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1. INTRODUCTION

This document details the Factory Acceptance Testing(FAT) migration existing SLC to ControlLogix PLC of TBL Lorry. This FAT automation system for the PLC Hardware communicate to, TAS via Kepware OPC redundant server. Testing is expected to take confirmation with the actual hardware.

1.1. Glossary of Terms & Acronyms Used In This Manual

Term or Acronym	Context	Meaning
N/A	Not application	The test or check that not applicable to specify items
PLC	Control system	Programmable Logic Control
HMI	Control system	Human Machine Interface
PSU	Control system	Power Supply Unit
TAS	Control system	Terminal Automation System
OPC	Communication protocol	Open Platform Communications
FAT		Factory Acceptance Test

1.2. FAT Location

The FAT Location will be at : Rockwell Automation Bangkok Office

1.3. Procedure for Non-Conformities

After the test and verification of each item then it shall be marked as completed. If any malfunction is detected, the test sequence shall be repeated. If the malfunction cannot be reproduced, the error shall be investigated after the completion of the FAT - with an entry to be made into the FAT Configuration query file. If the error can be reproduced, the test will be continued and the error logged on the punch-list sheets. Where possible the fault will be corrected prior to being re-tested on the next day or prior to the completion of the FAT. If this is not possible, a further entry shall be made into the FAT Configuration query file. Rockwell will rectify and re-test these defects after the FAT has been completed.

Appendix B contains a sample punch-list sheet and FAT Configuration query file documents.

Once the FAT has been successfully completed, the nominated customer and Rockwell representatives shall sign the FAT Completion Certificate. At this point the FAT shall be deemed to be complete and commissioning contingent upon any defects noted in the FAT Configuration query index being rectified.

1.4. FAT Objectives

The objectives of the FAT are to establish within reasonable time and cost that the control systems can be commissioned on site for plant operations with minimum of problems, and that they will perform as defined in the approved documents.

1.5. Existing System Configuration

The existing TBL Lorry Loading is SLC connect with TAS system via Ethernet

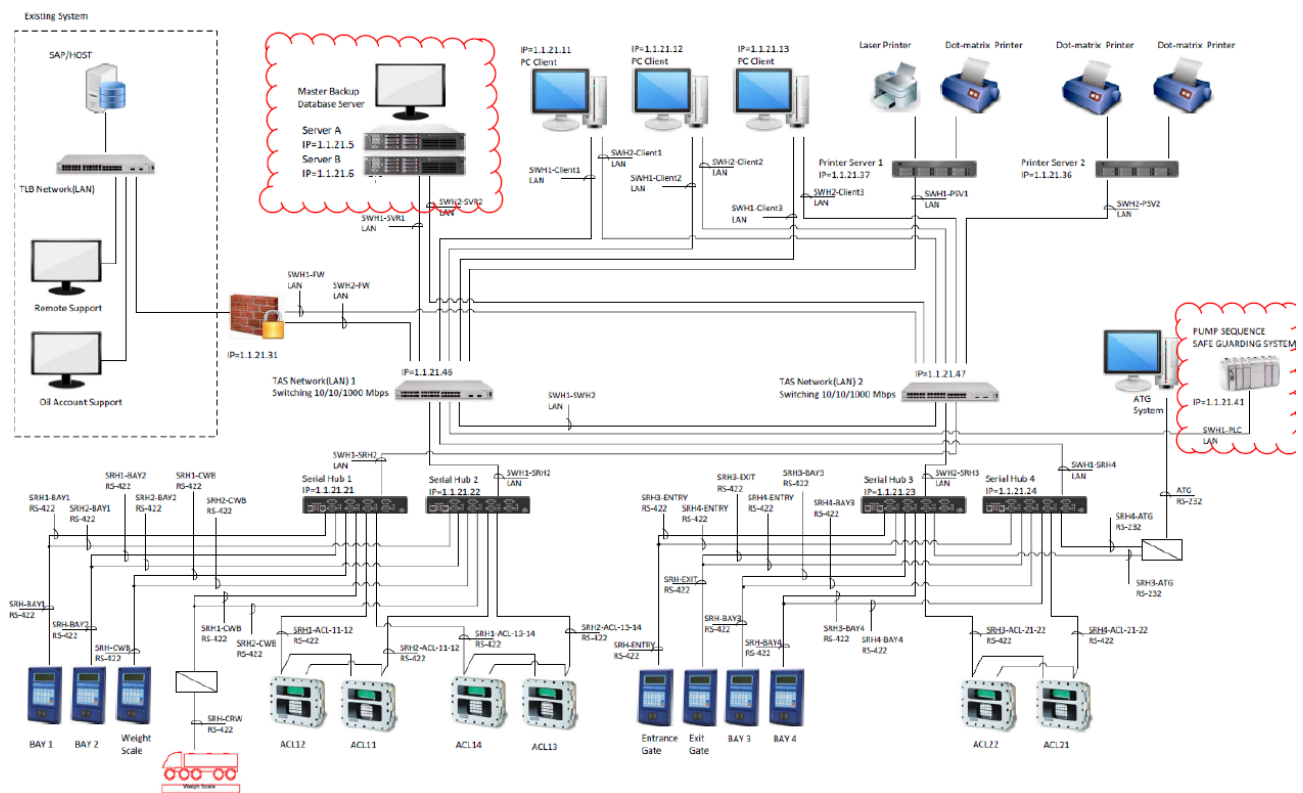


Figure 1 Existing TLB LORRY Loading PLC

1.6. System Configuration for FAT

There is limitation of prepare hardware to be the same as real design control system. So the FAT cannot prepare all hardware to be same as real use. The system overview as below is prepare for FAT.

The listed below is real hardware plan to replace existing system, after completed FAT these hardware will deliver to Thai Lube Base, BOM are listed below.

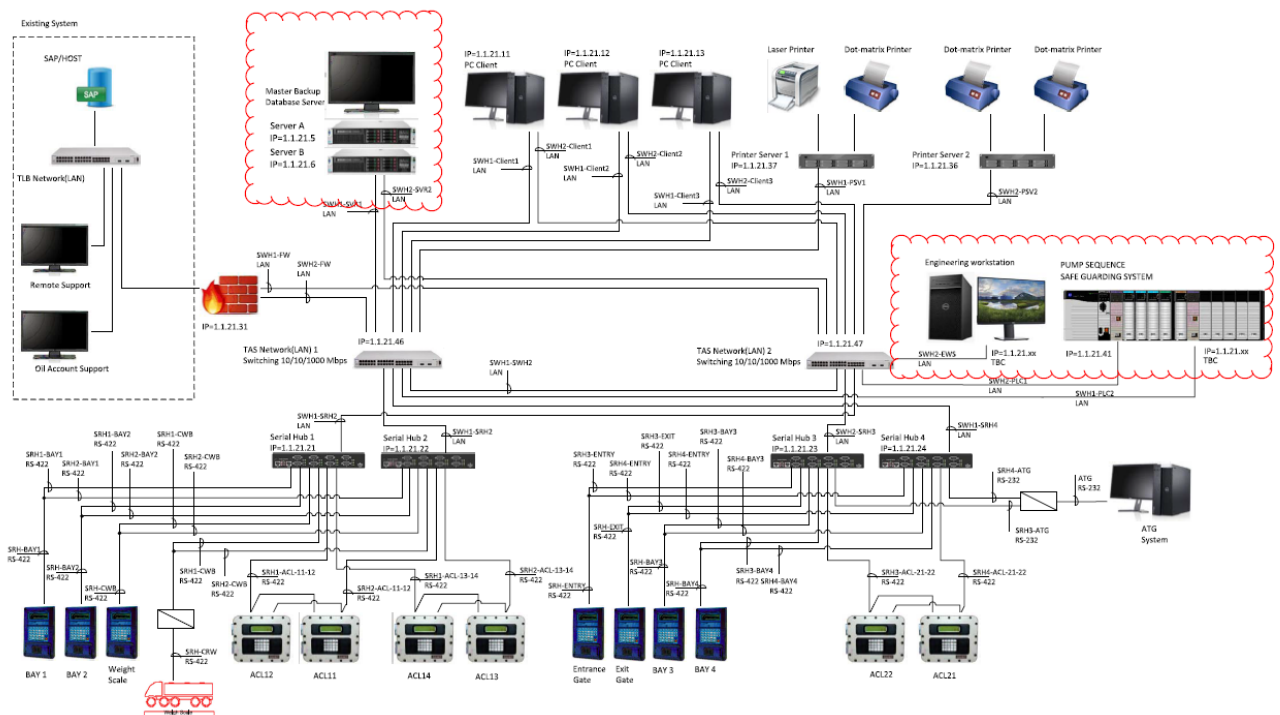
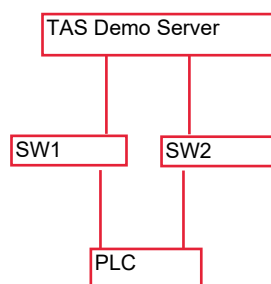


Figure 2 System Configuration for FAT



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System Location : Thai Lube Base



Rockwell Hardware

Item	Catalog no	Description	Quantity	Unit	Check
1	1756-A13	ControlLogix 13 Slots Chassis	1	Set	
2	1756-PB72	ControlLogix 24V DC Power Supply	1	Set	
3	1756-L71	ControlLogix 2 MB Controller	1	Set	
4	1756-EN2T	CLX HI-CAP ENET/IP MODULE - TP	2	Set	
5	1756-IB32	ControlLogix 32 Pt 12/24V DC D/I Module	3	Set	
6	1756-TBCH	ControlLogix 36 Pin Screw Terminal Block	5	Set	
7	1756-OV32E	ControlLogix 32 Point D/O Module	2	Set	
8	1756-IF8I	ControlLogix 8 Point Analog Input	1	Set	
9	1756-N2	ControlLogix Empty Slot Cover	4	Set	
10	1492-IFM40F	Connection Products	5	Set	
11	1492-CABLE025Z	Digital Cable Connection Products	5	Set	
12	1492-AIFM8S-3	Analog Interface Module	1	Set	
13	1492-ACABLE025YA	Analog Cable Connection Products	1	Set	

Software

Item	Catalog no	Description	Quantity	Unit
1	KWM-ABSTE0-RCP	KepServerEx Allen-Bradley OPC Suite Support Recapture	2	License
2	KWM-MDBUS0-RCP	KepServerEx Modbus Suite Support Recapture	2	License
3	9324-RLD600ENM	MEDIA - Studio 5000 Full Edition, English	1	License
4	9701-VWSTENM	MEDIA - FactoryTalk View Studio for FactoryTalk View Enterprise (ENGLISH)	1	License

3rd Party Hardware

Item	Catalog no	Description	Quantity	Hardware
1	Dell Precision T3630 CTO	Computer Work station DELL	1	Set

1.7. Punch Lists and Change Control

Separate Punch Lists shall be maintained for the Hardware tests. If a fault is found whilst testing the procedure shall be as follows:

- (a) Take the next available number from the punch list index and add a short description of the fault.
- (b) Take a fault log sheet and add the number plus a detailed description of the fault, date and sign.
Attach marked up copies of drawings or graphics as required to make the problem clear.
- I Place the completed log sheet in the tray marked 'COMPLETED'.
- (d) At the end of each day all log sheets raised during the day will be reviewed so that they are clearly understood by RA and it will be decided if they are to be fixed that evening or not.
- I Once faults are fixed RA will complete the log sheet and place the sheet in the tray marked 'FOR RETEST'. The customer person who raised the log will re-test the item and complete the log sheet and place in the tray marked 'COMPLETE FOR FILE'.
- (f) RA will update the Punch List index based upon the completed log sheets on a daily basis so that progress can be tracked.

ALL changes during FAT will be controlled in this way and there shall be no un-authorised changes to the system after sign off of tests

All tests will have two levels of sign off by the customer. The tester shall sign for completion of every test. Overall completion of the test shall be signed off by one of the nominated authorised signatories

1.8. Nominated Person

At the commencement of the FAT, the names and positions of the RA personnel conducting the tests and the customer (or nominated) representatives attending will be entered in the spaces below. This identifies the persons authorised to sign off the satisfactory completion of each test, final acceptance of the FAT, and any qualifications thereto.

RA Personnel	
Name	Responsibility

Customer Authorised signatories overall completion of tests	
Name	Responsibility

2. FAT PROCEDURE

2.1. Overview

The FAT will consist of the following tests:

- PLC hardware check physical module
- Hardware functional test
- Convert PLC Ladder testing
- I/O Test
- OPC data test

2.2. Documentation

The following latest documentation will be the basis for the FAT:

- 800469957-TLB-008-FAT and IFAT Procedure Rev A : FAT and IFAT Procedure (Document)
- I/O Assignment
- OPC Mapping
- Electrical wiring

2.3. FAT Equipment:

Sr. No.	Name	Cal. Certificate	Qty	Unit	Check
1	ControlLogix (System)	-	1	Set	
2	PC Engineering Workstation		1	Set	
3	Fluke 789 Multimeter	Attach calibration certificate	1	Set	
4	Document list for FAT	-	1	Set	
	- System Architecture				
	- Electrical Wiring diagram				
	- IO Assignment				
5	Studio 5000 software	Break license item (Serial, key)	1	Set	
6	FTView Studio	- Studio 5000 - FTView	1	Set	
7	Server for simulate TAS system	- Office - Anti-virus - etc.	1	Set	

2.4. Acceptance Certificates

On the successful conclusion of the FAT, an Overall Acceptance Certificate will be signed by Thai Lube / and RA nominated persons. If any agreed remedial work is required to be completed before system despatch to site, the Certificate will be qualified in appropriate terms. In such event RA will give written confirmation to the Customer when such work has been carried out.

3. PLC HARDWARE CHECK PHYSICAL MODULE

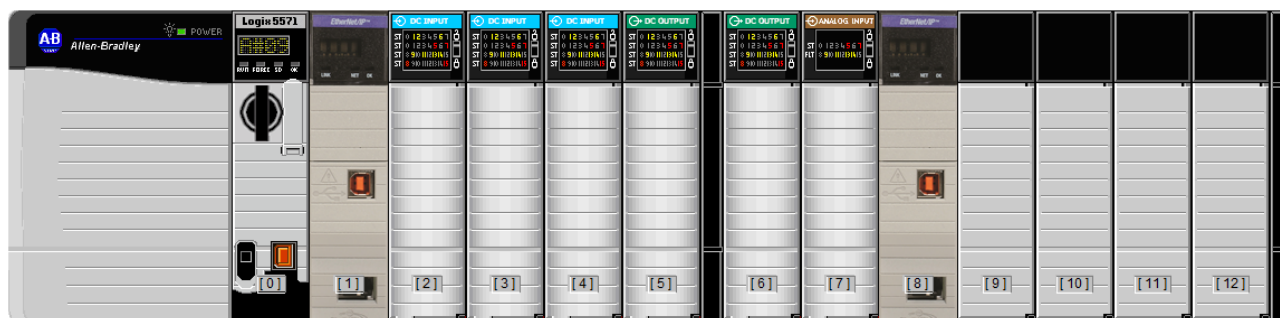
This is to certify that the subject system was duly inspected in accordance with the authorized factory inspection procedures agreed. Observations & action items in the form of Punch List are attached herewith. The system hardware was found to be in accordance with the specified project requirements. The system is cleared for despatch. The despatch clearance is hereby issued to Rockwell Automation to despatch system to site

3.1. Equipment Installation

3.1.1. Module in Controller Chassis Hardware Check

Check equipment are present as the BOM list.

VERIFY INSTALLATION OF			Record Serial No.	Firmware	MFG Date YYYY/MM/DD
1	1756-A13	-	79629987	n/a	2020/07/08
2	1756-PB72	-	79750220	n/a	2020/06/29
3	1756-L71	Slot 0	79337960	24	2020/06/10
4	1756-EN2T	Slot 1	79585584	11.002	2020/06/21
5	1756-IB32	Slot 2	78782390	3.006	2020/05/14
6	1756-IB32	Slot 3	78782392	3.006	2020/05/14
7	1756-IB32	Slot 4	78782240	3.006	2020/05/14
8	1756-OV32E	Slot 5	78664951	3.003	2020/05/07
9	1756-OV32E	Slot 6	78664963	3.003	2020/05/07
10	1756-IF8I	Slot 7	74349182	2.012	2019/10/23
11	1756-EN2T	Slot 8	79585582	11.002	2020/06/21
12	1756-N2	Slot 9			
13	1756-N2	Slot 10			
14	1756-N2	Slot 11			
15	1756-N2	Slot 12			



3.2. Hardware function test

3.2.1. Hardware Status

TASK		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
	Local Chassis			
1	Power supply LED Power status Solid Green			
2	Processor 1756-L71 Slot#0 is OK LED Solid Green			
3	Ethernet module 1756-EN2T Slot#1 is OK LED Solid Green, LED LINK and NET flashing green			
4	1756-IB32 Slot#2 is OK LED Solid Green			
5	1756-IB32 Slot#3 is OK LED Solid Green			
6	1756-IB32 Slot#4 is OK LED Solid Green			
7	1756-OV32E Slot#5 is OK LED Solid Green			
8	1756-OV32E Slot#6 is OK LED Solid Green			
9	1756-IF8I Slot#7 is OK LED Solid Green			
10	Ethernet module 1756-EN2T Slot#8 is OK LED Solid Green, LED LINK and NET flashing green.			

Verify software diagnostic

3.3. Configuration

Use RSLinx software view the property each of Controllogix module and record configuration and firmware version of controller, communication module and redundant module

~~3.3.1. Configuration and verify firmware for Local chassis~~

Task		Configuration	Firmware
1	1756-L71	N/A	
2	1756-EN2T ENET Slot#1	IP Address _____1.1.21.41_____ Subnet _____255.255.0.0_____	
3	1756-EN2T ENET Slot#8	IP Address _____1.1.21.42_____ Subnet _____255.255.0.0_____	

heck-list sign-off	
Tester (Name)	Signature and Date
Customer Approver (Name)	Signature and Date

4. PLC LADDER CONVERT TEST

4.1. Conversion PLC

TASK		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Convert Ladder Program SLC to ControlLogix version 24	<ul style="list-style-type: none"> - Verify program configuration correctly - Verify I/O tag and format compatibility - Verify program structure - Verify main program ladder compatibility - Verify communication mapping 		
2	Replace all IO Configuration to IO new models as designed			
3	Verify All IO already mapped are correctly as same existing program			
4	Verify PLC Ladder program. No any error as same existing program			
5	Verify report of modify ladder program			
6	Function Test as same existing program (no modify program function)			

Check-list sign-off	
Tester (Name)	Signature and Date
Customer Approver (Name)	Signature and Date

5. IO MODULE TEST

This is to certify that the subject system was duly inspected in accordance with the authorized factory inspection procedures agreed. Observations & action items in the form of Punch List are attached herewith. The system hardware and software was found to be in accordance with the specified project requirements. The system is cleared for despatch. The despatch clearance is hereby issued to Rockwell Automation to despatch system to site.

5.1. IO Module Testing

5.1.1. 1756-IB32 Slot #2 Testing (DI_S02)

Simulate 24 VDC input sink to each input channel. Observe LED status have to show on module and show on ladder logic.

1. LED activate correctly, 2. Logic activate correctly, 3. PLC tag assign corectly

IO Address		PLC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Local:2:I.Data.0	m_Fire_Detector_ESD			
2	Local:2:I.Data.1	m_ESD_CCR			
3	Local:2:I.Data.2	m_ESD_Gatehouse			
4	Local:2:I.Data.3	m_ESD_BAY1			
5	Local:2:I.Data.4	m_ESD_BAY2			
6	Local:2:I.Data.5	m_ESD_BAY3			
7	Local:2:I.Data.6	m_ESD_BAY4			
8	Local:2:I.Data.7	m_Earth_BAY1			
9	Local:2:I.Data.8	m_Earth_BAY2			
10	Local:2:I.Data.9	m_Earth_BAY3			
11	Local:2:I.Data.10	m_Earth_BAY4			
12	Local:2:I.Data.11	m_LZS051_M101A			
13	Local:2:I.Data.12	m_LZS052_M101B			
14	Local:2:I.Data.13	m_GZS051_M101A			
15	Local:2:I.Data.14	m_GZS053_M101B			
16	Local:2:I.Data.15	m_GZS052_M101A			
17	Local:2:I.Data.16	m_GZS054_M101B			
18	Local:2:I.Data.17	m_GZS065_M101A			
19	Local:2:I.Data.18	m_GZS056_M101B			
20	Local:2:I.Data.19	m_LZS061_M102A			
21	Local:2:I.Data.20	m_LZS062_M102B			
22	Local:2:I.Data.21	m_GZS061_M102A			
23	Local:2:I.Data.22	m_GZS063_M102B			

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IO Address		PLC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
24	Local:2:I.Data.23	m_GZS062_M102A			
25	Local:2:I.Data.24	m_GZS064_M102B			
26	Local:2:I.Data.25	m_GZS065_102A			
27	Local:2:I.Data.26	m_GZS066_102B			
28	Local:2:I.Data.27	m_LZS071_M103A			
29	Local:2:I.Data.28	m_LZS072_M103B			
30	Local:2:I.Data.29	m_GZS071_M103A			
31	Local:2:I.Data.30	m_GZS073_M103B			
32	Local:2:I.Data.31	m_GZS072_M103A			

5.1.2. 1756-IB32 Slot #3 Testing (DI_S03)

Simulate 24 VDC input sink to each input channel. Observe LED status have to show on module and show on ladder logic.

IO Address		PLC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Local:3:I.Data.0	m_GZS074_M103B			
2	Local:3:I.Data.1	m_GZS075_M103A			
3	Local:3:I.Data.2	m_GZS076_M103B			
4	Local:3:I.Data.3	m_LZS081_M104A			
5	Local:3:I.Data.4	m_LZS082_M104B			
6	Local:3:I.Data.5	m_GZS081_M104A			
7	Local:3:I.Data.6	m_GZS083_M104B			
8	Local:3:I.Data.7	m_GZS082_M104A			
9	Local:3:I.Data.8	m_GZS084_M104B			
10	Local:3:I.Data.9	m_GZS077_M104A			
11	Local:3:I.Data.10	m_GZS078_M104B			
12	Local:3:I.Data.11	m_LZS031_M104			
13	Local:3:I.Data.12	m_GZS056_M104			
14	Local:3:I.Data.13	m_GZS058_M104			
15	Local:3:I.Data.14	m_UY121_M104			
16	Local:3:I.Data.15	m_LZS041_M105			
17	Local:3:I.Data.16	m_GZS066_M105			
18	Local:3:I.Data.17	m_GZS068_M105			
19	Local:3:I.Data.18	m_UY131_M105			
20	Local:3:I.Data.19	m_Card_Boxinput			
21	Local:3:I.Data.20	m_UPS_Failinput			
22	Local:3:I.Data.21	m_080L_GB023_P108			
23	Local:3:I.Data.22	m_360L_GB_010_P103			
24	Local:3:I.Data.23				
25	Local:3:I.Data.24				
26	Local:3:I.Data.25	m_GBS061_1			
27	Local:3:I.Data.26	m_GBS061_2			
28	Local:3:I.Data.27	m_GBS061_3			
29	Local:3:I.Data.28	m_24Vdc_PS1_Fail			
30	Local:3:I.Data.29	m_24Vdc_PS2_Fail			
31	Local:3:I.Data.30				
32	Local:3:I.Data.31				

5.1.3. 1756-IB32 Slot #4 Testing (DI_S04)

Simulate 24 VDC input sink to each input channel. Observe LED status have to show on module and show on ladder logic.

IO Address		PLC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Local:4:I.Data.0	m_360L-P101A			
2	Local:4:I.Data.1	m_360L-P101B			
3	Local:4:I.Data.2	m_360L-P101C			
4	Local:4:I.Data.3	m_360L-P102A			
5	Local:4:I.Data.4	m_360L-P102B			
6	Local:4:I.Data.5	m_360L-P102C			
7	Local:4:I.Data.6	Spare			
8	Local:4:I.Data.7				
9	Local:4:I.Data.8				
10	Local:4:I.Data.9				
11	Local:4:I.Data.10				
12	Local:4:I.Data.11				
13	Local:4:I.Data.12				
14	Local:4:I.Data.13				
15	Local:4:I.Data.14				
16	Local:4:I.Data.15				
17	Local:4:I.Data.16	m_SL_P101AC			
18	Local:4:I.Data.17	m_SL_P101BC			
19	Local:4:I.Data.18	m_SL_P102AC			
20	Local:4:I.Data.19	m_SL_P102BC			
21	Local:4:I.Data.20	m_ACL11_Pump_Demand			
22	Local:4:I.Data.21	m_ACL12_Pump_Demand			
23	Local:4:I.Data.22	m_ACL13_Pump_Demand			
24	Local:4:I.Data.23	m_ACL14_Pump_Demand			
25	Local:4:I.Data.24	m_ACL21_Pump_Demand			
26	Local:4:I.Data.25	m_ACL22_Pump_Demand			
27	Local:4:I.Data.26				
28	Local:4:I.Data.27				
29	Local:4:I.Data.28				
30	Local:4:I.Data.29				
31	Local:4:I.Data.30				
32	Local:4:I.Data.31				

5.1.4. 1756-OV32E Slot #5 Testing (DO_S5)

Simulate 24 VDC output sink to each output channel. Observe LED status have to show on module and show on ladder logic.

IO Address		PLC Tag	or Data	ective Action Required	Retest Pass/F ail
		Refer to DI. Note: Verify force function			
1	Local:5:O.Data.0	m_Card_Reader_BAY1			
2	Local:5:O.Data.1				
3	Local:5:O.Data.2	m_Card_Reader_EntryGate			
4	Local:5:O.Data.3	m_Card_Reader_ExitGate			
5	Local:5:O.Data.4	m_Card_Reader_WeighBridge			
6	Local:5:O.Data.5	m_Card_Reader_Bay3			
7	Local:5:O.Data.6	m_Card_Reader_Bay4			
8	Local:5:O.Data.7	m_Card_Reader_Bay2			
9	Local:5:O.Data.8				
10	Local:5:O.Data.9				
11	Local:5:O.Data.10	m_P101A_Start			
12	Local:5:O.Data.11	m_P101A_Stop			
13	Local:5:O.Data.12	m_P101B_Start			
14	Local:5:O.Data.13	m_P101B_Stop			
15	Local:5:O.Data.14	m_P101C_Start			
16	Local:5:O.Data.15	m_P101C_Stop			
17	Local:5:O.Data.16	m_P102A_Start			
18	Local:5:O.Data.17	m_P102A_Stop			
19	Local:5:O.Data.18	m_P102B_Start			
20	Local:5:O.Data.19	m_P102B_Stop			
21	Local:5:O.Data.20	m_P102C_Start			
22	Local:5:O.Data.21	m_P102C_Stop			
23	Local:5:O.Data.22	m_360L-XA-019A			
24	Local:5:O.Data.23				
25	Local:5:O.Data.24	m_Entry_Gate_Control			
26	Local:5:O.Data.25	m_Exit_Gate_Control			
27	Local:5:O.Data.26	m_VFC_UY_120			
28	Local:5:O.Data.27	m_VFC_UY_130			
29	Local:5:O.Data.28	m_ACL11_Permissive			
30	Local:5:O.Data.29	m_ACL12_Permissive			
31	Local:5:O.Data.30	m_ACL13_Permissive			
32	Local:5:O.Data.31	m_ACL14_Permissive			

5.1.5. 1756- OV32E Slot #6 Testing (DO_S6)

Simulate 24 VDC output sink to each output channel. Observe LED status have to show on module and show on ladder logic.

IO Address		PLC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Local:6:O.Data.0	m_ACL21_Permissive			
2	Local:6:O.Data.1	m_ACL22_Permissive			
3	Local:6:O.Data.2	m_ACL11_Alarm			
4	Local:6:O.Data.3	m_ACL12_Alarm			
5	Local:6:O.Data.4	m_ACL13_Alarm			
6	Local:6:O.Data.5	m_ACL14_Alarm			
7	Local:6:O.Data.6	m_ACL21_Alarm			
8	Local:6:O.Data.7	m_ACL22_Alarm			
9	Local:6:O.Data.8	m_ACL11_Rem_Start			
10	Local:6:O.Data.9	m_ACL12_Rem_Start			
11	Local:6:O.Data.10	m_ACL13_Rem_Start			
12	Local:6:O.Data.11	m_ACL14_Rem_Start			
13	Local:6:O.Data.12	m_ACL21_Rem_Start			
14	Local:6:O.Data.13	m_ACL22_Rem_Start			
15	Local:6:O.Data.14	m_360L-US-100-2_Stop			
16	Local:6:O.Data.15	m_360L-US-100-2_Start			
17	Local:6:O.Data.16				
18	Local:6:O.Data.17	m_Weight_Bridge_Comm			
19	Local:6:O.Data.18	m_From_ATG_Comm			
20	Local:6:O.Data.19				
21	Local:6:O.Data.20				
22	Local:6:O.Data.21				
23	Local:6:O.Data.22				
24	Local:6:O.Data.23				
25	Local:6:O.Data.24				
26	Local:6:O.Data.25				
27	Local:6:O.Data.26				
28	Local:6:O.Data.27				
29	Local:6:O.Data.28				
30	Local:6:O.Data.29				
31	Local:6:O.Data.30				
32	Local:6:O.Data.31				

5.1.6. 1756-IF8I Slot #7 Testing (AI_S07)

Simulate source current input 4-20 mA for 5 step to each input channel. And then read value have shown in PLC IO address. The module maybe configuration each channel different Channel.

IO Address	OPC TAG	Sim (mA)	Record Value	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Local:7:I.Ch[0].Data Configuration : 4-20mA Scaling : 4000-20000	m_360L_LT001	4 mA	<div style="border: 1px solid red; padding: 5px;"> - Test reading - AI function block configuration correctly - AI tag assignment correctly - Engineering unit/conversion correctly - AI forcing </div>		
			8 mA			
			12 mA			
			16 mA			
			20 mA			
2	Local:7:I.Ch[1].Data Configuration : 4-20mA Scaling : 4000-20000	m_360L_TT055	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
3	Local:7:I.Ch[2].Data Configuration : 4-20mA Scaling : 4000-20000	m_360L_TT056	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
4	Local:7:I.Ch[3].Data Configuration : 4-20mA Scaling : 4000-20000	~Spare Slot 7 Chn 3	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
5	Local:7:I.Ch[4].Data Configuration : 4-20mA Scaling : 4000-20000	~Spare Slot 7 Chn 4	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
6	Local:7:I.Ch[5].Data Configuration : 4-20mA Scaling : 4000-20000	~Spare Slot 7 Chn 5	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
7	Local:7:I.Ch[6].Data Configuration : 4-20mA Scaling : 4000-20000	~Spare Slot 7 Chn 6	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			
8	Local:7:I.Ch[7].Data Configuration : 4-20mA Scaling : 4000-20000	~Spare Slot 7 Chn 7	4 mA			
			8 mA			
			12 mA			
			16 mA			
			20 mA			

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Check-list sign-off	
Tester (Name)	Signature and Date
Customer Approver (Name)	Signature and Date

6. OPC DATATEST

This is to certify that the subject system was duly inspected in accordance with the authorized factory inspection procedures agreed. Observations & action items in the form of Punch List are attached herewith. The system hardware and software was found to be in accordance with the specified project requirements. The system is cleared for despatch. The despatch clearance is hereby issued to Rockwell Automation to despatch system to site.

The test will use Simulator to Send/Receive data, OPC data testing procedure shall be as follows:

- The configuration of parameter and execute function have in ladder program.
- For Ethernet communication. Connect RJ45 connector to port 1 of 1756-EN2T
- Open KESERVER EX and setup parameter to connect the PLC Ethernet module
- Test read/write OPC data following data mapping from 800469957-TLB-005 OPC address mapping list. Online RSlogix5000 to controller simulation and see data in OPC Data appear in program KESERVER EX

6.1. OPC Data

	OPC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	24 Vdc Power1 fail			
2	24 Vdc Power2 fail			
3	360L-US-100-2 Slop Pump Start			
4	360L-US-100-2 Slop Pump Stop			
5	ACL11 (Pump Demand)			
6	ACL11 (Alarm)			
7	ACL12 (Alarm)			
8	ACL12 (Pump Demand)			
9	ACL13 (Pump Demand)			
10	ACL13 (Alarm)			
11	ACL14 (Alarm)			
12	ACL14 (Pump Demand)			
13	ACL21 (Alarm)			
14	ACL21 (Pump Demand)			
15	ACL22 (Alarm)			
16	ACL22 (Pump Demand)			
17	ALARM HIGH LEVEL SLOP BASE OIL			
18	ALARM HIGH TEMP BITUMEN			
19	ALARM HIGH TEMP SLOP BITUMEN			
20	ALARM HIGHHIGH LEVEL SLOP BASE OIL			

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OPC Tag		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
21	ALARM HIGHHIGH TEMP BITUMEN			
22	ALARM HIGHHIGH TEMP SLOP BITUMEN			
23	ALARM LOW LEVEL SLOP BASE OIL			
24	ALARM LOW TEMP BITUMEN			
25	ALARM LOW TEMP SLOP BITUMEN			
26	ALARM LOWLOW LEVEL SLOP BASE OIL			
27	ALARM LOWLOW TEMP BITUMEN			
28	ALARM LOWLOW TEMP SLOP BITUMEN			
29	Arm A Down (GZS052,M-101A)			
30	Arm A Down (GZS062,M-102A)			
31	Arm A Down (GZS072,M-103A)			
32	Arm A Down (GZS082,M-104A)			
33	Arm A Side (GZS051,M-101A)			
34	Arm A Side (GZS061,M-102A)			
35	Arm A Side (GZS071,M-103A)			
36	Arm A Side (GZS081,M-104A)			
37	Arm B Down (GZS054,M-101B)			
38	Arm B Down (GZS064,M-102B)			
39	Arm B Down (GZS074,M-103B)			
40	Arm B Down (GZS084,M-104B)			
41	Arm B Side (GZS053,M-101B)			
42	Arm B Side (GZS063,M-102B)			
43	Arm B Side (GZS073,M-103B)			
44	Arm B Side (GZS083,M-104B)			
45	Arm Down (GZS058,M -104)			
46	Arm Down (GZS068,M -105)			
47	Arm Side (GZS056,M- 104)			
48	Arm Side (GZS066,M- 105)			
49	Ball Valve Open SideA(101A)			
50	Ball Valve Open SideA(101B)			
51	Ball Valve Open SideA(102A)			
52	Ball Valve Open SideA(102B)			
53	Ball Valve Open SideA(103A)			

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	OPC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
54	Ball Valve Open SideA(103B)			
55	Ball Valve Open SideA(104A)			
56	Ball Valve Open SideA(104B)			
57	Card Box input			
58	ChangeOver ATG Communication			
59	ChangeOver CardReader Bay1			
60	ChangeOver CardReader Bay2			
61	ChangeOver CardReader Bay3			
62	ChangeOver CardReader Bay4			
63	ChangeOver CardReader Entrance Gate			
64	ChangeOver CardReader Exit Gate			
65	ChangeOver CardReader WieghBridge			
66	ChangeOver WeightBrigedComm			
67	EarthA (GantryA) Bit (BAY3)			
68	EarthA (GantryA) PD (BAY1)			
69	EarthA (GantryB) Bit (BAY4)			
70	EarthA (GantryB) PD (BAY2)			
71	Entry Gate Control (O/P)			
72	ESD ControlRoom S/D			
73	ESD GantryA S/D Bit (BAY3)			
74	ESD GantryA S/D PD (BAY1)			
75	ESD GantryB S/D Bit (BAY4)			
76	ESD GantryB S/D PD (BAY2)			
77	ESD Gatehouse S/D			
78	ESD_SP_ALL			
79	ESD_SP_Bay1,2			
80	ESD_SP_Bay3,4			
81	Exit Gate Control (O/P)			
82	FCV Limit Switch I/O (UY121,M-104)			
83	FCV Limit Switch I/O (UY131,M-105)			
84	FIRE DETECT S/D			
85	Infra Red1 (Weight Bridge)			
86	Infra Red2 (Weight Bridge)			

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OPC Tag		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
87	Infra Red3 (Weight Bridge)			
88	LEVEL SLOP BASE OIL			
89	Overspill (LZS031,M-104)			
90	Overspill (LZS041,M-105)			
91	Overspill A (LZS051,M-101A)			
92	Overspill A (LZS061,M-102A)			
93	Overspill A (LZS071,M-103A)			
94	Overspill A (LZS081,M-104A)			
95	Overspill B (LZS052,M-101B)			
96	Overspill B (LZS062,M-102B)			
97	Overspill B (LZS072,M-103B)			
98	Overspill B (LZS082,M-104B)			
99	Permissive(to ACL11) A			
100	Permissive(to ACL11) B			
101	Permissive(to ACL12) A			
102	Permissive(to ACL12) B			
103	Permissive(to ACL13) A			
104	Permissive(to ACL13) B			
105	Permissive(to ACL14) A			
106	Permissive(to ACL14) B			
107	Permissive(to ACL21) A			
108	Permissive(to ACL22) B			
109	Pump P101A (Running)			
110	Pump P101A (Start fail)			
111	Pump P101B (Running)			
112	Pump P101B (Start fail)			
113	Pump P101C (Running)			
114	Pump P101C (Start fail)			
115	Pump P102A (Running)			
116	Pump P102A (Start fail)			
117	Pump P102B (Running)			
118	Pump P102B (Start fail)			
119	Pump P102C (Running)			

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	OPC Tag	Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
120	Pump P102C (Start fail)			
121	Remote ST ACL11			
122	Remote ST ACL12			
123	Remote ST ACL13			
124	Remote ST ACL14			
125	Remote ST ACL21			
126	Remote ST ACL22			
127	SCALE MAX LEVEL SLOP BASE OIL			
128	SCALE MAX TEMP BITUMEN			
129	SCALE MAX TEMP SLOP BITUMEN			
130	SCALE MIN LEVEL SLOP BASE OIL			
131	SCALE MIN TEMP BITUMEN			
132	SCALE MIN TEMP SLOP BITUMEN			
133	SELECT P101A/C			
134	SELECT P101B/C			
135	SELECT P102A/C			
136	SELECT P102B/C			
137	SET HIGH LEVEL SLOP BASE OIL			
138	SET HIGH TEMP BITUMEN			
139	SET HIGH TEMP SLOP BITUMEN			
140	SET HIGHHIGH LEVEL SLOP BASE OIL			
141	SET HIGHHIGH TEMP BITUMEN			
142	SET HIGHHIGH TEMP SLOP BITUMEN			
143	SET LOW LEVEL SLOP BASE OIL			
144	SET LOW TEMP BITUMEN			
145	SET LOW TEMP SLOP BITUMEN			
146	SET LOWLOW LEVEL SLOP BASE OIL			
147	SET LOWLOW TEMP BITUMEN			
148	SET LOWLOW TEMP SLOP BITUMEN			
149	Slop Oil Status input (P103) Base Oil			
150	Slop Pump Status input (P108) Bitumen			
151	System Alarm(ACL)			
152	TEMP BITUMEN			

OPC Tag		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
153	TEMP SLOP BITUMEN			
154	TIG SP P101A			
155	TIG SP P101B			
156	TIG SP P101C			
157	TIG SP P102A			
158	TIG SP P102B			
159	TIG SP P102C			
160	TIG ST P101A			
161	TIG ST P101B			
162	TIG ST P101C			
163	TIG ST P102A			
164	TIG ST P102B			
165	TIG ST P102C			
166	UPS Fail input			
167	WeighBridgeLamp1 ON			
168	WeighBridgeLamp2 ON			
169	WeighBridgeTest Lamp			
170	WipeCardWeighBridge (Pass)			

6.2. OPC Redundant function test

TASK		Pass/Fail or Data	Corrective Action Required	Retest Pass/Fail
1	Disconnected RJ45 connector from 1756-EN2T Slot1 OPC communication status still Good quality			
2	Disconnected RJ45 connector from 1756-EN2T Slot8 OPC communication status still Good quality			

Check-list sign-off	
Tester (Name)	Signature and Date
Customer Approver (Name)	Signature and Date

7. TAS PROGRAM TEST

7.1. Create a Ticket (DO)

Creation product ticket from the TAS system is used as the default information to create order.

7.2. Create Load

The product and quantity obtained from the tickets creation. The system will (DO) arrange the compartment for the truck and check the vehicle information and permission for driver and card (Black List, Expiration Date) before creating a settlement and printing a filly guide. Then after the payment is created successfully, Driver can use the fill rate to create a filling invoice and payout.

7.3. Tap the Entrance Gate

The driver must tap the card on card reader(Entrance Gate) before truck through to loading area for receive the product, The system will check the load status. Incase the entrance card is not reached when touching the card, the Gate Barrier will not open. Tapping the card at the entrance is as follows:

Reference OPC TAG	Value Gate PASS	Description
Entry Gate Control (O/P)	1	

7.4. Tap Weight in Card

The driver must tap the card on the balance card reader to record the weight in before truck through to the loading area to receive the product. when tapping card a light status will show as follows:

Reference OPC TAG	Value Weight PASS	Description
Infrared1 (Weight Bridge)	0	Censor Head
Infrared2 (Weight Bridge)	1	Censor Mid
Infrared3 (Weight Bridge)	0	Censor Tail
WipeCardWeighBridge (Pass)	1	Green light on
WeighBridgeLamp1 ON	0	Yellow light off
WeighBridgeLamp2 ON	1	Green light on

7.5. Tap the Card at the Bay

The driver must tap the card at the payer card reader to begin the process of receiving the product according to the refill instructions. Tapping a card at the bay is as follows:

- The driver takes the truck to the pay plant as specified in the refill instructions.
- The driver connects the ground line and puts the proboscis into the vehicle's inlet.
- The driver taps the card at the payer card reader. Interlock Inspection System
 - ARM SIDE X
 - EARTH X
 - ARM DOWN X
 - OVERSPILL X
 - BALL VALVE X
 - ESD CCR
 - ESD BAY X
 - ESD FIRE ALARM
 - ESD GATE HOUSE
 - PREMISSIVE X
 - Start Pump (pump demand)
 - Stop Pump

7.6. Tap Weight out card

The driver must tap the card on the balance card reader to record the weight out before taking the vehicle to the exit for finish receiving the product. Tapping a heavy weight card is as follows:

- The driver puts the truck on the scale in the correct position according to the type of vehicle.
- The driver taps the truck card at the card reader.
- Monitoring System
 - If you tap Pass Time Recording, Heavy Weight
 - In case of failing to touch the card The system displays a warning message, the driver contacts the staff for further examination and correction.

Reference OPC TAG	Value Weight PASS	Description
Infrared1 (Weight Bridge)	0	Censor Head
Infrared2 (Weight Bridge)	1	Censor Mid
Infrared3 (Weight Bridge)	0	Censor Tail
WeighBridgeLamp1 ON	0	Yellow light off
WeighBridgeLamp2 ON	1	Green light on

7.7. Tap weight out card

The driver must tap the card on the balance card reader to record the weight out before taking the vehicle to the exit to finish receiving the product. Tapping a heavy weight card is as follows:

- The driver puts the car on the scale in the correct position according to the type of vehicle.
- The driver taps the car card at the card reader.
- Monitoring System
 - If you tap Pass Time Recording, Heavy Weight and Print Delivery Report
 - In case of failing to touch the card The system displays a warning message, the driver contacts the staff for further examination and correction.

Reference OPC TAG	Value Gate PASS	Description
Exit Gate Control (O/P)	1	

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7.8. TAS function Test

Description : Function Test				
Item	Function	Result		Remark
		Pass	Fail	
Tap the Entrance Gate				
1	Entry Gate Control (O/P)	<input type="checkbox"/>	<input type="checkbox"/>	
Tap Weight in Card				
2	Infrared1 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
3	Infrared2 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
4	Infrared3 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
5	WeighBridgeLamp1 ON	<input type="checkbox"/>	<input type="checkbox"/>	
6	WeighBridgeLamp2 ON	<input type="checkbox"/>	<input type="checkbox"/>	
Tap the Card at the Bay (PRODUCT BASE OIL 500N, BAY 1, METER 13)				
7	Arm A Side (GZS071,M-103A)	<input type="checkbox"/>	<input type="checkbox"/>	
8	EarthA (GantryA) PD (BAY1)	<input type="checkbox"/>	<input type="checkbox"/>	
9	Arm A Down (GZS072,M-103A)	<input type="checkbox"/>	<input type="checkbox"/>	
10	Overspill A (LZS071,M-103A)	<input type="checkbox"/>	<input type="checkbox"/>	
11	Ball Valve Open SideA(103A)	<input type="checkbox"/>	<input type="checkbox"/>	
12	ESD ControlRoom S/D	<input type="checkbox"/>	<input type="checkbox"/>	
13	ESD GantryA S/D PD (BAY1)	<input type="checkbox"/>	<input type="checkbox"/>	
14	FIRE DETECT S/D	<input type="checkbox"/>	<input type="checkbox"/>	
15	ESD Gatehouse S/D	<input type="checkbox"/>	<input type="checkbox"/>	
16	Permissive(to ACL13) A	<input type="checkbox"/>	<input type="checkbox"/>	
17	Remote ST ACL13 (Not used)	<input type="checkbox"/>	<input type="checkbox"/>	
18	Pump P102A (Running)			
Note:				

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Description : Function Test				
Item	Function	Result		Remark
		Pass	Fail	
Tap the Card at the Bay (PRODUCT BITUMEN 60/70, BAY 4, METER 22)				
19	Arm Side (GZS066,M- 105)	<input type="checkbox"/>	<input type="checkbox"/>	
20	EarthA (GantryB) Bit (BAY4)	<input type="checkbox"/>	<input type="checkbox"/>	
21	Arm Down (GZS068,M -105)	<input type="checkbox"/>	<input type="checkbox"/>	
22	Overspill (LZS041,M-105)	<input type="checkbox"/>	<input type="checkbox"/>	
23	ESD ControlRoom S/D	<input type="checkbox"/>	<input type="checkbox"/>	
24	ESD GantryB S/D Bit (BAY4)	<input type="checkbox"/>	<input type="checkbox"/>	
25	FIRE DETECT S/D	<input type="checkbox"/>	<input type="checkbox"/>	
26	ESD Gatehouse S/D	<input type="checkbox"/>	<input type="checkbox"/>	
27	Permissive(to ACL22) B	<input type="checkbox"/>	<input type="checkbox"/>	
28	Remote ST ACL22	<input type="checkbox"/>	<input type="checkbox"/>	
Tap the Card at the Bay				
29	Infrared1 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
30	Infrared2 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
31	Infrared3 (Weight Bridge)	<input type="checkbox"/>	<input type="checkbox"/>	
32	WeighBridgeLamp1 ON	<input type="checkbox"/>	<input type="checkbox"/>	
33	WeighBridgeLamp2 ON	<input type="checkbox"/>	<input type="checkbox"/>	
Tap the exit gate				
34	Exit Gate Control (O/P)	<input type="checkbox"/>	<input type="checkbox"/>	
Note:				

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Check-list sign-off	
Tester (Name)	Signature and Date
Customer Approver (Name)	Signature and Date

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8. SIGN-OFF CERTIFICATE

This is to certify that the subject system was duly inspected in accordance with the authorized factory inspection procedures agreed. Observations & action items in the form of Punch List are attached herewith. The system hardware and software was found to be in accordance with the specified project requirements. The system is cleared for despatch. The despatch clearance is hereby issued to Rockwell Automation to despatch system to site.

Participant	Organisation	Signature

Rockwell

Thai Lube

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APPENDIX A - DOCUMENTATION

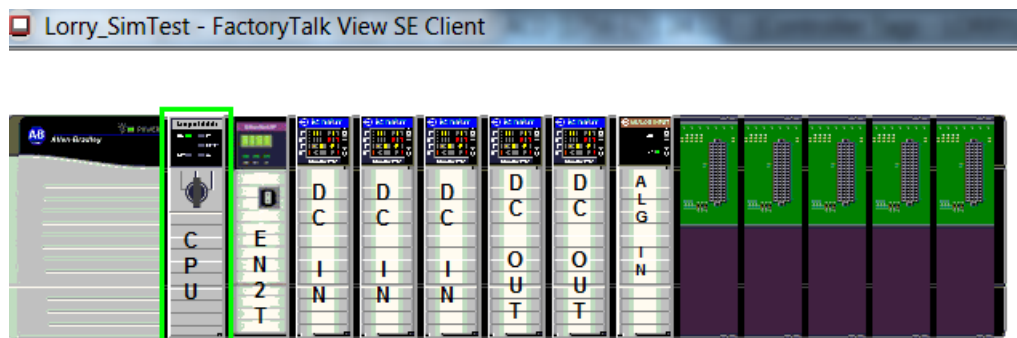
Reference documents		
#	Document	D code / ID code
[1]	System Configuration Drawing or System Architecture & Network Diagram	R1420004-3600L-IC-SMD-0001
[2]	I/O Assignment list	R1420004-3600L-IC-LST-0001
[3]	OPC address mapping list	R1420004-3600L-IC-LST-0002

APPENDIX B - FAT PUNCH LIST

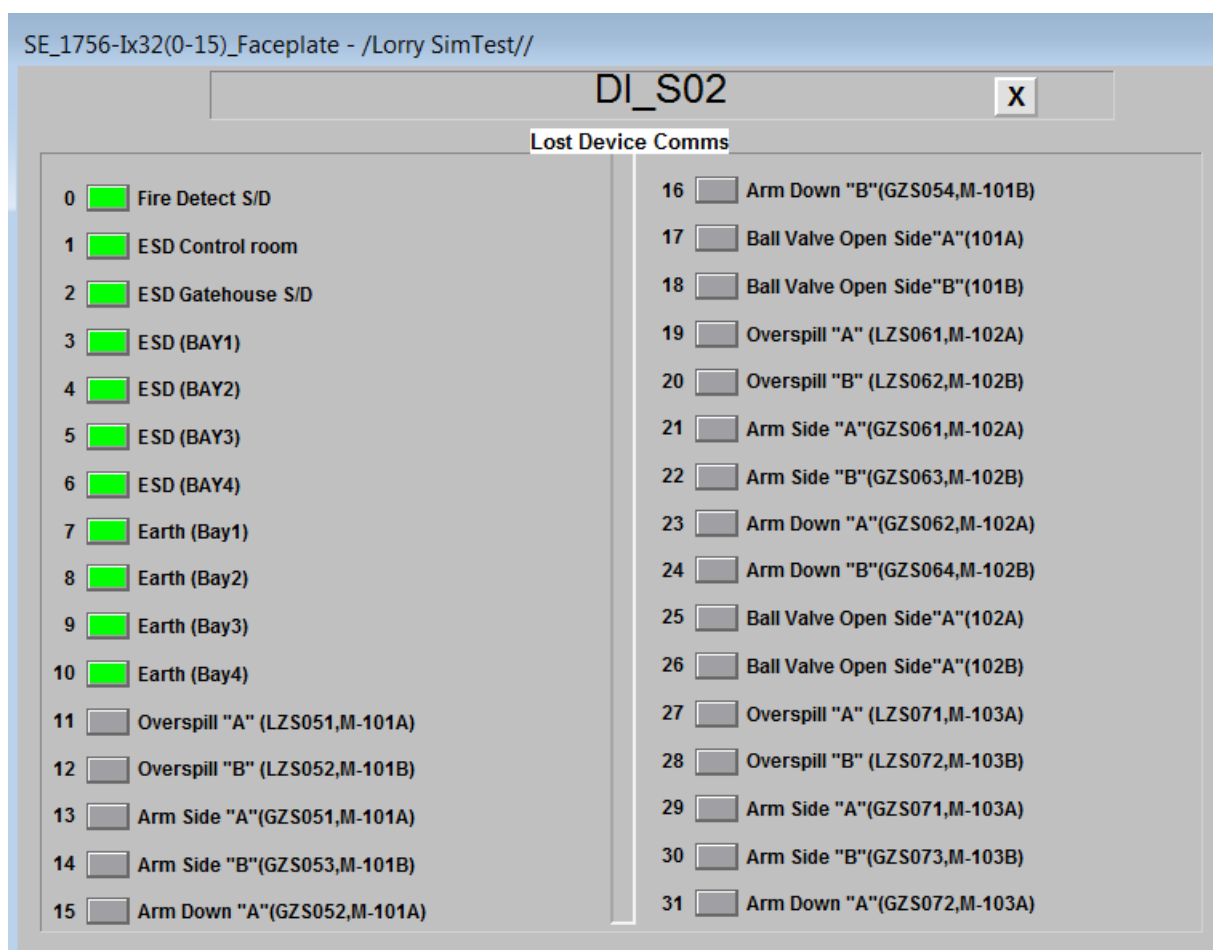
Log No	Description	Date	Signed	Retested and OK Signed	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

APPENDIX C – HMI FOR SIMULATION

Main screen



Digital Input Slot#2



Digital Input Slot#3

SE_1756-Ix32(0-15)_Faceplate - /Lorry SimTest//

DI_S03
X

<p>0 <input type="checkbox"/> Arm Down "B"(GZS074,M-103B)</p> <p>1 <input type="checkbox"/> Ball Valve Open Side"A"(103A)</p> <p>2 <input type="checkbox"/> Ball Valve Open Side"B"(103B)</p> <p>3 <input type="checkbox"/> Overspill "A" (LZS081,M-104A)</p> <p>4 <input type="checkbox"/> Overspill "B" (LZS082,M-104B)</p> <p>5 <input type="checkbox"/> Arm Side "A"(GZS081,M-104A)</p> <p>6 <input type="checkbox"/> Arm Side "B"(GZS083,M-104B)</p> <p>7 <input type="checkbox"/> Arm Down "A"(GZS082,M-104A)</p> <p>8 <input type="checkbox"/> Arm Down "B"(GZS084,M-104B)</p> <p>9 <input type="checkbox"/> Ball Valve Open Side"A"(104A)</p> <p>10 <input type="checkbox"/> Ball Valve Open Side"B"(104B)</p> <p>11 <input type="checkbox"/> Overspill (LZS031,M-104)</p> <p>12 <input type="checkbox"/> Arm Side (GZS056,M- 104)</p> <p>13 <input type="checkbox"/> Arm Down (GZS058,M -104)</p> <p>14 <input type="checkbox"/> FCV Limit Switch I/O (UY121,M-104)</p> <p>15 <input type="checkbox"/> Overspill (LZS041,M-105)</p>	<p>16 <input type="checkbox"/> Arm Side (GZS066,M- 105)</p> <p>17 <input type="checkbox"/> Arm Down (GZS068,M -105)</p> <p>18 <input type="checkbox"/> FCV Limit Switch I/O (UY131,M-105)</p> <p>19 <input type="checkbox"/> Card Box input</p> <p>20 <input type="checkbox"/> UPS Fail input</p> <p>21 <input type="checkbox"/> Slop Pump Status input (P108)(Run)</p> <p>22 <input type="checkbox"/> Drain Oil Status Running(P103)</p> <p>23 <input type="checkbox"/> ~Spare Slot 3 Chn 23</p> <p>24 <input type="checkbox"/> ~Spare Slot 3 Chn 24</p> <p>25 <input type="checkbox"/> Infra Red1 (Weight Bridge)</p> <p>26 <input type="checkbox"/> Infra Red2 (Weight Bridge)</p> <p>27 <input type="checkbox"/> Infra Red3 (Weight Bridge)</p> <p>28 <input type="checkbox"/> 24 VDC Power1 fail</p> <p>29 <input type="checkbox"/> 24 VDC Power2 fail</p> <p>30 <input type="checkbox"/> ~Spare Slot 3 Chn 30</p> <p>31 <input type="checkbox"/> ~Spare Slot 3 Chn 31</p>
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TLB Project No.: R1420004
TLB Document No. : R1420004-3600L-IC-PRO-0001
Project Name : TLB Lorry PLC Upgrading Project
RA Project No. : 800469957
RA Document No. : 800469957-TLB-008
System Location : Thai Lube Base



Digital Input Slot#4

SE_1756-Ix32(0-15)_Faceplate - /Lorry SimTest//

DI_S04

X

0 <input type="checkbox"/> Pump P101A (Running)	16 <input type="checkbox"/> Selector Pump P101A/C
1 <input type="checkbox"/> Pump P101B (Running)	17 <input type="checkbox"/> Selector Pump P101B/C
2 <input type="checkbox"/> Pump P101C (Running)	18 <input type="checkbox"/> Selector Pump P102A/C
3 <input type="checkbox"/> Pump P102A (Running)	19 <input type="checkbox"/> Selector Pump P102B/C
4 <input type="checkbox"/> Pump P102B (Running)	20 <input type="checkbox"/> ACL11 (Pump Demand)
5 <input type="checkbox"/> Pump P102C (Running)	21 <input type="checkbox"/> ACL12 (Pump Demand)
6 <input type="checkbox"/> ~ Spare Slot 4 Chn 6	22 <input type="checkbox"/> ACL13 (Pump Demand)
7 <input type="checkbox"/> ~ Spare Slot 4 Chn 7	23 <input type="checkbox"/> ACL14 (Pump Demand)
8 <input type="checkbox"/> ~ Spare Slot 4 Chn 8	24 <input type="checkbox"/> ACL21 (Pump Demand)
9 <input type="checkbox"/> ~ Spare Slot 4 Chn 9	25 <input type="checkbox"/> ACL22 (Pump Demand)
10 <input type="checkbox"/> ~ Spare Slot 4 Chn 10	26 <input type="checkbox"/> ~Spare Slot 4 Chn 26
11 <input type="checkbox"/> ~ Spare Slot 4 Chn 11	27 <input type="checkbox"/> ~Spare Slot 4 Chn 27
12 <input type="checkbox"/> ~ Spare Slot 4 Chn 12	28 <input type="checkbox"/> ~Spare Slot 4 Chn 28
13 <input type="checkbox"/> ~ Spare Slot 4 Chn 13	29 <input type="checkbox"/> ~Spare Slot 4 Chn 29
14 <input type="checkbox"/> ~ Spare Slot 4 Chn 14	30 <input type="checkbox"/> ~Spare Slot 4 Chn 30
15 <input type="checkbox"/> ~ Spare Slot 4 Chn 15	31 <input type="checkbox"/> ~Spare Slot 4 Chn 31

Digital Output Slot#5

SE_1756-Ox32(0-15)_Faceplate - /Lorry SimTest//

DO_S05 X

0 <input type="checkbox"/> Change communication Card reader BAY1	16 <input type="checkbox"/> Pump P102A (Start)
1 <input type="checkbox"/> ~Spare Slot 5 Chn 1	17 <input type="checkbox"/> Pump P102A (Stop)
2 <input type="checkbox"/> Change communication Card Reader Entry Gate	18 <input type="checkbox"/> Pump P102B (Start)
3 <input type="checkbox"/> Change communication Card Reader Exit Gate	19 <input type="checkbox"/> Pump P102B (Stop)
4 <input type="checkbox"/> Change communication Card Reader Weigh Bridge	20 <input type="checkbox"/> Pump P102C (Start)
5 <input type="checkbox"/> Change communication Card Reader Bay3	21 <input type="checkbox"/> Pump P102C (Stop)
6 <input type="checkbox"/> Change communication Card Reader Bay4	22 <input type="checkbox"/> Process Alarm ESD &; Fire detect AI
7 <input type="checkbox"/> Change communication Card Reader Bay2	23 <input type="checkbox"/> ~Spare Slot 5 Chn 23
8 <input type="checkbox"/> ~Spare Slot 5 Chn 8	24 <input type="checkbox"/> Entrance Gate Control(O/P)
9 <input type="checkbox"/> ~Spare Slot 5 Chn 9	25 <input type="checkbox"/> Exit Gate Control (O/P)
10 <input type="checkbox"/> Pump P101A (Start)	26 <input type="checkbox"/> Solenoid O/P (VFC UY 120)
11 <input type="checkbox"/> Pump P101A (Stop)	27 <input type="checkbox"/> Solenoid O/P (VFC UY 130)
12 <input type="checkbox"/> Pump P101B (Start)	28 <input type="checkbox"/> Permissive(to ACL11)
13 <input type="checkbox"/> Pump P101B (Stop)	29 <input type="checkbox"/> Permissive(to ACL12)
14 <input type="checkbox"/> Pump P101C (Start)	30 <input type="checkbox"/> Permissive(to ACL13)
15 <input type="checkbox"/> Pump P101C (Stop)	31 <input type="checkbox"/> Permissive(to ACL14)

Digital Output Slot#6

SE_1756-Ox32(0-15)_Faceplate - /Lorry SimTest//

DO_S05 X

0	<input type="checkbox"/> Change communication Card reader BAY1	16	<input type="checkbox"/> Pump P102A (Start)
1	<input type="checkbox"/> ~Spare Slot 5 Chn 1	17	<input type="checkbox"/> Pump P102A (Stop)
2	<input type="checkbox"/> Change communication Card Reader Entry Gate	18	<input type="checkbox"/> Pump P102B (Start)
3	<input type="checkbox"/> Change communication Card Reader Exit Gate	19	<input type="checkbox"/> Pump P102B (Stop)
4	<input type="checkbox"/> Change communication Card Reader Weigh Bridge	20	<input type="checkbox"/> Pump P102C (Start)
5	<input type="checkbox"/> Change communication Card Reader Bay3	21	<input type="checkbox"/> Pump P102C (Stop)
6	<input type="checkbox"/> Change communication Card Reader Bay4	22	<input type="checkbox"/> Process Alarm ESD &; Fire detect AI
7	<input type="checkbox"/> Change communication Card Reader Bay2	23	<input type="checkbox"/> ~Spare Slot 5 Chn 23
8	<input type="checkbox"/> ~Spare Slot 5 Chn 8	24	<input type="checkbox"/> Entrance Gate Control(O/P)
9	<input type="checkbox"/> ~Spare Slot 5 Chn 9	25	<input type="checkbox"/> Exit Gate Control (O/P)
10	<input type="checkbox"/> Pump P101A (Start)	26	<input type="checkbox"/> Solenoid O/P (VFC UY 120)
11	<input type="checkbox"/> Pump P101A (Stop)	27	<input type="checkbox"/> Solenoid O/P (VFC UY 130)
12	<input type="checkbox"/> Pump P101B (Start)	28	<input type="checkbox"/> Permissive(to ACL11)
13	<input type="checkbox"/> Pump P101B (Stop)	29	<input type="checkbox"/> Permissive(to ACL12)
14	<input type="checkbox"/> Pump P101C (Start)	30	<input type="checkbox"/> Permissive(to ACL13)
15	<input type="checkbox"/> Pump P101C (Stop)	31	<input type="checkbox"/> Permissive(to ACL14)

Analog Input Slot#7

SE_1756-IF6I-Faceplate - /Lorry SimTest//

Analog Input 1756-IF8I X

Ch 0: -24.9969 UnderRange	Ch 4: -24.9965 UnderRange
Ch 1: -24.9936 UnderRange	Ch 5: -24.9969 UnderRange
Ch 2: -24.9969 UnderRange	Ch 6: -24.9984 UnderRange
Ch 3: -24.9966 UnderRange	Ch 7: -24.9970 UnderRange