59-1	62-1				
10.4.1.1	Open test valve	00W	00W				
10.4.1.2	Water flow	00W	00W				
10.4.1.3	Verify alarm	00W	00W				
10.4.1.4	Record time	50.5sec	25.3sec				
10.4.1.5	LEDs are ON	00W	00W				
10.4.1.6	Close test valve	00W	00W				
10.4.1.7	Message received	00W	00W				
10.4.1.8	Reset FCP	00W	00W				
10.4.1.9	LEDs are OFF	00W	00W				

1-3-94

* Denotes zone number

.5 BATTERY DRAW DOWN AND POWER TRANSFER: This test will verify battery load and system recharge capability. This test will verify automatic transfer to battery upon ac power interruption and restoration upon return to normal.

- W1221-94 10.5.1 At Alarm Gong Relay and Bypass Enclosure, switch Gong Bypass Switch to NORMAL.
- W1221-94 10.5.2 Verify FCP system trouble LEDs are OFF.
- W1221-94 10.5.3 Disconnect 1 battery lead. Verify battery trouble LED is ON.
- W1221-94 10.5.4 Connect ammeter in battery/panel circuit. Reconnect battery to panel. Verify battery trouble LED is OFF.
- W1221-94 10.5.5 At Power Panel EA, open Breaker 22 to interrupt ac power to FCP.
- W1221-94 10.5.6 Verify ac power trouble indication. Do not silence trouble buzzer.
- W1221-94 10.5.7 Verify "Local Panel Trouble" message for Box 2780/2781 received at 200 Area Fire Station.
- W120-95 10.5.7a ~~Place gong/door bypass switches to BYPASS. Added per ECN.~~
- W1221-94 10.5.8 Record battery supervisory current. (Is) = .341 A.
- W1221-94 10.5.9 Put the system into alarm by placing a momentary short between zone terminals.
- W120-95 10.5.10 Verify ~~building alarm signaling appliances OPERATE until~~ alarm message acknowledged at Fire Station. ~~Revised per ECN.~~
- W1221-94 10.5.11 Verify alarm message received at 200 Area Fire Station.
- W1221-94 10.5.12 Record battery alarm current. (Ia) = .351 A.
- W120-30 10.5.13 ~~Silence alarm gongs and trouble buzzer. Deleted per ECN~~
- W1221-94 10.5.14 Close and secure Breaker 22.
- W1221-94 10.5.15 Remove ammeter from battery circuit, reconnect battery to panel.
- W1221-94 10.5.16 Reset the manual pull station (if used).
- W1221-94 10.5.17 Reset FCP.
- W120-30 10.5.18 ~~At Alarm Gong Relay and Bypass Enclosure, switch Security Door Interlock switch to NORMAL. Deleted per ECN.~~
- W1221-94 10.5.19 Verify FCP is in NORMAL condition. All LEDs are OFF.

10.5.20 Battery Calculation: Using the test results obtained in Steps 10.5.8 and 10.5.12, calculate the battery requirement using the following formula:

$$(H_s \times I_s) + (H_a \times I_a) = \text{Battery requirement in ampere.hours}$$

H_s = hours of standby (60)

H_a = hours of alarm (.083)

I_s = standby current in amperes

I_a = alarm current in amperes

~~0122194~~ 10.5.20.1 Calculated requirement

$$(60 \times \underline{.341}) + (.083 \times \underline{.351}) = \underline{20.5} \text{ Ah}$$

~~0122194~~ 10.5.21 Record the nameplate ampere hour rating of the batteries.
25 Ah.

~~0122194~~ 10.5.22 Verify the battery requirement calculated is less than the nameplate rating of the batteries.

END OF SECTION 10

GROUND FAULT DETECTION TEST: This test will verify that each Control Panel has ground fault detection capability.

1 Record the following steps for each control panel shown on Data Sheet 11.1.

11.1.1 At Flex 300 FCP, momentarily short Terminal S(+) to ground using a 10k resistor.

11.1.2 At System 3 FCP, momentarily short PS-35, Terminal 5 to ground.

11.1.3 Verify System Ground Fault Detection LED is ON, momentarily.

DATA SHEET 11.1

STEP	PERFORM/VERIFY	INPUT DEVICE				
		FCP-1412-1	FCP-1415-1	FCP-1416-1	AFCP-AGCC-2	AFCP-AGCC-3
11.1.1	Short Terminal S(+) to ground	000	000	000	NA	NA
11.1.2	Short Terminal 5 to ground	NA	NA	NA	000	000
11.1.3	System ground fault detection LED is ON momentarily	000	000	000	000	000

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DATA SHEET 11.1

STEP	PERFORM/VERIFY	INPUT DEVICE				
		FCP-1415-236Z-B	SUPV-ENCL-1			
11.1.1	Short Terminal S(+) to ground	NA	NA			
11.1.2	Short Terminal 5 to ground	000	000			
11.1.3	System ground fault detection LED is ON momentarily	000	000			

1-3-94

MASTER ELEMENT TEST: This test will verify the operation of the master element.

1 Master Element Supervision: Record the following steps for the items shown on Data Sheet 12.1.

12.1.1 Disconnect a wire from Terminal 4a of indicated Master Element.

12.1.2 Verify FCP system and zone trouble LEDs are ON.

12.1.3 Reconnect the wire disconnected in Step 12.1.1.

12.1.4 Reset FCP.

12.1.5 Verify FCP system and zone trouble LEDs are OFF.

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		1-1	1-2	1-3	1-4	1-5	1-6	1-7
12.1.1	Disconnect wire	oow	oow	oow	oow	oow	oow	oow
12.1.2	Trouble LEDs are ON	oow	oow	oow	oow	oow	oow	oow
12.1.3	Reconnect wire	oow	oow	oow	oow	oow	oow	oow
12.1.4	Reset FCP	oow	oow	oow	oow	oow	oow	oow
12.1.5	Trouble LEDs are OFF	oow	oow	oow	oow	oow	oow	oow

12-14-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		1-8	1-9	1-10	1-11	1-12	1-13	1-14
12.1.1	Disconnect wire	oow	oow	oow	oow	oow	oow	oow
12.1.2	Trouble LEDs are ON	oow	oow	oow	oow	oow	oow	oow
12.1.3	Reconnect wire	oow	oow	oow	oow	oow	oow	oow
12.1.4	Reset FCP	oow	oow	oow	oow	oow	oow	oow
12.1.5	Trouble LEDs are OFF	oow	oow	oow	oow	oow	oow	oow

12-14-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		1-15	1-16	1-17	1-18	1-19	1-20	1-21
12.1.1	Disconnect wire	000	000	000	000	000	000	000
12.1.2	Trouble LEDs are ON	000	000	000	000	000	000	000
12.1.3	Reconnect wire	000	000	000	000	000	000	000
12.1.4	Reset FCP	000	000	000	000	000	000	000
12.1.5	Trouble LEDs are OFF	000	000	000	000	000	000	000

12-14-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS							
		1-22	1-23	2-1	2-2	2-3	2-4	2-5	2-6
12.1.1	Disconnect wire	000	000	000	000	000	000	000	000
12.1.2	Trouble LEDs are ON	000	000	000	000	000	000	000	000
12.1.3	Reconnect wire	000	000	000	000	000	000	000	000
12.1.4	Reset FCP	000	000	000	000	000	000	000	000
12.1.5	Trouble LEDs are OFF	000	000	000	000	000	000	000	000

12-16-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		2-7	2-8	2-9	2-10	2-11	2-12	2-13
12.1.1	Disconnect wire	000	000	000	000	000	000	000
12.1.2	Trouble LEDs are ON	000	000	000	000	000	000	000
12.1.3	Reconnect wire	000	000	000	000	000	000	000
12.1.4	Reset FCP	000	000	000	000	000	000	000
12.1.5	Trouble LEDs are OFF	000	000	000	000	000	000	000

12-16-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		2-14	2-15	2-16	2-17	2-18	2-19	2-20
12.1.1	Disconnect wire							
12.1.2	Trouble LEDs are ON							
12.1.3	Reconnect wire							
12.1.4	Reset FCP							
12.1.5	Trouble LEDs are OFF							

12-16-94

DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS											
		1-21	2-22	2-23	2-24	2-25	2-26	2-27	2-28	2-29	2-30	2-31	2-32
12.1.1	Disconnect wire												
12.1.2	Trouble LEDs are ON												
12.1.3	Reconnect wire												
12.1.4	Reset FCP												
12.1.5	Trouble LEDs are OFF												

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DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		3-1	3-2	3-3	3-4	3-5	3-6	3-7
12.1.1	Disconnect wire							
12.1.2	Trouble LEDs are ON							
12.1.3	Reconnect wire							
12.1.4	Reset FCP							
12.1.5	Trouble LEDs are OFF							

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DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS						
		3-8	3-9	3-10	3-11	3-12	3-13	3-14
12.1.1	Disconnect wire							
12.1.2	Trouble LEDs are ON							
12.1.3	Reconnect wire							
12.1.4	Reset FCP							
12.1.5	Trouble LEDs are OFF							

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DATA SHEET 12.1

STEP	PERFORM/VERIFY	MASTER ELEMENTS									
		3-15	3-16	3-17	3-18	3-19	3-20	3-21	4-1	4-2	4-3
12.1.1	Disconnect wire										
12.1.2	Trouble LEDs are ON										
12.1.3	Reconnect wire										
12.1.4	Reset FCP										
12.1.5	Trouble LEDs are OFF										

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SALT LOOP PANEL ALARM TEST: This test will verify the Salt Loop Controllers alarm functions.

1

Record the following steps for each controller shown on Data Sheet 13.1.

13.1.1 Activate the zone on the indicated controller by placing a momentary jumper between Sig and GND.

13.1.2 Verify controller, ME and FCP systems and zone alarm LEDs are ON.

13.1.3 Verify FCP system alarm LED is ON.

13.1.4 Verify RFAR "Zone *M Fire" message for Box 2780/2781 received at 200 Area Fire Station.

13.1.5 Verify alarm in Power Control Room.

13.1.6 Reset FCP.

13.1.7 Verify controller, ME FCP system and zone alarm LEDs are OFF.

DATA SHEET 13.1					
STEP	PERFORM/VERIFY	SALT-LOOP CONTROLLERS			
		17-1	19-1	19-2	19-3
13.1.1	Activate zone	ON	ON	ON	NA
13.1.2	Alarm LEDs are ON	ON	ON	ON	NA
13.1.3	FCP alarm LED is ON	ON	ON	ON	NA
13.1.4	Message received	ON	ON	ON	NA
13.1.5	Verify alarm	ON	ON	ON	NA
13.1.6	Reset FCP	ON	ON	ON	NA
13.1.7	Alarm LEDs are OFF	ON	ON	ON	NA

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SALT LOOP PANEL ZONE SUPERVISION:

Record the following steps for the items shown on Data Sheet 14.1.

- 14.1.1 At Salt Loop Controller, lift a wire at Sig terminal for the indicated zone.
- 14.1.2 Verify controller, ^{SCP}~~FCP~~ system, and zone circuit trouble LEDs are ON.
ECN-631-30
- 14.1.3 Reland wire lifted in Step 14.1.1.
- 14.1.4 Reset FCP.
- 14.1.5 Verify controller, ^{SCP}~~FCP~~ system, and zone trouble LEDs are OFF.
ECN-631-30

DATA SHEET 14.1					
STEP	PERFORM/VERIFY	ZONE/CONTROLLER			
		17-1	19-1	19-2	19-3
14.1.1	Lift wire	000	000	000	NA
14.1.2	Trouble LEDs are ON	000	000	000	NA
14.1.3	Reland wire	000	000	000	NA
14.1.4	Reset FCP	000	000	000	NA
14.1.5	Trouble LEDs are OFF	000	000	000	NA

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SUPERVISORY SYSTEM TEST

.1 FCP/RFAR INTERFACE

- ~~W12-2094~~ 15.1.1 Lift 1 wire from zone Module 2A Term 2 on SCP.
- ~~W12-2094~~ 15.1.2 Verify "LOCAL PANEL" trouble message for Box 2780/2781 received at 200 Area Fire Station.
- ~~W12-2094~~ 15.1.3 Reconnect wire lifted in Step 15.1.1.
- ~~W12-2094~~ 15.1.4 Reset SCP.
- ~~W12-2094~~ 15.1.5 Verify RFAR zone trouble LEDs are OFF.

SUPERVISORY PANEL

Record the following steps for the switches shown on Data Sheet 15.2.

15.2.1 Lift 1 wire from each zone.

15.2.2 Verify SCP system and SCP zone trouble LEDs are ON.

15.2.3 Reconnect wire lifted in Step 15.2.1.

15.2.4 Reset SCP.

15.2.5 Verify SCP system and SCP zone trouble LEDs are OFF.

DATA SHEET 15.2						
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH				
		OS&Y TS 100-1	PS 101-1	PS 102-1	PIVTS 103-1	PS 104-1
15.2.1	Wire lifted	ON	ON	ON	ON	ON
15.2.2	Trouble LEDs are ON	ON	ON	ON	ON	ON
15.2.3	Reconnect wire	ON	ON	ON	ON	ON
15.2.4	Reset SCP	ON	ON	ON	ON	ON
15.2.5	Trouble LEDs are OFF	ON	ON	ON	ON	ON

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DATA SHEET 15.2						
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH				
		PIVTS 105-1	PS 106-1	OS&Y TS 107-1	PS 108-1	PIVTS 109-1
15.2.1	Wire lifted	ON	ON	ON	ON	ON
15.2.2	Trouble LEDs are ON	ON	ON	ON	ON	ON
15.2.3	Reconnect wire	ON	ON	ON	ON	ON
15.2.4	Reset SCP	ON	ON	ON	ON	ON
15.2.5	Trouble LEDs are OFF	ON	ON	ON	ON	ON

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DATA SHEET 15.2						
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH				
		PS 110-1	PIVTS 111-1	OS&Y TS 112-1	PS 113-1	PIVTS 114-1
15.2.1	Wire lifted	ON	ON	ON	ON	ON
15.2.2	Trouble LEDs are ON	ON	ON	ON	ON	ON
15.2.3	Reconnect wire	ON	ON	ON	ON	ON
15.2.4	Reset SCP	ON	ON	ON	ON	ON
15.2.5	Trouble LEDs are OFF	ON	ON	ON	ON	ON

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DATA SHEET 15.2							
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH					
		PS 115-1	PIVTS 116-1	OS&Y TS 117-1	LT 118-1	PIVTS 119-1	PS 120-1
15.2.1	Wire lifted	000	000	000	000	000	000
15.2.2	Trouble LEDs are ON	000	000	000	000	000	000
15.2.3	Reconnect wire	000	000	000	000	000	000
15.2.4	Reset SCP	000	000	000	000	000	000
15.2.5	Trouble LEDs are OFF	000	000	000	000	000	000

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DATA SHEET 15.2							
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH					
		OS&Y TS 121-1	PS 122-1	FCP 123-1	FCP 125-1	FCP 126-1	
15.2.1	Wire lifted	000	000	000	000	000	
15.2.2	Trouble LEDs are ON	000	000	000	000	000	
15.2.3	Reconnect wire	000	000	000	000	000	
15.2.4	Reset SCP	000	000	000	000	000	
15.2.5	Trouble LEDs are OFF	000	000	000	000	000	

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DATA SHEET 15.2							
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH					
		FCP 127-1	FCP 128-1	FCP 129-1	FCP 130-1	FCP 131-1	
15.2.1	Wire lifted	000	000	000	000	000	
15.2.2	Trouble LEDs are ON	000	000	000	000	000	
15.2.3	Reconnect wire	000	000	000	000	000	
15.2.4	Reset SCP	000	000	000	000	000	
15.2.5	Trouble LEDs are OFF	000	000	000	000	000	

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DATA SHEET 15.2							
STEP	PERFORM/VERIFY	ZONE/SUPERVISORY SWITCH					
		FCP 132-1	FCP 133-1				
15.2.1	Wire lifted	000	000				
15.2.2	Trouble LEDs are ON	000	000				
15.2.3	Reconnect wire	000	000				
15.2.4	Reset SCP	000	000				
15.2.5	Trouble LEDs are OFF	000	000				

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TAMPER SWITCHES

Record the following steps for the switches shown on Data Sheet 15.3.

15.3.1 Close valve 2 turns.

15.3.2 Verify SCP system and SCP zone trouble LEDs are ON.

15.3.3 Open valve.

15.3.4 Reset SCP.

15.3.5 Verify SCP system and SCP zone trouble LEDs are OFF.

DATA SHEET 15.3							
STEP	PERFORM/VERIFY	ZONE/POST INDICATOR/OS&Y VALVE TAMPER SWITCH					
		OS&Y 100-1	PIVTS 100-2	PIVTS 103-1	PIVTS 105-1	OS&Y 107-1	PIVTS 107-2
15.3.1	Close valve 2 turns
15.3.2	SCP system and SCP zone trouble LEDs are ON
15.3.3	Open valve
15.3.4	Reset SCP
15.3.5	SCP system and SCP zone trouble LEDs are OFF

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DATA SHEET 15.3								
STEP	PERFORM/VERIFY	ZONE/POST INDICATOR/OS&Y VALVE TAMPER SWITCH						
		PIVTS 109-1	PIVTS 111-1	OS&Y 112-1	PIVTS 114-1	PIVTS 116-1	OS&Y 117-1	PIVTS 119-1
15.3.1	Close valve 2 turns
15.3.2	SCP system and SCP zone trouble LEDs are ON
15.3.3	Open valve
15.3.4	Reset SCP
15.3.5	SCP system and SCP zone trouble LEDs are OFF

1-3-95

DATA SHEET 15.3

STEP	PERFORM/VERIFY	ZONE/POST INDICATOR/OS&Y VALVE TAMPER SWITCH					
		OS&Y 121-1	OS&Y 121-2	PIVTS 121-3			
15.3.1	Close valve 2 turns	oow	oow	oow			
15.3.2	SCP system and SCP zone trouble LEDs are ON	oow	oow	oow			
15.3.3	Open valve	oow	oow	oow			
15.3.4	Reset SCP	oow	oow	oow			
15.3.5	SCP system and SCP zone trouble LEDs are OFF	oow	oow	oow			

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LOW PRESSURE SWITCHES

Record the following steps for the switches shown on Data Sheet 15.4.

- 15.4.1 Isolate air or water to system.
- 15.4.2 Activate zone by placing a jumper across zone terminals.
- 15.4.3 Verify SCP system and SCP zone supervisory LEDs are ON.
- 15.4.4 Restore air or water to system.
- 15.4.5 Reset SCP.
- 15.4.6 Verify SCP system and SCP zone Supervisory LEDs are OFF.

DATA SHEET 15.4

STEP	PERFORM/VERIFY	ZONE/LOW PRESSURE SWITCHES						
		101-1	102-1	104-1	106-1	108-1	110-1	113-1
.4.1	Isolate air or water to system							
.4.2	Activate zone							
.4.3	Supervisory LEDs are ON							
.4.4	Restore air or water to system							
.4.5	Reset SCP							
.4.6	SCP system and SCP zone Supervisory LEDs are OFF							

12-22-94

DATA SHEET 15.4

STEP	PERFORM/VERIFY	ZONE/LOW PRESSURE SWITCHES						
		115-1	120-1	122-1				
5.4.1	Isolate air or water to system							
5.4.2	Activate zone							
5.4.3	Supervisory LEDs are ON							
5.4.4	Restore air or water to system							
5.4.5	Reset SCP							
5.4.6	Supervisory LEDs are OFF							

12-22-94

This test will verify a Supervisory condition when low temperature occurs.

- ~~12-16-94~~ 15.5.1 Activate Low Temperature Switch by placing ice (or using other approved method) around Switch 118-1.
- ~~12-16-94~~ 15.5.2 Verify SCP system and SCP Zone 118 Supervisory LEDs are ON.
- ~~12-16-94~~ 15.5.3 Remove ice (or other) and allow switch to return to normal temperature.
- ~~12-16-94~~ 15.5.4 Reset SCP.
- ~~12-16-94~~ 15.5.5 Verify SCP system and SCP zone Supervisory LEDs are OFF.

END OF SECTION 15

BATTERY DRAW DOWN AND POWER TRANSFER: This test will verify battery load and system recharge capability. This test will verify automatic transfer to battery upon ac power interruption and restoration upon return to normal.

- ~~112229416.1~~ Verify SCP system trouble LEDs are OFF.
~~112229416.1a~~ Place gong/door bypass switches to NORMAL. Added per ECU-B-631-30
~~112229416.2~~ Disconnect 1 battery lead. Verify battery trouble LED is ON.
- ~~112229416.3~~ Connect ammeter in battery/panel circuit. Reconnect battery to panel. Verify battery trouble LED is OFF.
- ~~112229416.4~~ At Power Panel EP-1, open Breaker 13 to interrupt ac power to SCP.
ECU-B-631-30
- ~~112229416.5~~ Verify ac power trouble indication. Do not silence trouble buzzer.
- ~~112229416.6~~ Verify "Local Panel Trouble" message for Box 2780/2781 received at 200 Area Fire Station.
~~112229416.6a~~ Place gong/door bypass switches to BYPASS, Added per ECU-B-631-30
- ~~112229416.7~~ Record battery supervisory current. (Is) = .40 A.
- ~~112229416.8~~ Put the system into alarm by placing a momentary short between zone terminals.
- ~~112229416.9~~ Verify ~~trouble~~ ^{alarm} message received at 200 Area Fire Station.
ECU.
- ~~112229416.10~~ Record battery alarm current. (Ia) = .50 A.
- ~~112229416.11~~ ~~Silence trouble buzzer.~~ Deleted per ECU-B-631-30
- ~~112229416.12~~ Close and secure Breaker 13.
- ~~112229416.13~~ Remove ammeter from battery circuit, reconnect battery to panel.
- ~~112229416.14~~ Reset the manual pull station (if used).
- ~~112229416.15~~ Reset SCP.
- ~~112229416.16~~ ~~At Alarm Gong Relay and Bypass Enclosure, switch Security Door Interlock and gong bypass switches to NORMAL.~~ Deleted per ECU-B-631-30
- ~~112229416.17~~ Verify SCP is in NORMAL condition. All LEDs are OFF.

16.18

Using the test results obtained in Steps 16.7 and 16.17, calculate the battery requirement using the following formula:

$$(H_s \times I_s) + (H_a \times I_a) = \text{Battery requirement in ampere hours}$$

H_s = hours of standby (60)

H_a = hours of alarm (.083)

I_s = standby current in amperes

I_a = alarm current in amperes

~~12-22-94~~ 16.18.1

Calculated requirement

$$(60 \times \underline{.40}) + (.083 \times \underline{.50}) = \underline{24.04} \text{ Ah}$$

~~12-22-94~~ 16.19

Record the nameplate ampere hour rating of the batteries.

17.2 Ah.

~~12-22-94~~

~~Sept 1~~ 16.20

Verify the battery requirement calculated is less than the nameplate rating of the batteries.

END OF SECTION 16

EXCEPTION NO. 1		Project No. B-631		ATR No. WHC-SD-631-ATR-006		Rev. 1		
Recorded by Debra O. Wallace			Organization ICF KH		Date Recorded 12-22-94		ATR Page No. 60	
Step No. 16.20		Requirement Verify the battery requirement calculated is less than the nameplate rating of the batteries.						
Description of Problem Calculation is not less than the nameplate rating of the batteries.								
Objector 1 (Name/Organization) Debra O. Wallace ICF KH				Objector 2 (Name/Organization) Huey H. Nguyenhuu WHC				
Planned Action Replace batteries and retest.								
Action Taken Retested steps 16.1-16.20. Step 16.7 Battery Supervisory current recorded - (Is) .39 A. Step 16.10 Battery alarm current recorded (Is) .37 A. Calculated requirement, $(60 \times .39) + (.083 \times .37) = 23.4 \text{ Ah}$.								
RETEST EXECUTION AND ACCEPTANCE								
Retest Installation Contractor Joseph Fennessy		Date 1-17-95		Recorder D.O. Wallace		Date 1-17-95		
Witness 1 (Name/Organization) Dennis J. Byrne		Date 1-17-95		Witness 2 (Name/Organization) M.J. Salazar		Date 1-17-95		
Field Engineering Linda McCulley		Date 1-17-95		Test Director (Name/Organization) Huey H. Nguyenhuu / WHC		Date 1-17-95		
Design Engineering (Author of ATP)		Date		A-E Project Engineer		Date		
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR								
☒ Retest Approved and Accepted ☐ Exception Accepted-as-is* ☐ Other*								
* Explanation 25 AMP-HR BATTERIES HAVE BEEN INSTALLED. CALCULATED REQUIREMENTS MET PER WHC-SD-631-ATP-006 REV.1								
Approver 1 [Signature]		Date 2/2/95		Approver 2		Date		
Approver 3		Date		Approver 4		Date		

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, both to meet NFPA 72 installation testing requirements and to ensure that the ATP proceeds in an efficient manner.

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

SH 12-6-94 1. Verify that all conductors other than those intentionally and permanently grounded have been tested for isolation from ground using a non-destructive insulation testing device such as a VOM.

SH 12-6-94 2. Verify that all conductors have been tested for conductor-to-conductor isolation using a non-destructive insulation testing device such as a VOM.

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

SH 12-6-94 1. Verify that the system is installed and wired in accordance with the installation drawings.

SH 12-6-94 2. Inspect each initiating device and alarm output device and verify that the conductors are properly wired for supervision.

SH 12-6-94 3. Verify that each required end-of-line device is in place.

SH 12-6-94 4. With battery installed and normal power supplied, verify that the FCP is in a NORMAL supervisory condition as defined by the manufacturer's manual.

SH 12-6-94 5. By lifting leads or end-of-line devices, verify that each supervised zone produces proper trouble indication.

SH 12-6-94 6. Verify that each alarm/supervisory initiating device produces proper alarm conditions when activated.

ECN-30 7. ~~Verify that auxiliary functions (eg, HVAC shutdown) operate correctly in accordance with the design.~~

Deleted per
ECN-B-631-30