

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض			 NISOC
Control Sazan Pooyande Co. 	Project SAT Procedure			Page No.
	Date	Document No.	Rev.	1 of 6
	2022/02/14	Q-CSP-99-178	0	

“PROJECT SAT PROCEDURE (SAT)” Rev. A

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  	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض			 NISOC	
Control Sazan Pooyande Co. 	Project SAT Procedure			Page No.	
	Date	Document No.	Rev.	2 of 6	
	2022/02/14	Q-CSP-99-178	0		

Revision Index																	
Sheet	Rev.								Sheet	Rev.							
	A	B	C	D	E	F	G	H		A	B	C	D	E	F	G	H
1	X								41								
2	X								42								
3	X								43								
4	X								44								
5	X								45								
6	X								46								
7									47								
8									48								
9									49								
10									50								
11									51								
12									52								
13									53								
14									54								
15									55								
16									56								
17									57								
18									58								
19									59								
20									60								
21									61								
22									62								
23									63								
24									64								
25									65								
26									66								
27									67								
28									68								
29									69								
30									70								
31									71								
32									72								
33									73								
34									74								
35									75								
36									76								
37									77								
38									78								
39									79								
40									80								

  	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض			 NISOC
Control Sazan Pooyande Co. 	Project SAT Procedure			Page No.
	Date	Document No.	Rev.	3 of 6
	2022/02/14	Q-CSP-99-178	0	

TITLE.....PAGE

CONTENT PAGE	3
INTRODUCTION AND SCOPE	4
1. INPUT/OUTPUT LOOP CHECK:	4
1.1. DIGITAL INPUT/OUTPUT LOOP TEST	4
1.1.1. DIGITAL INPUT	4
1.1.2. DIGITAL OUTPUT	4
1.2. ANOLOG INPUT/OUTPUT LOOP TEST	5
1.2.1. ANALOG INPUT	5
1.2.2. ANALOG OUTPUT	5
2. CHECK OF PLC HMI GRAPHIC DISPLAY PAGES:	5

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض	 NISOC						
Control Sazan Pooyande Co. 	Project SAT Procedure <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 20%;">Date</th><th style="width: 50%;">Document No.</th><th style="width: 30%;">Rev.</th></tr> <tr> <td style="text-align: center;">2022/02/14</td><td style="text-align: center;">Q-CSP-99-178</td><td style="text-align: center;">0</td></tr> </table>	Date	Document No.	Rev.	2022/02/14	Q-CSP-99-178	0	Page No. 4 of 6
Date	Document No.	Rev.						
2022/02/14	Q-CSP-99-178	0						

INTRODUCTION AND SCOPE

Control Sazan. Co. supplies the PMS Panels & Accessories for Water Transmission Pipe line From Kousar Dam To Gachsaran Petrochemical Co The PLC Panels are to be tested in site.

The Test procedure document is provided by Control Sazan Co. to guide and conduct the test to satisfy all concerned about the acceptability of PLC as per requirements of the process control

and purchase order of client. The result of test that will be carried out according to mentioned following test and the PUNCH LIST documents will be signed by full responsible representative of client and vendor in the related punch lists. The whole documentation, including the test certificate, will be collected and will form part of the final documentation that will be handed over to the client.

1. INPUT/OUTPUT LOOP CHECK:

1.1. DIGITAL INPUT/OUTPUT LOOP TEST

☐ SCOPE:

The purpose of this test is to verify the proper functioning of digital field input/output signals acquisition which includes I/O cards and any needed interfaces (such as interposing relays, I.S. isolator barriers). These checks will be done parallel to the HMI graphic display pages check (section 2) and 100% of loop checks will be done.

☐ APPLICABLE DOCUMENTS:

- PMS I/O CONFIGURATION
- PMS CP TERMINATION SCH

1.1.1. DIGITAL INPUT

☐ METHOD:

Select the input from I/O configuration list, exciting it in site and check proper status changes on relevant LED on input module and at the same time relevant indicating on HMI display screen on each of Operator Stations. All digital inputs will be tested in this section.

☐ RESULT:

All devices and relevant indicating on HMI display shall properly react to the excited input changes and the test result will be documented in PMS SAT PUNCH LIST - INPUT / OUTPUT LIST and any possible deviations will be corrected in the mentioned punch list.

1.1.2. DIGITAL OUTPUT

☐ METHOD:

Select the output from I/O configuration list, Change the status of the digital output on the engineering station by forcing on and off the selected output channel, check proper status changes on relevant LED on output module and related relay then verify the correct changes through the site according to the related command. All digital outputs will be tested in this section.

☐ RESULT:

  	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض			 NISOC
Control Sazan Pooyande Co. 	Project SAT Procedure			Page No.
	Date	Document No.	Rev.	5 of 6
	2022/02/14	Q-CSP-99-178	0	

All devices shall properly react to the excited output changes and the test result will documented in PMS SAT PUNCH LIST - INPUT / OUTPUT LIST and any possible deviations will be corrected in the mentioned punch list.

ANOLOG INPUT/OUTPUT LOOP TEST

☐ SCOPE:

The purpose of this test is to verify the proper functioning of analog field input/output signals which includes I/O cards and any needed interfaces (such as I.S. isolator barriers) These checks will be done parallel the HMI graphic display pages check (section 2) and 100% of loop checks will be done

☐ APPLICABLE DRAWINGS:

- PMS I/O CONFIGURATION LIST
- PMS CP TERMINATION SCH.

1.2.1. ANALOG INPUT

☐ METHOD:

Connect a hand held communicator to a field device that wired to an analog input modules. Change the value of simulation device from 0% to 50% and to 100% and check the relevant value from HMI station indicate in proper unit or percentage. All analog inputs will be tested in this section.

☐ RESULT:

All indicating on HMI display screen shall properly react to the excited input changes and the test result will be documented in PMS SAT PUNCH LIST - INPUT / OUTPUT LIST (Doc. No.: VP-LJ2-ST-INP-CS100-054) and any possible deviations will be corrected in the mentioned punch list.

1.2.2. ANALOG OUTPUT

☐ METHOD:

Connect an Ampere meter to field device that wired to analog output module. Change the value of analog output from HMI screen by putting the relevant PID controller in manual mode then change the output value from 0% to 50% and to 100% and measure the relevant value from the relevant field device by the ampere meter. All analog output will be tested in this section.

☐ RESULT:


All devices shall properly react to the excited output changes and the test result will be documented in PMS SAT PUNCH LIST - INPUT / OUTPUT LIST and any possible deviations will be corrected in the mentioned punch list.

2. CHECK OF PLC HMI GRAPHIC DISPLAY PAGES:

☐ SCOPE:

This check will be done for verifying that HMI graphic display pages are in accordance with approved document.

☐ APPLICABLE DRAWINGS:

  	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض	 NISOC	
<i>Control Sazan</i> <i>Pooyande Co.</i> 	Project SAT Procedure		Page No.
	Date	Document No.	Rev.
	2022/02/14	Q-CSP-99-178	0

- HMI GRAPHIC DISPLAY

☐ **METHOD:**

As the visual check, which will be done during the I/O checks (section1). for details of HMI graphic display pages, the general specification of display pages such as color and component legends, overview page, selecting areas ,alarm acknowledgement, event list, reports ,... will be check visually.

☐ **RESULT:**

All pages should be in accordance with approved document and the results will be documented in PMS SAT PUNCH LIST - HMI GRAPHIC DISPLAY and any possible deviations will be corrected in the mentioned punch list.

3. CHECK OF PLC PROGRAM AND CONFIGURATION

☐ **SCOPE:**

To check logic sequences, PLC relative devices operation and control loops, with reference to approved logic diagram. The below list show the logic sections:

- i. OPERATION OF MOTORS
- ii. OPERATION OF MOV
- iii. OPERATION OF SOV
- iv. OPERATION OF MCC SECTION
- v. OPERATION OF CONTROL LOOPS

☐ **APPLICABLE DRAWINGS AND DOCUMENS:**

- PMS LOGIC DIAGRAM
- PMS FUNCTION BLOCK DIAGRAM

☐ **METHOD:**

Check all the I/O points, both digital and analog ones, with PCS7 software which has been excited them from field. All the logic sequences, one by one, will be tested in order to perform a complete functional test through graphical screen. Additionally all control loops consist of single, split and cascade loops will be checked functionally. During each test related sequence alarm and event report will be checked.

☐ **RESULT:**

Whole operation functionality will be checked.
 The results will be documented in PMS SAT PUNCH LIST - PROGRAM & CONFIGURATION and any possible deviations will be noted in the mentioned punch list.