AUTOMATION MODERNIZATION PROGRAM

LOS ANGELES CARSON REFINERY

LAR1C AMP BPCS CONFIGURATION PROJECT C-FAT PROCEDURE - REF2-C300-21P/22S

Revisions and Approvals					
Rev	**Date**	**Reason for Issue**	**Originated By:**	**Reviewed By:**	**Approved By:**
B	08-Jun-23	Issued for Use	AJ	RP	JTJ
A	20-Mar-23	Issued for Review	AJ	RP	JTJ

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Revision History

Rev	Description	Section
A	Issued for Review	All
B	Issued for Use	--

Assumptions

No.	Description	Section
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Holds

No	Description	Section
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1. General

1.1 Introduction

The Los Angeles Refinery Carson (LARC) facility is completing an Automation Modernization Program (AMP) to replace obsolete automation equipment and to migrate the existing functionality and operability to the Honeywell Experion Process Knowledge System (EPKS) platform.

The LAR1C project scope is to migrate and/or upgrade the existing functionality and operability of identified Basic Process Control System (BPCS) consoles and controllers as well as operator and engineering stations to comply with current industry standards and practices. The migration will be from the existing Honeywell High Performance Process Manager (HPM)[1], Application Module (AM) controllers, Process Manager Input/Output (PMIO), and Basic Controllers to new Honeywell Experion C300 controllers and Series C and Universal Input/Output (UIO) and (UIO-2). The migration of the existing 3rd-party device serial interfaces to the C300 controllers shall be via either Modbus TCP/IP using Peer Communication Data Interfaces (PCDI), Ethernet Interface Module (EIM) or EPKS Server Supervisory Control and Data Acquisition (SCADA) points and Human Machine Interface (HMI) screens migrated using HMI WebBuilder.

1.2 Scope

The scope of this Configuration Factory Acceptance Test (C-FAT) procedure is limited to hardware configuration in the C300 controller or EPKS server resulting from the migration of the original controllers/tags. This test procedure will not be used to verify configuration of the EPKS server or network components.

This procedure includes test checklists for CPM, CEE, I/O Link, and IOM hardware configuration and for I/O Channel parameter configuration.

For the equipment application function check, refer to the following procedures:

- LAR1C AMP BPCS Configuration Project C-FAT Procedure - Carson General (747002-LAR1C-AUT-PRO-0104)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - 2 Reformer (747002-LAR1C-AUT-PRO-0105)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - #2 Ref Recycle Gas Compressor (747002-LAR1C-AUT-PRO-0106)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - #2 Reformer Heater (747002-LAR1C-AUT-PRO-0107)

[1] The scope of the HPM migration is limited to specific functions if it is determined to provide a more robust solution of the other control loops migrating to the C300 controllers.

- LAR1C AMP BPCS Configuration Project C-FAT Procedure - 2A Desulfurizer Heater (747002-LAR1C-AUT-PRO-0108)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - 2B Desulfurizer Heater (747002-LAR1C-AUT-PRO-0109)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - #2 DeSulf Feed/Recycle 0009 (747002-LAR1C-AUT-PRO-0110)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - #2 DeSulf Feed/Recycle 0010 (747002-LAR1C-AUT-PRO-0111)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure – LED (747002-LAR1C-AUT-PRO-0112)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure - NA_DIB (747002-LAR1C-AUT-PRO-0113)
- LAR1C AMP BPCS Configuration Project C-FAT Procedure – SRD (747002-LAR1C-AUT-PRO-0114)

2. Acronyms and Definitions

2.1 Acronyms

Table 2.1 defines the acronyms used within this document.

Table 2.1. Acronyms

Acronym	Description
AMP	Automation Modernization Program
BPCS	Basic Process Control System
C-FAT	Configuration Factory Acceptance Test
EIM	Ethernet Interface Module
EPKS	Experion® Process Knowledge System
HMI	Human Machine Interface
HPM	High Performance Process Manager
I/O	Input/Output
LAR	Los Angeles Refinery
LARC	Los Angeles Refinery Carson
MPC	Marathon Petroleum Corporation
PCDI	Peer Communication Data Interface
PMIO	Process Manager Input/Output
RSP	Refining Standard Practice
SCADA	Supervisory Control and Data Acquisition
UIO	Universal Input/Output

2.2 Project Definitions

Table 2.2 describes terms used in this document.

Table 2.2. Project Definitions

Definition	Description
Xenon Team	Xenon Project Team or their authorized representative(s)
LAR Site Team	LAR site team or their authorized representative(s)

Definition	Description
Automation Contractor	MPC-appointed Automation Contractor or their authorized representative(s)

3. References

3.1 MPC and LAR Standards

Table 3.1 records the specifications that shall be referenced during testing. Any deviations from the specifications are recorded in an addendum to the specification and will be referenced in the table below.

Table 3.1. Codes and Standards

Document Number	Rev	Document Title
AMP Central Global Specifications		
AMP-GBL-SIS-INS-0002	A1	Applying MPC RSPs for SIS, Heaters, and Boilers
AMP-GBL-PM-SPC-0001	A3	T/A Integration and Cutover Specification
AMP-GBL-PM-SPC-0002	A1	Automation Specification
AMP-GBL-PM-SPC-0004	5	HMI Specification
AMP-GBL-PM-SPC-0009	A3	Third-Party Integration Specification
AMP-GBL-PM-SPC-0012	A0	Experion C300 Configuration Specification
AMP-GBL-PM-SPC-0020	3	Process Automation System Naming Specification
AMP-GBL-PM-SPC-0022	2	Automation System Testing Specification
Refining Standards and Specifications		
RSP-1172-024	13	Heater Application Standard

3.2 Project Reference Drawings, Documents, and Software Backups

Project reference documentation is listed in Table 3.2. The revisions used during testing shall be recorded during the test.

Table 3.2. Project Reference Drawings/Documents/Software Backup

Reference Number	Rev	Reference Title
LAR AMP BPCS Documentation		
747002-LAR1C-AUT-IOA-0100		LAR1 AMP BPCS Configuration Project I/O List - Carson
747002-LAR1C-AUT-SPC-0110		LAR1C AMP BPCS Configuration Project Software Migration Specification - REF2-C300-21P/22S

Reference Number	Rev	Reference Title
747002-LAR1C-AUT-SPC-0102		LAR1C AMP BPCS Configuration Project HMI Migration Specification - 2 Reformer
747002-LAR1C-AUT-RPT-0120		LAR1C AMP BPCS Configuration Project Parameter Validation Report - REF2-C300-21P/22S

4. Identity of Test Personnel

The names and initials of each person either performing or witnessing and accepting the tests will be recorded in Table 4.1. Further names and details can be appended as required.

Table 4.1. Test Personnel

Name	Signature	Title/Company	Initials	Date

5. Test Procedure

5.1 Test Prerequisites

Step No.	Action/Observation	Pass/NA	Initial & Date	Comments
5.1.0	IP Addresses of Test Devices Verify that the IP Addresses of devices are as per the IP Address Schedule.			
5.1.1	Test Equipment Document the Model and Serial Numbers of all equipment used as part of the test and provide a sketch or take a photo of the test arrangement. Attach the list and sketches to Appendix A.			
5.1.2	Software Verify the EPKS software release is R520 from the following folder path “C:\Program File (x86)\Honeywell\Experion PKS. Attach to Appendix A.			
5.1.3	Test Set-Up Verify controllers and servers are functioning without errors or system alarms.			

Test Prerequisites Completion:		
Comments/Outstanding Actions:		
Test Prerequisites Acceptance:		
Customer		
Name	**Signature**	**Date**
Xenon		
Name	**Signature**	**Date**

5.2 Hardware Configuration Checks

The following hardware configuration checks are designed to verify that the BPCS application hardware parameters are configured as specified in the relevant project design documents and per the original controller configuration (where applicable).

Parameter value verification should be performed using an extract from the BPCS application configuration or by directly viewing the parameter value in Project View of the Control Builder application.

The output of an automated comparison tool, application extracts, or screenshots used to verify configuration parameter values should be highlighted and appended to the appropriate appendix of this document as evidence of testing.

In the following procedures, the terms FIXED and DESIGN are used in reference to parameter values and connections.

A FIXED parameter value or connection is considered to be any parameter or connection that should not be changed when the template is instantiated, as it may undermine the functional or operational integrity of the template or as it will not comply with project standards. A DESIGN parameter value or connection is any parameter that is not considered FIXED.

All discrepancies between application and template default DESIGN parameter values must be verified and the reason for the discrepancy recorded as part of the test evidence. Typically, discrepancies arise when the source of the template parameter values cannot be automatically checked or the template parameter values do not match the original controller configuration values as a result of approved design changes or adaptation to project templates.

Step No.	Action/Observation	Pass/NA	Initial & Date	Comments
5.2.0	Control Processor Module Configuration			
5.2.1	Confirm that the application parameter values are configured as specified in the project design documents: • AMP C300 Configuration Specification Section 11.1 • LAR1 AMP BPCS Configuration Project I/O List - Carson Section 5.0 • AMP BPCS Software Migration Design Specification Section 4.0 Attach the result of the comparison to Appendix B.1.			
5.2.2	Control Execution Environment Configuration			
5.2.3	Confirm that the application parameter values are configured as specified in the project design documents: • AMP C300 Configuration Specification Section 11.1 • LAR1 AMP BPCS Configuration Project I/O List - Carson Section 5.0 • AMP BPCS Software Migration Design Specification Section 4.0 Attach the result of the comparison to Appendix B.1.			

Step No.	Action/Observation	Pass/NA	Initial & Date	Comments
5.2.4	I/O Link Configuration			
5.2.5	Confirm that the application parameter values are configured as specified in the project design documents: • AMP C300 Configuration Specification Section 11.2 • LAR1 AMP BPCS Configuration Project I/O List - Carson Section 5.0 • AMP BPCS Software Migration Design Specification Section 4.0 Attach the result of the comparison to Appendix B.1.			
5.2.6	I/O Module Configuration			
5.2.7	Confirm that the application parameter values are configured as specified in the project design documents: • AMP C300 Configuration Specification Section 11.3 • LAR1 AMP BPCS Configuration Project I/O List - Carson Section 5.0 • AMP BPCS Software Migration Design Specification Section 4.0 • EB Files Attach the result of the comparison to Appendix B.1.			

Step No.	Action/Observation	Pass/NA	Initial & Date	Comments
5.2.8	I/O Channel Configuration			
5.2.9	Confirm that the application parameter values are configured as specified in the project design documents: • AMP C300 Configuration Specification Section 13 • LAR1 AMP BPCS Configuration Project I/O List - Carson Section 5.0 • AMP BPCS Software Migration Design Specification Section 4.0 • EB Files Attach the result of the comparison to Appendix B.1.			

Hardware Configuration Check Completion:		
Comments/Outstanding Actions:		
Hardware Configuration Check Acceptance:		
Customer		
Name	**Signature**	**Date**
Xenon		
Name	**Signature**	**Date**

6. FAT Acceptance Certificate

CONFIGURATION FACTORY ACCEPTANCE TEST CERTIFICATE

Automation Modernization Program (AMP)

AMP LAR1C BPCS Configuration Test Specification

REF2-C300-21P/22S

THE UNDERSIGNED HAS INSPECTED AND WITNESSED THE TESTS WITHIN THIS PROCEDURE AND ITS APPENDICES.
THE UNDERSIGNED ACCEPTS THAT THE SYSTEMS HAVE BEEN TESTED TO THE AGREED PROCEDURES AND MEETS THE REQUIREMENTS OF THE PURCHASE ORDER REQUIREMENTS.

LARC: _____	XENON: _____
Title: _____	Title: _____
Date: _____	Date: _____

Overall Test Completion Summary:

Appendix A. Test Prerequisites

Document Number	No. of Pages

Appendix B. Hardware Configuration

When an electronic copy of the Parameter Configuration report is attached to this Appendix, the "No. of Pages" column in Table B.1 shall be used to reference the name of the Excel worksheets (tabs) applicable within the report (e.g., Worksheet B.1).

Table B.1. CPM, CEE, I/O Link, I/O Module, and I/O Channel Configuration

Document Number	No. of Pages

Appendix C. Test Documents

All marked up/highlighted design documents used during testing should be attached to this appendix as evidence of testing.

Document Number	No. of Pages

Appendix D. Log Items

All log items generated during testing and their status should be attached to this appendix. Log items shall be recorded in the Log Register (747002-LAR1C-AUT-LOG-0105).

Document Number	No. of Pages

LogID	Date	Log Type	Log Category	Associated Document	Log Description	Raised by	Log Resolution	Checked by	Log Status	Closed Date	Remarks