ANCR-1075

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ANCR-1075

PBF ADMINISTRATIVE CONTROL
OF
CONSTRUCTION COMPONENT TESTS

MASTER

Aerojet Nuclear Company

NATIONAL REACTOR TESTING STATION

Idaho Falls, Idaho — 83401

Date Published - July 1972

PREPARED FOR THE

U. S. ATOMIC ENERGY COMMISSION

IDAHO OPERATIONS OFFICE UNDER CONTRACT AT(10-1)-1375

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AEROJET NUCLEAR COMPANY

Date Published - July 1972

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PBF
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OF
CONSTRUCTION COMPONENT TESTS

APPROVAL PAGE

Written By:

PBF Planning and Documentation

6-14-72
Date

Approved By:

Manager, PBF Special Projects

6/16/72
Date

Approved By:

Manager, P & QA

6/21/73
Date

ABSTRACT

This document presents the mechanisms for the generation and administrative control of construction component tests for PBF. Interface relationship and required approvals are delineated in the text.

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PBF
ADMINISTRATIVE CONTROL
OF
CONSTRUCTION COMPONENT TEST

A. PURPOSE AND SCOPE

The purpose of Construction Component (CC) testing is to provide the Construction Contractor the opportunity to demonstrate that components and subsystems are correctly installed in accordance with approved drawings and specifications and in accordance with vendor instructions, and are ready to operate.

Scope of the tests is to verify that components are correctly installed and that no failure or damage occurred during installation. Functional testing is not normally included although there may be some exceptions.

B. REFERENCES

1. ANCR-1076, PBF System Operation Test Plan (Operation Phase), R. E. Heffner, (to be published).

C. ORGANIZATIONAL RESPONSIBILITIES

Two companies are involved in writing and accomplishing the CC tests. The tests will be conducted by The Construction Contractor to specifications set forth in the test documentations prepared by Aerojet Nuclear Company. Title III inspection will be performed by ANC R&QA unless specifically designated by them to other ANC organizations for level II and level III systems.

The responsibilities of each company and interfacing between companies are described below. Referring to Figure 1:

1. ANC Issues First Draft of Test Specifications
2. ANC Reviews Draft and Redrafts

On completion of the test specification by ANC, the PBF Special Projects Branch distributes the document for review to Design Engineering, Quality Assurance and the Project Engineer, and Shift Operations. The comments are resolved by the Special Projects Branch.

3. ANC Approves Specification

The resolved test specification is approved by ANC Shift Operations Manager, Special Projects Manager, and Reliability and Quality Assurance Representative.

4. Special Projects Issues Test Specification to Title III Representative

PBF Special Projects transmits the CC Test Specification to ANC Title III Representative for preparation of the test data sheets.

5. Title III Representative Issues Test Data Sheets

Title III Representative issues test data sheets to PBF Special Projects for review.

6. Special Projects Reviews and Approves Test Data Sheets

The Test Data Sheets are reviewed and approved by the Cognizant Project Engineer and the Manager, PBF Special Projects.

7. Special Projects Issues Test Data Sheets and Specifications to Construction Contractor, ANC and AEC-ID

8. Construction Contractor Requests CC Test (or Retest)

When the installation of a component is completed, the Construction Contractor will request the CC test by completing form CC-100 "Request for CC Test" and transmitting it to ANC approximately one week prior to the test. A sample of this form is shown in Exhibit A.

9. Title III Inspection and Special Projects Appoint Test Engineers and Inspectors

PBF Special Projects will appoint test engineers and Title III Inspection will appoint inspectors. Special Projects may waive witnessing of test by the test engineer.

10. Conduct CC Test Readiness Review Meeting

ANC will conduct a CC test readiness review meeting as outlined in Exhibit B.

11. Construction Contractor Conducts Test or Retest Under Direction of ANC

The tests will be supervised by the Construction Contractor Test Engineers. The Construction Contractor will be responsible for assuring that all test operation preparations have been made. If temporary utility hookups (electricity, water, air, etc.) are utilized, the tag procedure of Exhibit C is to be followed. Data shall be recorded by the Title III Inspector. Any changes or variances to the CC Test Specification or Test Data Sheets shall be resolved as specified in Exhibit D.

12. Rejected Test: Red Tag & Note Deficiencies

A test is either accepted or rejected. If a test is rejected, the component is red-tagged per Exhibit C and the deficiencies are noted on form C-101, "Exceptions to CC Test" (Exhibit E). These exceptions are defined as deviations from drawings and design specifications.

13. Recommend Method of Correction to ANC Resident Engineer

The Title III Inspector and ANC Test Engineer recommend the method of correction. This is formulated by Title III Inspection and the Cognizant Project Engineer and written by ANC to the ANC Resident Engineer on form C-101.

14. ANC Resident Engineer Directs Construction Contractor to Correct Deficiencies

The ANC Resident Engineer will review the deficiencies for validity and evaluate the recommendations for corrections or repairs. He will then prepare form C-101a, "Deficiency Action Request" (Exhibit F) for transmittal to the Construction Contractor. Retests are made per the CC test specification.

15. Construction Contractor Corrects Deficiencies

The Construction Contractor corrects the deficiencies and requests retest. If the retest is acceptable, the Construction Contractor countersigns form C-101a and forwards to Title III and PBF Special Projects.

16. Acceptable Test: Green Tag

If a test is acceptable, the component is green-tagged per Exhibit C and the completed Test Data Record Sheets are forwarded to ANC Special Projects for approval, accompanied by form C-102 (Exhibit G).

17. ANC Approve Tests

Signatures on form C-102 will indicate formal acceptance of the test by ANC Special Projects will return the approved form C-102 to Title III Inspection for distribution.

18. Title III Inspection Distributes Test Results

Title III Inspection will package the final copy of the approved CC Test Specification, the approved Test Data Record Sheets, Exceptions to the CC Test (form C-101), Corrective Action Request (form C-101a), and the signed off form C-102, and make the following distributions:

Director, PBF Program Division, ID (1)
PBF P&D (1) (Original)
Construction Contractor (5)
R&QA Records (1)
Project Engineer (1)
Resident Engineer (1)

19. Transfer Construction Component to ANC

Prior to the System Operation (SO) test, the Construction Contractor will transfer the Construction Component to the Aerojet Nuclear Company in accordance with ANCR-1026, PBF Systems Operation Test Plan (Operation Phase), R. E. Heffner, June 1972.

20. Suggested Improvements

Recommended changes to the hardware or instrumentation which involve design changes shall be listed on form C-103, "Recommended Improvement List" (Exhibit H) and transmitted to the addressee. This form thus processed is not a part of the CC test data package.

21. Manager Shift Operations For Future Action

The Manager, Shift Operations will consider the recommendation of form C-103 and will make changes in the future if he concurs.

22. SO Test Waiver

When the SO test requirements have been included as a part of the CC test, an SO test waiver, Exhibit K, form C-105, signed by the PBF Special Projects Manager and Program Manager, is attached and made a part of the data sheets of the CC test.

23. System Transfer to ANC

Those systems with SO test waivers may be transferred to ANC upon successful completion of the related CC test according to procedures in ANCR-1026, PBF Systems Operation Test Plan (Operation Phase), R. E. Heffner, June 1972.

CC TEST OPERATIONS FLOW SHEET
Figure 1

Aerojet Nuclear Company

Interoffice Correspondence

PBF P.O. NO. _____

REQUEST FOR CC TEST NO. _____

ITEM AND/OR EQUIPMENT NO. _____

Date _____

K. C. Ralph
A. G. McGuire

We have completed the installation of _____ to a sufficient degree to permit its CC testing. Please be prepared to witness the test for compliance with applicable specifications.

Date and time of Readiness Review Meeting _____

Location _____

Requested By:

Construction Contractor

Please sign and return one(1) copy of this transmittal designating your inspector or engineer.

R&QA Inspector _____

ANC Test Engineer _____

Acknowledged By Date

Distribution:

PBF Program Division, ID
W. E. Durkee
R. E. Heffner
K. C. Relph
R. P. M. Gildersleeve
B. K. Pope
R. E. Heffner (file)
File: 01A02

CONSTRUCTION COMPONENT TEST
READINESS REVIEW MEETING

I. PURPOSE

The purpose of the Readiness Review Meeting is to assure that:
(a) equipment, materials, and services are available and adequately prepared for the CC test and (b) proper personnel arrangement have been made and each individual understands his duties. Deficiencies will be identified and the responsibilities for correction will be specified.

II. DISCUSSION

Attendance will be expected from the following personnel:

Chairman - PBF Test Engineer (A. G. McGuire, or
alternate)
ANC Resident Engineer
Title III Representative
Construction Contractor
ANC Test Engineer(s)
E&C Div. Test Engineer (if applicable)

Areas of discussion during the review meeting will include, but not necessarily limited to, the following:

- (a) Test engineers and inspectors assignments
- (b) Completeness of test specification and test data sheets
- (c) Prerequisite completion
- (d) Calibration of gauges and instruments
- (e) Availability of tooling and test equipment
- (f) Availability of temporary utilities.

Action items resulting from the review shall be noted. The responsibility for accomplishing the action items will be established and completion dates will be set.

Minutes of the meeting will be kept and distributed as determined by the Manager of Special Projects with the following as a minimum:

Attendees

PBF-ID Standard Distribution
Construction Contractor (5)
R & QA (3)
Planning and Documentation File (1)
File: 01A02

III. TIME AND PLACE OF MEETING

The review meeting will be scheduled at least three days prior to the CC test. The meeting room will be at the PBF construction site. If all test preparations have been made to the satisfaction of the Chairman, the readiness review meeting may be waived at his discretion.

PBF CC & SO

TAGGING PROCEDUREI PURPOSE

The purpose of this tagging procedure is to provide a uniform guide in applying tags to system components. Its intent is to assure that the status of tested items is visually identifiable in the field.

II TAG CATEGORIES

There are three categories of tags, each colored differently. Orange denotes a temporary facility hookup, or some other incomplete connection, used during a test. Red denotes the item has failed to pass in some way. Green signifies the item has passed its CC test. These tags are ANC property and for ANC's benefit, and will be prepared and attached by the ANC inspector. In the case of red and orange tags (which require corrective effort), inventory control will be by the ANC Resident Engineer, who will issue the tags and keep a working record of attachment and removal. Green tags require no inventory control. No tags are to be removed by anyone except the authorized ANC representative defined on the card.

A. Temporary Facility (Incomplete Connection) Tag (Orange)

This tag is to be used whenever a temporary facility is used for a test, or whenever some connection is incomplete and will require proper connection before acceptance of a System Operation Test. A temporary facility or an incomplete connection must have the prior approval of those conducting and approving the test. For example: If temporary air is used during a test, the air to be used and the connection point must receive approval before the test begins. An orange tag is to be placed at the connection, (or as close by as practical so as to be conspicuous to an observer). The intent is to furnish a visual reminder that a system is not fully complete.

Orange tags used during CC tests may remain on items (if necessary) at the time of signing approval form C-102. SO tests may start with orange tags in the system, but permanent, approved connections must be made before final approval and acceptance can occur. A record of tested and approved permanent connections must be submitted to the Manager, Special Projects on form C-104 (Exhibit J).

B. CC or SO Test Failure Tag. (RED)

This tag, denoting any type of failure which makes the test unacceptable until corrected, is to be placed in a conspicuous location on the item(s) involved. A short description of the nature of the deficiency must be written on the tag. Title III Inspection and the PBF Test Engineer both sign for CC test failure, but only Title III Inspector need sign red tags for SO test deficiencies. Failed items are also to be listed on form C-101,

Corrective Action Request. The latter is used by the Construction Contractor as the official guide to performing repairs.

C. CC Test Approval Tag

The green "approval" tag will be used to denote that the item, or valve group, or piping section (or any other appropriate grouping) as satisfactorily passed its CC test. Green tags identify by data on them, exactly what is encompassed by their approval. It may be a single item or reasonable accumulation of items (such as a valve group). It indicates the identified items have been inspected or tested according to a referenced CC test and satisfactorily meet requirements. Green tags must be signed by the Construction Contractor (signifying release for further testing), by Title III Inspection (approval of test), and by the PBF Test Engineer. These tags should remain in place at least until the satisfactory conclusion of SO testing of the system.

III. LIMITATIONS

The use of these tags is mandatory under direction of ANC Management. Their intent as visual evidence of test status, is not to be compromised by failure to apply them. They are to be used as intended, in order that field inspections by management can quickly determine failed items and other work remaining to be done.

<p style="text-align: center;">T E M P O R A R Y F A C I L I T Y H O O K U P</p>		
<p>This tag is to be used at the connection point wherever temporary facilities are tied in or are not ready during CC or SO tests.</p>		
<p>Examples: Temporary Power, Air, Liquid or Steam, or Incomplete Connections</p>		
<p>Remove only AFTER permanent connections have been made, tested and approved.</p>		
<p>T E M P O R A R Y F A C I L I T Y U S E D</p> <hr/>		
<p>P E R M A N E N T H O O K U P T O B E M A D E T O: (System & Location)</p> <hr/>		
<p style="text-align: center;">(Use back if necessary)</p> <hr/>		
Construction Contractor	Date	
Title III Inspector	Date	
Special Projects Engineer	Date	
<p>Tag is to be removed only by ANC Representative:</p>		
(Name)	(Location)	(Phone)

Explanation

Removal limitations

Description for guidance when permanent connections are to be made.

This is an ANC tag.
Others should not
remove it.

ORANGE CARDBOARD

CC OR SO TEST

FAILURE TAG

To be placed in conspicuous location on any item which fails during CC or SO test.

ITEM TESTED: _____

TEST IDENTIFICATION: _____

_____ REVISION _____

ITEM FAILED IN THE FOLLOWING WAY: _____

_____ (Use back of tag if necessary)

TITLE III INSPECTOR

_____ DATE _____

ANC TEST ENGINEER REP.

_____ DATE _____

Tag to be removed only by ANC representative:

(Name) _____ (Location) _____ (Phone) _____

Common use

To be placed near the failure, but still easily visible.

Test used and Rev. No.

This is an ANC tag. Others should not remove it.

RED CARDBOARD

CC TEST

APPROVAL TAG

(To be place on Item in a conspicuous location)

ITEM TESTED: _____

CC TEST IDENTIFICATION _____

REVISION _____

This tag indicates that the above item (or sub-system) has been inspected or tested according to the referenced CC Specification and satisfactorily meets requirements.

CONSTRUCTION CONTRACTOR RELEASES ITEM FOR FURTHER TESTING

DATE _____

TITLE III INSPECTOR APPROVAL OF CC TEST

DATE _____

TEST ENGINEER APPROVAL OF CC TEST

DATE _____

Tag to be removed only by ANC Representative

(Name) (Location) (Phone)

Valves, group of valves pump, inst., or group of instruments, tank, etc.

CC Test Revision used.

Purpose stated

Construction Contractor release permitting ANC to use & SO test.

Title III Inspector's acknowledgement of satisfaction.

ANC's acknowledgment of satisfaction.

This is an ANC tag & others should not remove it.

GREEN CARDBOARD

RESOLUTION OF CHANGES
OR VARIANCES TO A CC TEST

In the event test procedure must be changed or a variance occurs between the test performance and the test documentation, the ANC Test Engineer will immediately contact the appropriate R & QA personnel and the Manager, PBF Special Projects for resolution.

After the resolutions have been made, the ANC Test Engineer will document the change or variance and its resolution, and append the documentation to the Test Specification or Test Data Sheet, whichever the case may be.

Aerojet Nuclear Company
PBF Project
P.O. Box 1845
Idaho Falls, Idaho 83401

Date _____
Subcontract No. _____

EXCEPTIONS TO CC TEST

CC TEST NO. _____

ITEM AND/OR EQUIPMENT NO. _____

To: ANC Resident Engineer

The following are not acceptable under this test and must be corrected before the test can be signed off as complete.

1. Description of Deficiency
2. Recommendations for Correction or Repair

Reliability and Quality Assurance

ANC Test Engineer

Distribution:

W. E. Durkee
R. E. Heffner
B. K. Pope
A. G. McGuire
K. C. Relph

File: 01A03

Aerojet Nuclear Company
PBF Project
P.O. Box 1845
Idaho Falls, Idaho 83401

Date _____

Deficiency ACTION REQUEST

CC Test No. _____

Item/Equipment No. _____

Contract No. _____

To: Construction Superintendent

The following corrections or repairs are requested on CC Test No. _____.

- 1.
- 2.

Please sign and return one (1) copy of this transmittal after the above actions have been completed.

I certify that the above deficiency actions have been completed as specified.

Construction Superintendent

Distribution:

W. E. Durkee
R. H. Heffner
K. C. Relph
A. G. McGuire
B. K. Pope
R. D. M. Gildersleeve

CC TEST APPROVAL SHEET

CC TEST NO. _____ SUBCONTRACT NO. _____

ITEM AND/OR EQUIPMENT NO. _____

Test Supervised By: _____ Date _____

Test Witnessed By: _____
Test Engineer, Aerojet Date _____

R & QA Inspector Date _____

Test Approved By: _____
Test Engineer, ANC Date _____

Manager of PBF Special Projects Date _____
Aerojet Nuclear Company

Superintendent of PBF Shift Operations Date _____
Aerojet Nuclear Company

R & QA Date _____

This sheet accompanies final copy of approved CC Test Specification
and Test Data Record Sheets

RECOMMENDED IMPROVEMENT LIST

To: Manager, PBF Shift Operations

Reference: CC Test No. _____

The following improvements in design are recommended:

1.

2.

R & QA

ANC Cognizant Engineer

cc:

Aerojet Nuclear Company

Interoffice Correspondence

PBF Manager Special Projects

INCOMPLETE CONNECTION CC/SO TEST NO. _____

The following connections were not permanent or were otherwise incomplete at the end of CC testing or during SO testing.

1.

2.

3.

4.

These have now been permanently connected, tested and approved.

ANC Test Engineer

R & QA

Distribution

R. E. Heffner
P. K. Pope
A. G. McGuire
K. C. Relph

S O T E S T W A I V E R

System or Items: _____

The system (or items) identified above, is (are) considered to have adequately met System Operation Tests under CC-_____. Therefore, the SO test is waived.

PBF Special Projects Manager

PBF Program Manager