

ORPS Operating Experience Report

ORPS contains 58217 OR(s) with 61527 occurrences(s) as of 3/19/2018 4:01:54 AM
Query selected 1 OR(s) with 1 occurrences(s) as of 3/19/2018 4:01:56 AM

1)Report Number: [EM--PPPO-FRNP-PGDPDAR-2018-0003](#) **Post 2017 Redesign**

Secretarial Office: Environmental Management

Lab/Site/Org: Paducah Gaseous Diffusion Plant

Facility Name: Paducah Deactivation & Remediation

Subject/Title: C-335 Surge Drum Pressure Instrumentation Discovered Isolated

Date/Time Discovered: 01/17/2018 11:40 (ETZ)

Date/Time Categorized: 01/18/2018 13:30 (ETZ)

Report Type: Final

Report Dates:

Notification Type	Notification Date	Notification Time
Notification	01/23/2018	17:22 (ETZ)
Initial Update	03/16/2018	12:51 (ETZ)
Latest Update	03/16/2018	12:51 (ETZ)
Final	03/16/2018	14:14 (ETZ)

Reporting Level: H

Reporting Criteria: 3C(3) - A loss of one or more nuclear criticality documented controls such that an accidental criticality is possible from the loss of one additional documented control.

Cause Codes: A4B5C04 - Management Problem; Change Management LTA; Risks / consequences associated with change not adequately reviewed / assessed
A5B2C05 - Communications Less Than Adequate (LTA); Written Communication Content LTA; Ambiguous instructions / requirements
A3B1C06 - Human Performance Less Than Adequate (LTA); Skill Based Errors; Wrong action selected based on similarity with other actions

ISM: 2) Analyze the Hazards

Subcontractor Involved: No

Occurrence Description: SUMMARY:

On 01/17/18 at approximately 1130 hours (all times reported in ETZ) in response to a surge drum pressure recorder not reading correctly in the C-335 Area Control Room, instrument maintenance (IM) personnel connected a sample buggy to the surge drum instrumentation to read the C drum bank pressure. The as-read sample buggy pressure indicated a pressure approximately 2 psia lower than expected, based on the previous periodic check performed. The Operator performing the pressure check, noted the lower than expected reading and notified the C-335 Facility Manager (FM) and Front Line Manager (FLM) who discovered the instrument loop isolation valves for each surge drum bank, located behind the instrument panel in the surge drum room, were closed. The Plant Shift Superintendent (PSS)/Nuclear Facility Manager (NFM) immediately notified Nuclear Criticality Safety (NCS) personnel. As directed by NCS personnel, the

instrument loop isolation valves were opened and pressures were obtained in the C-335 A, B, C, D, and E Surge Drums. The newly-obtained drum pressures were within expected acceptable parameters as required by Nuclear Criticality Safety Evaluation (NCSE) 113. An extent-of-condition review was performed in other process buildings. Buildings C-337, C-333, and C-331 were checked and no other system was found to be in this configuration. A Fact Finding was conducted at 0730 hours on 01/18/18.

BACKGROUND:

On 01/17/18 at approximately 1140 hours, while troubleshooting a problem with the C-335 C surge drum 0-25 psia recorder, Operations personnel discovered the instrument loop isolation valves associated with C-335 A, B, C, D, and E Surge Drums in the closed position. With these instrument loop isolation valves closed, the surge drums were isolated such that accurate, daily pressure readings were not being obtained. Daily surge drum pressure readings are required to be obtained to ensure compliance with NCSE 113; while the procedure CP4-OP-0438, Periodic Regulatory Checks is more conservative, and requires checks once per shift. Following discovery, the PSS/NFM was notified at 1140 hours. The PSS/NFM immediately notified NCS personnel. As directed by NCS personnel, the instrument loop isolation valves were opened and pressures were obtained in the C-335 A, B, C, D, and E Surge Drums. The newly-obtained drum pressures were within expected acceptable parameters as required by NCSE 113. A Fact Finding was conducted at 0730 hours on 01/18/18.

OCCURRENCE RE-CATEGORIZATION 01/18/18:

This occurrence was initially categorized at 1348 hours on 01/17/18 as Group 3, Nuclear Safety Basis, Subgroup C, Nuclear Criticality Safety Control Violations, (4) L - A deficiency in criticality safety analysis or degradation of a documented criticality control (or controls) such that adequate controls were not in place for a credible criticality accident scenario. Appropriate notifications including the DOE Facility Representative and the Four Rivers Nuclear Partnership, LLC (FRNP) Emergency Duty Officer (EDO) were made at 1348 hours based on the initial categorization. Upon further investigation and receipt of the Criticality Safety Anomalous Condition Report number NCS-ACR-18-001 from NCS, this occurrence was re-categorized to Group 3, Nuclear Safety Basis, Subgroup C, Nuclear Criticality Safety Control Violations, (3) H - A loss of one or more nuclear criticality documented controls such that an accidental criticality is possible from the loss of one additional documented control. Notification times listed in this report reflect the initial and re-categorization notifications.

The Issues Management tracking number related to this Occurrence is CA-001126.

Cause Description:

A Root Cause Analysis was performed in accordance with CP3-QA-3007, FR1, Issue Investigation and Causal Analysis. The analysis approach chosen for this evaluation included Event and Causal Factor Charting and Why Analysis methods. The analysis identified one Root Cause and two

Contributing Causes.

The Root Cause was determined to be DOE Cause Code A4/B5/C04: Management Problem/Change Management LTA/Risks and consequences associated with change not adequately reviewed/assessed. FRNP determined the root cause of this event was attributed to the risks and consequences associated with the initial implementation of NCS controls for the surge drum pressure instrumentation being less than adequate, which resulted in lack of configuration control. The lack of configuration control, combined with weak historical Conduct of Operations practices, with respect to isolation valves two inches or less, allowed Operations personnel to close the valves when the system was considered in service. This resulted in the NCS violation when pressure readings were obtained from isolated instrumentation. Corrective Action (CA) Numbers 4 and 5 address the Root Cause.

The following Contributing Causes were identified:

Contributing Cause 1: A5/B2/C05: Change Management LTA and written Communications LTA/Ambiguous Instruction/Requirements. Ambiguous procedure instructions prevented Operations from implementing the appropriate level of control required in work execution for smaller (i.e., less than two-inch nominal) NCS related valves. Ambiguous drum calibration procedure step allowed Instrument Maintenance (IM) personnel to re-interpret prerequisites to include valves not originally intended (i.e., erroneously included smaller instrument isolation valves). The ambiguous instructions also allowed Operations personnel to conduct manipulations of the smaller valves without using documented and approved valve line-up instructions. CAs 5 and 6 addresses this Contributing Cause.

Contributing Cause 2: A3/B1/C06: Human performance LTA/wrong action selected based on similarity with other actions. IM personnel, based on ambiguous task instruction, used knowledge based flexibilities not commensurate with NCS-related components during calibration activities. CA 8 addresses this Contributing Cause.

Compensatory Actions included developing and implementing valve line-ups for surge drum pressure instrumentation using redlined/approved drawings; labeling associated valves in accordance with CP3-OP-0016, Component Labeling procedure, removing caps from P-nut valves that, if closed, would isolate the pressure instrumentation, and Engineering and Next Level Manager reviewing the line-ups for accuracy.

The Root Cause Analysis included discussion of the Extent-of-Cause that was attributed to the risks and consequences associated with the initial implementation of NCS controls for the surge drum pressure instrumentation being less than adequate, which resulted in lack of configuration control. The lack of configuration control, combined with weak historical Conduct of Operations practices, with respect to isolation valves two inches or less, allowed Operations personnel to close the valves when the system was considered in service. This resulted in the NCS

violation when pressure readings were obtained from isolated instrumentation. CA 3 supplements this discussion to include review of existing/approved NCSE controls important for criticality safety and determine if configuration control has been established.

Extent-of-Condition was addressed by verifying no other surge drum isolation valves were closed in other process buildings (C-331, C-333, and C-337). FRNP reviewed the most recent calibration-related activity work orders (e.g., calibration check, point check) for the drum pressure instrument systems; reviewed the associated calibration procedure that was in effect at the time of the task; and reviewed corresponding operator shutdown facility checks (CP3-OP-0313 data) for the time frame of the work order task (i.e., minimum of day before, day of, and day after) with emphasis on drum pressure readings. Interviews and additional reviews were conducted as necessary. Issues were identified in the FRNP Issues Management system to provide timely communication of pertinent new conditions or quality improvement items that were identified, as applicable.

Operating Conditions:

Activity Category:

Immediate Action(s):

The instrument loop isolation valves were opened and pressures were obtained in the C-335 surge drums.

The other process buildings C-337, C-333, and C-331 were checked and no other system was found to be in this configuration.

FM Evaluation:

Facility Representative or Designated DOE

Representative Input:

DOE Program Manager

Input:

Further Evaluation is Required:

NA

Division or Project:

Four Rivers Nuclear Partnership

Plant Area:

C-335

System/Building/Equipment: C-335 Surge Drum

Facility Function:

Balance of Plant - Infrastructure (Other Functions not specifically listed in this Category)

Corrective Action 01:

Target Completion Date: 03/15/2018	Actual Completion Date: 03/15/2018
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[AI-0001489] Issue a Long-Term Order to Facility Operation personnel to clarify Operator actions for NCS-related valves.

Corrective Action 02:

Target Completion Date: 03/02/2018	Actual Completion Date: 03/02/2018
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[AI-0001428] Determine Corrective Actions.

Corrective Action 03:

Target Completion Date: 04/18/2018	Actual Completion Date:
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[AI-0001490] Conduct an extent-of-cause review of existing/approved

NCSE control important for criticality safety and determine if configuration control has been established.

Corrective Action 04:

Target Completion Date: 04/23/2018	Actual Completion Date:
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[AI-0001491] Revise procedure CP3-EN-0400, Quality Level Determination, to require notification to the Facility Manager when implementing a QL 2 quality level determination.

Corrective Action 05:

Target Completion Date: 04/23/2018	Actual Completion Date:
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[AI-0001492] Revise the following procedures and form: Revise CP4-OP-0027, Status Control, Revise CP3-OP-0015, Control of Equipment and System Status, Revise CP4-OP-1121, Cascade Valve and Leak Rating Operations, Revise CP4-OP-0436, Operation of Surge Drums, Revise CP3-OP-0313, Repetitive Task Schedule, CP4-OP-0438, Periodic Regulatory Checks, and Revise CP3-EN-1031-F02, Implementation Verification Checklist.

Corrective Action 06:

Target Completion Date: 04/13/2018	Actual Completion Date:
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[AI-0001493] Revise drum pressure instrumentation calibration procedures listed in the Work Pause.

Corrective Action 07:

Target Completion Date: 05/07/2018	Actual Completion Date:
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[AI-0001494] Provide training to Facility Operations on the procedure revisions.

Corrective Action 08:

Target Completion Date: 04/20/2018	Actual Completion Date:
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[AI-0001495] Provide training to IM on the procedure revisions.

Lessons(s) Learned:

A Lessons Learned will be prepared [AI-0001496]

HQ Keywords:

01E--Inadequate Conduct of Operations - Operations Procedure Noncompliance
 01J--Inadequate Conduct of Operations - Criticality Procedure Noncompliance
 12L--EH Categories - Nuclear Criticality Safety Concern
 14E--Quality Assurance - Work Process Deficiency

HQ Summary:

On January 17, 2018, in response to a surge drum pressure recorder not reading correctly in the C-335 Area Control Room, instrument maintenance personnel connected a sample buggy to the surge drum instrumentation to read the "C" drum bank pressure. The as-read sample buggy pressure indicated a pressure approximately 2 pounds per square inch absolute lower than expected, based on the previous periodic check performed. The operator performing the pressure check noted the lower than expected reading and notified the C-335 Facility Manager and Front Line Manager, who discovered the instrument loop isolation valves for each surge drum bank, located behind the instrument panel in the surge drum room, were closed. The Plant Shift Superintendent/Nuclear Facility Manager immediately notified Nuclear Criticality Safety (NCS) personnel. As directed by NCS personnel, the instrument loop isolation valves were opened, and pressures were obtained in the C-335 "A", "B", "C", "D", and "E" Surge Drums. The newly-obtained drum pressures were within expected acceptable parameters as required by the Nuclear Criticality Safety Evaluation. An extent-of-condition review was performed in other process

buildings and no other system was found to be in this configuration. A fact-finding meeting was conducted.

Similar OR Report Number:

Facility Manager:

Name Barletto, Joseph
Phone (270) 441-6211
Title

Originator:

Name Roberson, Regina Waynette
Phone (270) 441-5124
Title CONTRACTOR PERFORMANCE ASSURANCE PRO

HQ OC Notification:

Date Time Person Notified Organization

NA NA NA NA

Other Notifications:

Date Time Person Notified Organization

01/17/2018	13:48 (ETZ)	Mike Swartz	FRNP
01/17/2018	13:48 (ETZ)	Chris Wagner	DOE
01/18/2018	13:30 (ETZ)	David Martin	FRNP
01/18/2018	13:38 (ETZ)	Chris Wagner	DOE
01/18/2018	13:40 (ETZ)	Mike Swartz	FRNP
01/18/2018	13:58 (ETZ)	Bill Kirby	FRNP

Authorized Classifier(AC): Terrell Sorrell Date: 03/15/2018
