

Attachment 5.1(a) – Notice of Substantial Completion Form**NOTICE OF SUBSTANTIAL COMPLETION**

To: Ontario Power Generation Inc.	Contract: Unit 3 Emergency Heat Sink; ES MSA (T&M)
	Contract No.: OPG PO 236998
	Date: 18-July-2023

Defined terms used in this Notice have the same meanings given to those terms in the Contract. In accordance with section 5.1(a) of Appendix 5 to the ES MSA included in the Contract, the Contractor hereby gives OPG notice that Substantial Completion has occurred as follows:

Date of “substantial performance” under the Construction Act (Ontario)	Actualized on 01-Jun-2023. Rev 01 submitted on 07-Jun-2023 (with administrative mark-ups).
Grounds for Requesting Substantial Completion	Modification has been declared Available for Service- per AFS Report NK38-REP-33410-10125).
Costs to Finish the Services	~\$43,200 (Class 4 Estimate).
Delivery of Approvals	Per OPG N-FORM-10091 “Turnover Declaration”.
Delivery of Reports	Per OPG N-FORM-10091 “Turnover Declaration”.
Independent Professional Certificate	Not applicable for U3.

[E.S. FOX Limited, Nuclear Services]

By: Rubinder Gill

Name: Rubinder Gill

Title: Program Manager (Acting)

Attachment 5.1(b) – Substantial Completion Confirmation Form

CONFIRMATION OF SUBSTANTIAL COMPLETION

To: E.S. Fox Limited	Contract: (the “Contract”) Emergency Heat Sink, Unit 3 Contract No.: WS-YN-2014-0593 PO 236998 Date: 7/19/2023
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Defined terms used in this Notice have the same meanings given to those terms in the Contract.
OPG has determined that:

(a) Substantial Completion has occurred effective 1 June 2023 ; or	<input checked="" type="checkbox"/>
(b) Substantial Completion has not occurred for the reasons set out in Exhibit A to this Notice.	<input type="checkbox"/>

ONTARIO POWER GENERATION INC.

DocuSigned by:

By:

Nino (Nunzio) Mastrocola

Name: Nino (Nunzio) Mastrocola

Title: Senior Manager

Attachment 5.2 – Final Completion Confirmation

**Form CONFIRMATION OF FINAL
COMPLETION**

To: ■	Contract: ■ (the “Contract”)
	Contract No.: ■
	Date: ■

Defined terms used in this Notice have the same meanings given to those terms in the Contract. OPG has determined that:

(a)	Final Completion has occurred effective ■, 20■; or	<input type="checkbox"/>
(b)	Final Completion has not occurred for the reasons set out on Exhibit A to this Notice.	<input type="checkbox"/>

ONTARIO POWER GENERATION INC.

By: _____
Name: ■

Notice of Substantial Completion

U3 Emergency Heat Sink

OPG Project: 73600

ES Fox Project: 18-5186



NUCLEAR SERVICES



Project Correspondence

Correspondence #: ESFL-5186-031 R01 / NRR
Date: 07-Jun-2023
ES Fox Job Number: 18-5186
OPG Project Number: 73600
PO & Line(s): 236998-004 & 007
Job Title: U3 EHS

Attn: Kamalraj Thananayagam, Manager Projects

This memorandum is being submitted to document that Substantial Completion has been achieved on the U3 Emergency Heat Sink project per Scope of Work document NK38-SOW-09701-10138 R005. As a result, the following Design Engineering Changes have been declared Available For Service (Reference Appendix A: NK38-REP-33410-10125 R00):

DEC 141005- Main Piping and Supports

DEC 141006- Emergency Service Water Instrumentation and Controls

DEC 141007- Civil and Structural Modifications

DEC 141008- Leak Detection System

DEC 143659- Leak Detection DCC Patches

DEC 143660- PIDS PI Server I/O Point Update

Included with the submission of this memo are: the applicable Notice of Substantial Completion forms (ES-MSA Attachment 5.1a), along with the individual Turnover Declaration forms which have been attached as reference for the aforementioned dates. Please note: the 'Cost to Complete Services' estimate is based on the cost-to-complete as of the date of this memo submission.

As of 01-Jun-2023, all field work is complete on U3 EHS and the HDOCs for the aforementioned scopes have been accepted by OPG with the exception of the following scopes which will be submitted and accepted as soon as possible (TCD: 27-Jul-2023):

History Doc- 5186-7000-D TIE INS FOR EHS CLASS 1 & ACU IN CONTAINMENT

History Doc- 5186-7002-EHS-MECH CLASS 1 PIPING @ EP5066

History Doc- 5186-7003-LD-IN EHS LEAK DETECTION TUBING INSIDE CONTAINMENT

History Doc- 5186-7003-E INSTALL INSTRUMENTATION

History Doc- 5186-7003-LD-OUT EHS LEAK DETECTION TUBING OUTSIDE CONTAINMENT

History Doc- 5186-7004-PRE-FAB-SITE



Project Correspondence

Currently, there are pending Oncore charges (reflective of a one week lag) that require urgent OPG approval to facilitate close-out. It is assumed OPG will approve these costs in full.

Oncore Step 2: \$18,494

Oncore Step 3+: \$352,613

In addition to the aforementioned Oncore pending charges, see below for the overview of the current project financial data as of 01-Jun-2023:

Total Contract Value (PO 236998-004 & 007): \$10,764,647.40

Pending Change Notice (5186-CN-034): \$608,583.01

Total Oncore Actuals: \$11,682,334.00

Estimate to Complete (Class 4) = QTY: 6 weeks x 4 shifts/week x 5 hours/shift (0.5 FTE) x \$120 (blended indirect rate) x [QTY:2 Doc Control Resources + QTY:1 QCI Resource] = \$43,200

EAC Breakdown = Actuals-to-Date + Estimate to Complete (closeout) = \$11,725,534.00

Note: ESFL will need to reconcile the T&M overages against the existing budget via a pending Change Notice (5186-CN-035).

Sincerely,

A handwritten signature in black ink that reads "Rubinder Gill". The signature is written in a cursive, flowing style.

Rubinder Gill, ESFL Refurbishment Program Manager (Acting)

Enclosure: NK38-REP-33410-10125 R00

cc: Rahavi Selvarajah, Pranavan Sambavalingam, Nunzio Mastrocola, Rachel Hignett, Hark Mander



Available For Service (AFS) Report

Internal Use Only	
Document Number: NK38-REP-33410-10125	
Sheet Number: N/A	Revision: R000

Title:

FINAL AFS REPORT FOR EMERGENCY HEAT SINK - ALTERNATE SUPPLY TO HEAT
TRANSPORT SYSTEM

Internal Use Only

Final AFS Report for Emergency Heat Sink - Alternate Supply to Heat Transport System - Unit 3

MEC Number: 123042 Rev 01

**DEC Number: 141005 Rev 09, 141006 Rev 07, 141007 Rev 03,
141008 Rev 05, 143659 Rev 00, 143660 Rev 01**

Prepared by: S. Pranavan - 18-Apr-2023

Pranavan Sambavalingam
Modification Team Lead
Balance of Plant – OPG

Date

Reviewed by: D. Ridge 18-Apr-2023

Dustin Ridge
Design Team Lead
Refurbishment Design – OPG

Date

Reviewed by: Kam 18APR2023

Kam Thananayagam
Project Manager
Balance of Plant – OPG

Date

Approved by: N. Mastrocola 18APR2023

Nunzio Mastrocola
Senior Manager Projects
Balance of Plant – OPG

Date

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Revision Summary

Revision Number	Affected Section	Description of Revisions
R000		Initial Issue – Partial AFS
R001	All	Document revised for Final AFS

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**FINAL AFS REPORT FOR EMERGENCY HEAT SINK - ALTERNATE
SUPPLY TO HEAT TRANSPORT SYSTEM**

Executive Summary

The Emergency Heat Sink modification (EHS) (MEC 123042) provides a permanent pipe connection from the Emergency Service Water (ESW) system to the Primary Heat Transport System (PHTS) to inject ESW for certain Beyond Design Basis Accidents (BDBA).

This Final AFS Report documents information as it relates to the Class 1 and Class 6 portion of the modification and it includes details for each phase of the project (design, installation, commissioning, operation, maintenance, and lessons learned). The modification was successfully commissioned and can be turned over to operations.

The modifications addressed in this Available for Service (AFS) Report for Unit 3 are covered under Master EC-123042 and are installed as per detailed design changes.

The Design Engineering Changes pertaining to this AFS for Unit 3 are listed below:

- EC-141005 (Mechanical)
- EC-141006 (I&C)
- EC 141007 (Civil)
- EC 141008 (Leak Detection System)
- EC 143659 (EHS Leak Detection DCC Patches)
- EC 143660 (PIDS Update for EHS Leak Detection)

These modifications were prepared in accordance with modification process Engineering Change Nuclear Procedure N-PROC-MP-0090.

Installation and Commissioning was conducted in accordance with applicable codes, standards, and regulations. Commissionable aspects of EHS is commissioned under work plan NK38-WPL-33410-0770136 (performed by OPG) and was divided into partial and final commissioning to support partial AFS and final AFS. Partial AFS was for Class 6 portion of EHS up to the cap downstream of valve 3-72800-V628, and final AFS is for the remaining Class 1 portion. Installation and Commissioning activities were successfully completed under the following workplans:

- NK38-WPL-33410-0712203- Emergency Heat Sink Piping Installation (no Tie-ins) - Unit 3 Sequence A
- NK38-WPL-33410-0712656- Emergency Heat Sink Piping Including I/C And Electrical Installation – Sequence B/C
- NK38-WPL-33410-0712657 – Unit 3 EHS Piping Installation Sequence D
- NK38-WPL-33410-0770136– COMMISSIONING OF THE U3 EMERGENCY HEAT SINK MODIFICATION

AFS will be completed in accordance with Operation Turnover Plan Memo, NK38-CORR- 33410-0834280–Rev 003.

Open AFS items are documented in Section 6.0

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1.0 INTRODUCTION

This AFS report provides assurance that the design, installation, and commissioning of the Darlington Unit 3 modification of EHS is complete and the modification is Available for Service.

1.1 Background

Ontario Power Generation (OPG) is currently refurbishing the Darlington Nuclear Generating Station (DN GS) to extend its operating life by 30 years. The EHS modification provides a permanent pipe connection from the Emergency Service Water (ESW) system to the Primary Heat Transport System (PHTS) to inject ESW for certain Beyond Design Basis Accidents (BDBA), specifically for:

- a. In-core Loss of Cooling Accident (LOCA) with End Fitting Ejection (EFE) and loss of Emergency Coolant Injection System (ECIS) and Loss of Moderator Accident (LOMA).
- b. Station Blackout resulting in total loss of alternating current (AC) power (e.g., loss of Class IV power, Class III power and Emergency Power Supply (EPS) in all four units). This loss of power results in the unavailability of ECI System to supply cooling water to the PHTS, since ECI relies on Class III or EPS power. The prolonged loss of cooling water to the PHTS is assumed to result in a Pressure Tube (PT) / Calandria Tube (CT) failure.

1.2 Design Change Description

For the purpose of this partial AFS the following Design EC's are being turned over:

1) DEC 141005 – Mechanical:

A flow path from the ESW system to the HTS is tied into 33140-HD4/HD8 and is isolated via a double isolation 33410-V115 and 72800-V628. To prevent backflow from HD4/HD8 into the ESW system, three check valves (33410-NV112, NV113 and NV114) have been installed. Each check valve and interspace between 33410-V115 and 72800-V628 are monitored for leakage in the MCR.

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**FINAL AFS REPORT FOR EMERGENCY HEAT SINK - ALTERNATE
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2) DEC 141006 – I&C

This DEC is for the check valve leakage monitoring circuit which provides a leakage path to the Primary Heat Transport System D₂O Collection system.

3) DEC 141007 – Civil

This Civil EC covers the Flued Head and Shielding Box in R309 at EP 5066 for the Class 1 portion of the piping into the Vault.

4) DEC 141008 – Leak Detection System

This DEC is for check the valve leaking monitoring circuit which provides a leakage path to the Primary Heat Transport System D₂O Collection system.

5) DEC 143659 – Software

This DEC is for EHS Leak Detection DCC patches based on I&C DEC 141006.

6) DEC 143660 – Software

This DEC adds PIDS PI Server PI tags for Unit 3. Six new PI tags were created to support EHS Modification, three new tags for U3 DCC X and three new tags for U3 DCC Y.

2.0 DESIGN COMPLETION ASSURANCE

Item	Document No.	Status
Engineering Change Request	21561	Actioned
Modification Outline	N-FORM-10958	Approved – Signed by DA/DOM
Design Requirements	NK38-MDR-33100-10006 R006	Issued
Design Plan	NK38-DP-33100-10006 R002	Issued
Master/Design ECs	MEC – 123042 Rev 001 DEC (Mech) – 141005 R009 DEC (I&C) – 141006 R007 DEC (Civil) 141007 R003 DEC (Leak Detection) 141008 R005 DEC (Software) 143659 R000 DEC (Software) 143660 R001	Active Active Active Active Active Active

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Design Bills of Material (DBOMs)	<p>BOMs are issued under respective design packages of Design ECs – As follows</p> <p><u>DEC 141005</u></p> <p>NK38-BOM-33348-10001-U3 NK38-BOM-33349-10001-U3 NK38-BOM-33410-10005-U3 NK38-BOM-33419-10003-U3 NK38-BOM-33818-10003-U3 NK38-BOM-33819-10023-U3 NK38-BOM-56100-10007-U3 NK38-BOM-75139-10003-U3 NK38-BOM-72808-10001-U3 NK38-BOM-72809-10003-U3</p> <p><u>DEC 141006</u></p> <p>NK38-BOM-63861-10009-U3 NK38-BOM-67280-10005-U3 NK38-BOM-66100-10067-U3</p> <p><u>DEC 141007</u></p> <p>NK38-BOM-21130-10001-U3 NK38-BOM-21131-10001-U3 NK38-BOM-21251-10001-U3</p> <p><u>DEC 141008</u></p> <p>NK38-BOM-33418-10009-U3 NK38-BOM-33419-10006-U3 NK38-BOM-33419-10007-U3 NK38-BOM-33419-10011-U3 NK38-BOM-33419-10012-U3 NK38-BOM-33419-10013-U3 NK38-BOM-33419-10014-U3 NK38-BOM-33419-10015-U3 NK38-BOM-33419-10016-U3 NK38-BOM-33419-10017-U3 NK38-BOM-33419-10019-U3 NK38-BOM-33419-10020-U3 NK38-BOM-63341-10006-U3</p> <p><u>DEC 143659</u></p> <p>N/A</p> <p><u>DEC 143660</u></p> <p>N/A</p>	Accepted as Part of DEC 141005,141006,141007, 141008 Affected Documents List.
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Spare Parts List	NK38-CORR-33410-0881817 R000 (Unit 3,1,4)	Memo is accepted by OPG and Issued.
COMS Stakeholder Declaration	N-FORM-10007 (MEC 123042)	Complete and issued
Regulatory Approvals	<p><u>DEC141005/141008</u></p> <p>NK38-CORR-00554-11045 NK38-REF-72800-0663447 NK38-REF-79710-0663565 NK38-REF-79710-0663571 NK38-REF-72800-0760103 ICS</p> <p>NK38-REF-33340-0838414 NK38-REF-33410-1035351 NK38-REF-33810-1031090 NK38-REF-72800-0760103 NK38-REF-75110-0804617 NK38-REF-75130-0679782 NK38-REF-79710-0663571</p> <p>NK38-CORR-00554-10859 NK38-CORR-00554-10860 NK38-CORR-00554-10876 NK38-CORR-00554-10877 NK38-CORR-00554-10880 NK38-CORR-00554-10889 NK38-CORR-00554-11045 NK38-CORR-00554-20049 NK38-CORR-00554-20050 NK38-CORR-00554-20061</p>	Issued
Manufacturer's Manual	<p><u>DEC 141005</u></p> <p>NK38-MMM-33413-00002 NK38-MMM-33413-00005 NK38-MMM-33413-00006 NK38-MMM-72800-10010 Rev 000 NK38-MMM-72800-10009 Rev 000 NK38-MMM-72800-10011 Rev 000</p> <p><u>DEC 141006</u></p> <p>NK38-MMM-67280-10006</p> <p><u>DEC 141008</u></p>	Issued

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	NK38-MMM-33413-00003 NK38-MMM-63341-00006 NK38-MMM-63341-00007 NK38-MMM-63950-10002	
Design Manual	<u>DEC 141005</u> NK38-DM-33340 NK38-DM-33410 NK38-DM-72800-10001 NK38-DM-79710 NK38-DR-33340-0001 NK38-DBD-34280-00001 <u>DEC 141006</u> NK38-DM-63861 <u>DEC</u> <u>141007/141008/143659/143660</u> N/A	Mark ups accepted as Part of Affected Documents List.
Master Equipment List (MEL) Update Ready For Launch	DEC# 141005, 141006, 141007, 141008, 143659, 143660	Ready to set active. Tracked by AR 28258867-02
Design Reports	<u>DEC 141005</u> NK38-DRT-33340-10018 R000 NK38-DRT-33410-10019 R001 NK38-DRT-33410-10034 R001 NK38-DRT-33410-10038 R001 NK38-DRT-33413-00005 R000 NK38-DRT-33413-00006 R000 NK38-DRT-33413-00007 R000 NK38-DRT-33413-00007 ADD-001 R000 NK38-DRT-33413-00008 R000 NK38-DRT-33810-10028 R001 NK38-DRT-33818-00002 R001 NK38-DRT-72803-00001 R000 NK38-DRT-72803-00002 R000 NK38-DRT-72803-00003 R000 NK38-DRT-72800-10028 R001	Issued

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	<u>DEC 141008</u> NK38-DRT-33413-00003 R000 NK38-DRT-33418-10002 R001 NK38-REP-33109-10002 ADD-005 R002	
Design Guide	N/A	N/A
Design Calculations	<u>DEC 141005</u> NK38-REP-72800-10073 R001 NK38-REP-72800-10074 R001 NK38-REP-72800-10092 R002 NK38-REP-72800-10112 R000 NK38-REP-72800-10118 R001 NK38-DC-21251-10006 R001 NK38-DC-21251-10009 R001 NK38-DC-33348-10001-U3 R001 NK38-DC-33418-10006 R001 <u>DEC 141007</u> NK38-DC-21130-10001 R001 NK38-DC-21131-10003 R001 NK38-DC-21251-10006 R001 NK38-DC-21251-10009 R001 NK38-REP-21023-00001 R000 NK38-REP-21131-10002 R002 NK38-REP-21350-10003 R002 NK38-REP-21350-10006 R001 <u>DEC 141008</u> NK38-REP-33109-10004 ADD-004 R001 NK38-REP-33109-10004 ADD-006 R000	Issued

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Technical Specifications and TSDS	<p><u>DEC 141005</u></p> <p>NK38-DS-33340-0001 ADD-002 R000</p> <p>NK38-DS-33410-10010 ADD-002 R003</p> <p>NK38-DS-33410-10014 R002</p> <p>NK38-DS-33410-10015 R002</p> <p>NK38-DS-33410-10016 R001</p> <p>NK38-DS-33410-10017 R000</p> <p>NK38-DS-33410-10018 R001</p> <p>NK38-DS-33819-10001 ADD-007 R000</p> <p>NK38-VSS-72800-10034 R000</p> <p>NK38-VSS-72800-10035 R000</p> <p>NK38-VSS-72800-10037 R000</p> <p>NK38-VSS-72800-10043 R000</p> <p>NK38-VSS-72800-10052 R000</p> <p><u>DEC 141006</u></p> <p>NK38-TS-63861-10002 R003</p> <p>NK38-TS-67280-10006 R003</p> <p>NK38-TS-67280-10007 R004</p> <p>NK38-TS-67280-10008 R003</p> <p>NK38-TS-67280-10009 R005</p> <p>NK38-TS-67280-10010 R001</p> <p><u>DEC 141008</u></p> <p>NK38-DS-33410-10010 ADD-002 R003</p> <p>NK38-DS-33410-10019 R001</p>	Issued
Annunciation Specification Data Sheet	<p><u>DEC 141008</u></p> <p>NK38-TSI-63341-10003 R001</p> <p>NK38-TSI-63341-10004 R002</p> <p>NK38-TSI-63341-10005 R002</p>	Issued
Safety Reports	<p>NK38-SR-03500-10001 R005</p> <p>NK38-SR-03500-10002 R005</p>	Issued

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On-Line Wiring Information	DEC 141006 Rev007 DEC 141008 Rev005	OLW status complete by Drawings Office
Instrument Calibration Specifications (ICS)	NK38-ICS-3-67280-FI74-90009 NK38-ICS-3-67280-PI671- 89794 NK38-ICS-3-67280-PI672- 89798 NK38-ICS-3-63341-PT36-89799 NK38-ICS-3-63341-PT37-89800 NK38-ICS-3-63341-TI60-91367 NK38-ICS-3-63341-TT60-91396	Issued
History Docket	D-HDOC-33410-0715807 (Installation of Seq A) D-HDOC- 0715816 D-HDOC-0763188 D-HDOC-0763190 D-HDOC-0811709 D-HDOC-33410-0699507 D-HDOC-33410-0699507 D-HDOC-33410-0769757 D-HDOC-33410-0699507 D-HDOC-33410-0769757 D-HDOC-33410-0763191 D-HDOC-33410-0769758 D-HDOC-33410-0699507 D-HDOC-33410-0769759 D-HDOC-72800-0790725 D-HDOC-33410-0715807 D-HDOC-33410-0849404 D-HDOC-33410-0763192 D-HDOC-33410-0849405 D-HDOC-33410-0763193	The Vendor HDOCs OPG accepted and Archived: D-HDOC-33410- 0715807 D-HDOC-0715816 D-HDOC-0763188 D-HDOC-0763190 D-HDOC-0811709 The following Vendor HDOC's are outstanding and tracked via AR 28247896-2 D-HDOC-33410- 0699507 D-HDOC-33410- 0699507 D-HDOC-33410- 0769757 D-HDOC-33410- 0699507 D-HDOC-33410- 0769757 D-HDOC-33410- 0763191 D-HDOC-33410- 0769758 D-HDOC-33410- 0699507 D-HDOC-33410- 0769759 D-HDOC-33410- 0849405

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Other	NK38-REP-33100-10072 R001 NK38-REP-33100-10076 R000 NK38-REP-33100-10077 R001 NK38-OSR-08131.02-10002-U3 NK38-OSR-08131.02-10014-U3 NK38-OSR-08131.02-10015-U3 NK38-SR-03500-10001	Issued
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3.0 INSTALLATION COMPLETION ASSURANCE

Item	Document No.	Status
Detailed Installation Instructions	NK38-WPL-33410-0712203- Emergency Heat Sink Piping Installation (no Tie-ins) - Unit 3 Sequence A NK38-WPL-33410-0712656- Emergency Heat Sink Piping Including I/C And Electrical Installation – Sequence B/C NK38-WPL-33410-0712657 – Unit 3 EHS Piping Installation Sequence D	Seq A Completed Seq B/C Outstanding – Tracked via AR 28258867-27 Seq D Complete
Fabrication and Installation Package Releases (FIPRs)	<u>Mechanical</u> 5186-7000-M1 5186-7001-M1 5186-7002-M1 5186-7002-M2 5186-7000-PS-M1 5186-7000-TIE-IN <u>I&C</u>	Complete

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	5186-7001-M1 5186-7001-E1	
Change or Rework Notification (CORN)	N/A	N/A
Inspection and Test Plans (ITPs)	<u>Mechanical</u> 5186-7000-M1 5186-7001-M1 5186-7002-M1 5186-7002-M2 5186-7000-PS-M1 5186-7000-TIE-IN <u>I&C</u> 5186-7001-M1 5186-7001-E1 <u>Civil</u> 5186-7002-C1 <u>Operations Pressure Test</u> 5186-33410-72800-OPT	All ITP are Complete except for 5186-7002-M2 tracked via AR 28258867-27
Installation and Test Data Report for Tie-In	Part of CWP 5186-7000-TIE-IN (Class 6 line tie in) Part of CWP 5186-7000-D-M1 (Class 1 line tie in)	Complete
Master Work Order	<u>Mechanical</u> 05310602 05310605 05310609 05310607 <u>I&C</u> 05310 614 <u>Civil</u> 05310 607 <u>Leak</u> <u>Detec</u> <u>tion</u> 05310 606	05310602 – Closed 05310605 – Complete 05310609 – Active, 05310607 – Active 05310614 – Closed 0531060 7 – Active 5310606 -Active

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	05310 608 05310 611 05310 613	0531060 8 – Complete 0531061 1 – Active 05310613 – Active Open WO's tracked via AR 28258867-29
Mechanical Supplemental Work Order	N/A	N/A
Electrical Supplemental Work Order	N/A	N/A
Field Initiated Changes	See Table 1, below	
Configuration Report (if applicable)	N/A	N/A
Other	N/A	N/A

Refer to Appendix B: Field Initiated Changes

4.0 COMMISSIONING COMPLETION ASSURANCE

Item	Document No.	Status
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Detailed Commissioning Specification and Design Acceptance	NK38-DCS-33410-10006 Rev 001	Issued
Detailed Commissioning Instructions	NK38-WPL-33410-0770136	
Commissioning Report and Design Acceptance	NK38-CR-33410-10016	Completed
Post-Maintenance Tests	N/A	N/A
Commissioning Work Order Status	05185668	
Other	N/A	N/A

5.0 OPERABILITY AND MAINTAINABILITY

Item	Document No.	Status
Operating Manual	NK38-OM-33000-02 NK38-OM-72800-04.05 NK38-OM-72800-06	NK38-OM-72800-04.05 – Issued in AS9 NK38-OM-72800-06 – Issued in AS9 NK38-OM-33000-02 (NR002490) – Outstanding Tracked via AR 28258867-22
Impairments Manuals	N/A	N/A
Abnormal Incidents Manuals	NK38-OM-09013B-03.03	Updated for all units
Operator Rounds Sheets	D-FORM-10279 D-FORM-10580	Updated for all units
Alarm Response Manual	NK38-ARM-60312-01301 NK38-ARM-60310-00812	Updated for all units
Operating Procedures	N/A	N/A
Chemistry Laboratory Procedures	N/A	N/A
Power Supply List Updates	PSL Program	N/A
Air Supply List Updates	ASL Program	N/A
Lube List Updates	DNGS Lube List	3-72800-V628 - Isolation Valve and lubricants added to DNGS Lube List Database

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Operational Flowsheets	NK38-FEX-72800-3501 NK38-FEX-79710-3502 NK38-FEX-63861-3501 NK38-FXX-33410-3501 NK38-FXX-33810-3501 NK38-FXX-33340-3501		NK38-FEX-72800-3501 – Flowsheet updated. NK38-FEX-79710-3502 – markup complete, TCR FAR (Flowsheet action request) DA51250 NK38-FEX-63861-3501 – markup complete, TCR-FAR# DA55734 NK38-FXX-33410-3501- markup complete TCR FAR DA55356 NK38-FXX-33810-3501- Markup Complete TCR FAR DA 51134 NK38-FXX-33340-3501- Flowsheet updated
Test Procedures	N/A		N/A
Maintenance Procedures	NK38-CTP-72800-10003 NK38-CTP-72800-10006 NK38-CTP-72800-10004		Updated for all units
Maintenance Pre-Defines NOTE: PM changes must be requested, accepted, and for frequencies less than 13 weeks, must also be created and scheduled.	PMID-RQs to be Cancelled	Equipment Number	<ul style="list-style-type: none"> PM Change Requests (CRs) Created and Submitted Work Request(s) have been raised to identify the routine PMs required post AFS
	N/A	N/A	U3 CR2022-00049 - IMPLEMENTED U3 CR2022-00050 - IMPLEMENTED U3 CR2022-00051 - IMPLEMENTED U3 CR2022-00052 - PENDING APPROVAL Tracked to acceptance through AR: 28251211-13 U3 CR2022-00340 - IMPLEMENTED

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Equipment Tags Hung on Field Equipment	Complete	Verified as per CCD Walk down
Temporary Change Records	N/A	N/A
Corrective Maintenance Backlog	Work Order(s) to be Cancelled	N/A
	N/A	N/A
System Surveillance Program	NK38-SPM-72800-10001	Issued in AS7
Training (Operations, Maintenance, Chemistry)	N-TNA-901-20013 N-TNA-901-10017	Training packages are completed as part of U2 AFS
Service Contracts	N/A	N/A
On-Line Wiring Status	DEC 141006 Rev007 DEC 141008 Rev005	Completed by Drawing Office Completed by Drawing Office

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Item	Document No.	Status
Spare Parts on Site	NK38-CORR-33410-0881817 Rev001	There are no Critical Spare Parts for EHS Project. All non-critical spares are listed in the spare parts list
Design EC and Field Changes Incorporated into Final Drawings	DEC 141005 Rev009 DEC 141006 Rev007 DEC 141007 Rev003 DEC 141008 Rev005 DEC 143660 Rev001 DEC 143659 Rev000	Active Active Active Active Active Active
EQ Completion Assurance	N-FORM-10649	Accepted by EQ SPOC.
Other	N/A	N/A

6.0 OPEN ITEMS/OUTSTANDING ACTIONS

Item	A/R Ref No.	Description	TCD	Responsibility
1	28258867-01	FINAL AFS DOCUMENT SUBMISSION TO DOCUMENT CUSTODIAN	1 Days after FINAL AFS	N-NRBOPM
2	28258867-02	FINAL AFS - LAUNCH EQUIPMENT MINOR REVISIONS, SEE DESCRIPTION FOR EC'S	1 Days after FINAL AFS	N-NRDEM
3	28258867-03	FINAL AFS - SET EQUIPMENT NEW E-TAGS TO "ACTIVE" STATUS, SEE DESCRIPTION FOR EC'S	15 Days after FINAL AFS	N-NRDEM
4	28258867-04	FINAL AFS-UPDATE NON-DRAWING CONTROL DOCS	60 Days after FINAL AFS	N-NRDEM
5	28258867-05	FINAL AFS-UPDATE DRAWINGS, SEE DESCRIPTION FOR EC'S	60 Days after FINAL AFS	N-NRDEM
6	28258867-07	FINAL AFS - APPROVE NON-DRAWING CONTROL DOCUMENTS	70 Days after FINAL AFS	N-NRDEM
7	28258867-08	FINAL AFS - APPROVE DRAWINGS	75 Days after FINAL AFS	N-NRDEM
8	28258867-09	FINAL AFS - ISSUE DRAWINGS	100 Days after FINAL AFS	N-NRDEM
9	28258867-10	FINAL AFS - ISSUE NON-DRAWINGS	100 DAYS after FINAL AFS	N-NRDEM

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10	28258867-11	FINAL AFS-DESIGN EC CLOSE OUT	112 DAYS after FINAL AFS	N-NRDEM
11	28258867-21	TEMPUS WORK EVENTS ASSIGNED TO RDO FOR DNUR3 EHS EC'S	10 Days after FINAL AFS	N-NRBOPM
12	28258867-22	CONFIRM TPAR REQUEST NR0002490 ISSUED	10 Days after FINAL AFS	N-NRBOPM
13	28258867-23	AFS NON-DRAWING MARK UP SUBMISSION, DNUR3 EHS	60 Days after FINAL AFS	N-NRBOPM
14	28258867-24	SUPERSEDE PREINSTALL ICS WITH APPROVED ICS	60 Days after FINAL AFS	N-NRDEM
15	28258867-27	COMPLETE BA MODIFICATION ON BA 75130-SDN-402	PRIOR TO RCHP5	N-NRBOPM
16	28258867-28	RP CHECK BACKGROUND RADIATION COMING OFF OF R3-309 SHIELDING BOX	90 Days after FINAL AFS	N-NRBOPM
17	28258867-30	ACCEPTANCE OF MATERIAL HDOC ADDENDUM BY PROCUREMENT ENGINEERING	AFS Signoff	N-NRDEM

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7.0 POST MODIFICATION/REVIEW

For EHS Modification, the Installation Work plan for Sequence A (NK38-WPL-33410-0712203), Sequence D (NK38-WPL-33410-0712657), and Commissioning workplan (NK38-WPL-33410-0770136) were completed, signed off by all involved parties and signed master copies are available in AS9.

The Installation Work plan for Sequence B/C is outstanding due to the outstanding breathing air modification on 75130-SDN-402 activities being tracked by AR 28258867-27.

7.1 Lessons Learned

Lessons learned meetings for W68, W105, W106 were conducted and can be found in EBX# 12584 (W68), 12485 (W105), and 11354 (W106).

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Appendix A: Appendix A: SCR Summary

SCR #	Cat	Status	Event Title	Condition Description	Immediate Action Taken
N-2023-06015	D4	COMPLETE	DNRU3 Project 73600 Missed CCD2 Open Item for Lamacoid Labels	PHT PL0007 Label: Called U3 ANO to confirm lamacoid labels were added to PHT PL0007 display in MCR per EC 141006 change papers last affected in R001 in 2018. ANO confirmed that labels were not applied to PHT PL0007 display in MCR. Applicaition of lamacoids are in EC change papers, this should have been identified as a CCD open item.	Reached out to Contruaction vendor to procure required lamacoids and apply in MCR per EC141006 change papers.

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N-2023-05495	D4	COMPLETE	U3 RTS: Project 73600 Work Authorization Delay	U3 RTS: Project 73600 Work Authorization Delay	Reached out to ROCC manager, CRSS and Shift Manager for Support with WA approval.
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N-2023-05399	D4	COMPLETE	U3 RTS: Project 73600 Work Authorization (WA) Delay	WA for DNRU3 EHS work was submitted into CA que ~10:00. WA review was outstanding at 15:00 and work was not completed during shift.	Reached out to ROCC Ops SPOC for WA support.
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N-2023-05398	D4	COMPLETE	U3 RTS: Project 73600 Work Authorization Submitted to incorrect Queue	WA for EHS Project was incorrectly submitted into Station IA queue instead of Station CA queue for authorization. WA was in IA queue for ~2 hours and it was identified that it needed to go into the CA queue once reviewed by IA.	WA was submitted into CA queue.
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N-2023-04268	D4	COMPLETE	DNRU3 Project 73600 Late Identification of CNSC Concession Letter	<p>ITF ID 53041 in EBX identified: (Copied from U2 ITF 30-MAR-2020) CNSC Concession needs to be obtained in order to proceed with the Operational Pressure Test for the EHS Gland seal line L179. OPG SRE to prepare the CNSC concession which will be reviewed by PB SPOC and TSSA prior to final submission to the CNSC. Tied to PB Milestone # PBITP23310002 as part of Window 089. Step # 420 under ITP # 5103-7000-D-M1 Rev. 00 has been marked up to capture the same.</p> <p>Upon review with DTL, SRE and projects it was determined that CNSC concession was not required and ITF was closed 19-Jan-23.</p> <p>It was later identified that CNSC concession was required (ref U2 NK38-CORR-00531-21308).</p>	Drafted CNSC Concession Letter for DNRU3, reached out to PB specialist and TSSA to support with expedited turnaround. Entered SCR to identify late request.
N-2023-03954	D4	COMPLETE	DNRU3: Project 73600 Receptacle (RE18) Damaged in Vault	While attempting to reconnect power to RE18 for U3 EHS install kick plate / electrical connect it was determined that there was damage to the RE that deemed it out of service. There is no other RE available to plug into.	Reached out to RE coordinator and other vendor workgroups to obtain access to a RE. Was unsuccessful. Reached out to another vendor workgroup to connect EHS construction vendor weld machine to another vendors power pack. Unable to find power convertor and work could not progress.

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N-2023-02935	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Discrepancy Between As-Left and As-Found Field Conditions, Project # 73600	While Vendor project team was on a walk down in the vault, they noted that breathing air station 402 was connected to the union, and the TCR isolating 3- 75130-V402 was removed. The work on breathing air station 402 was not completed and does not match as-left conditions left by Vendor work group. See attached pictures showing as-left picture with FME cap, and as-found condition showing pipe connected to the station as the current configuration in the field.	Notified Vendor and OPG line management, project teams, and Refurb Construction CCOE. SCR initiated to document adverse condition and document change to as-left field condition. Install planning deliverables for downstream work also under review by the vendor project team.
N-2023-01212	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Vendor Work Group Unable to Receive WA to Progress Planned Work, Project # 73600	Vendor work group unable to progress scheduled task due to delay in receiving work authorization as Issuing Authority and Controlling Authority did not receive prior notification of the planned speaker outage in the vault. As a result, the following T0 task was adversely impacted: 0582673538 BEL: PERFORM ONE TIME LOAD VERIFICATION FOR 3-60215- SPK61/SPK68	Notified Vendor and OPG line management, project teams, PCC Manager, and Refurb Construction CCOE. SCR initiated to document delay to T0 task. Task will be rescheduled based on work group availability and coordination with key stakeholders to minimize impact to refurb critical path activities.

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N-2023-01123	D4	COMPLETE	DNRU3: 10-73600 - Challenge to MTCE - (NK38- WPL-33410- 0770136) not marked up to required steps	Attempted to execute WO# 05185668- 15 / 18 / 19 - MC - Coordination requested project team mark up the master WPL during the T-2, to ensure the work is executable. MC went to MCR to execute work and WPL is not marked up to required step Coordination followed up via email, teams call and text with no response	Coordination followed up via email, teams call and text with no response - work at risk for the week - MC resources delayed starting work
N-2022-20233	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Group Delayed Due to Updated Requirements of Tenting/ Venting in the Vault for Hot Work Activities, #73600	Vendor work group unable to progress scheduled tasks on the T0 plan due to revised requirements of tenting and venting in the vault for hot work activities during the new fuel load window. As a result, the following T0 tasks will be suspended and resume WW01: 0569985841 BEL: WELD UNISTRUT CONDUIT SUPPORT TO BEAM HG271 0569985892 BEL : WELD UNISTRUT CONDUIT SUPPORT TO BEAM HG272	OPG project team, Vendor project team and Vendor construction management notified. SCR submitted to document adverse condition and push to T0 tasks.

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N-2022-20158	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Group Delayed Due WA Issuance, Project # 73600	Vendor work group unable to progress schedule task on the T0 plan due to delay with receiving work authorization. As a result, the following T0 tasks were adversely impacted: 0569985841 BEL: WELD UNISTRUT CONDUIT SUPPORT TO BEAM HG271 0569985892 BEL : WELD UNISTRUT CONDUIT SUPPORT TO BEAM HG272	OPG project team, Vendor project team and Vendor construction management notified. SCR submitted to document adverse condition.
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N-2022-17679	D4	COMPLETE	<p>DNRU3: Project 73600: Cobra Tig Weld machines to be wired to 4 wire 3 phase instead of 3 wire 1 phase</p>	<p>Cobra TIG weld machine certification expires 11-Nov-22 and needs to be calibrated to support DNRU3 6-shift work. Weld machines used by project are currently wired to 4 wire 3 phase 30 AMP 250V to accommodate vendor power packs. OPG weld group requires weld machines to be wired to 3 wire 1 phase 30 AMP 250V to complete calibration. It takes half a shift to change configuration from 4 wire 3 phase to 3 wire 1 phase and another half shift to convert back from 3 wire 1 phase to 4 wire 3 phase to accommodate vendor power pack.</p> <p>OPG weld group communicated to vendor 14-June-2022 that going forward all Cobra Tig welding machines will be wired for 3 wire 1 phase 30 AMP 250V. Cobra Tig weld machines would not be re-wired to accommodate vendor power packs. Vendor was requested to change power packs to accept 3 Wire 1 Phase 30 Amps 250V plugs or acquire OPG power packs compatible with this configuration. OPG Weld group is responsible for 8 Cobra Tig Weld machines, 6/8 use 3 wire 1 phase 30 AMP 250V configuration and 2/8 are switched to 4 wire 3 phase 30 AMP 250V to accommodate vendor power packs.</p> <p>Vendor did not change power packs to accept 3 Wire 1 Phase 30 Amps 250V</p>	<p>Reached out to OPG Weld Group FLM and vendor. As EHS project has 5 remaining welds to complete DNRU3 work OPG Weld Group will support with calibrating weld machine and rewiring to 4 wire 3 phase 30AMP 250V to accommodate vendor power packs.</p>
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				plugs or acquire OPG power packs compatible and weld machines need to be rewired to 4 wire 3 phase 30Amps 250V plugs to progress DNRU3 6-shift work.	
N-2022-17600	D4	COMPLETE	DNRU3: Project 73600: 6-Shift delay due to HEPA filter unavailability	1 shift delay to EHS 6-shift work due to HEPA unit unavailability. Delay to progress L179 tie-in scope.	ESFL searched internally to source a HEPA unit from a different project. Escalated to OPG 07-Nov-22. OPG PCC and OPG RP was engaged and HEPA unit was found 08-Nov-22.

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N-2022-17346	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - NON- COMPLIANCE - TOOL MISSING OR LOST, Project # 73600	Worker assigned tool DOT 997449-00015 - HARNESS FULL BODY SAFETY 997449-4 WEB PURCHASE 400 LB MAX POLYESTER T- FLEX STRETCHABLE from lower stores on 2022AUG11. On 2022AUG17, the tool was reported as missing from the work face inside the vault on the 107.5EL. Tool cannot be located to date.	Initiated SCR in accordance with N- PROC-MA-0015, N- FORM-10976R01 - TDR filed. Worker returned to work face to locate DOT997449-00015 and tool was not located.
N-2022-16966	D4	COMPLETE	2022-NSSW- CHANGE FILTER PACKAGE WF- 73600-F11-no parts	WO.05839677. Change filters on Fan 11 made it to T-0 with no parts	Filed SCR
N-2022-16799	D4	COMPLETE	DNRU3: Emergency Heat Sink Unit 3 - T0 Task Delayed Due to Headset Connection Issue, Project # 73600	Vendor work group unable to progress T0 task in the vault due to connection issue with Bell pack headsets. As a result, the following T0 tasks did not progress as scheduled: 0531061127 BPF: TIE IN 3-33410-L124 INTO 3-33410-L4.	OPG project team, Vendor project team and Vendor construction management notified. Comms repaired by OPG Comms group at 1400hrs on 2022 October 12. SCR submitted to document 1 shift delay to project critical path.
N-2022-16798	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Worker TLD Taken from Badge Rack, Project # 73600	At the start of shift on 2022 October 13, individual from Vendor work group was unable to locate their TLD badge on the badge rack. It was identified that the TLD badge was returned to the badge rack before lunch.	OPG project team, Vendor project team and Vendor construction management notified. TLD badge sent to the Rad Data office to identify additional/ change of dosage on badge. SCR submitted to document adverse condition.

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N-2022-16797	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Inspection Camera Taken from Storage Area, Project # 73600	Vendor work group identified that the inspection camera stored at U3 AL2 rubber area could not be located during the following shift. As a result, alternate apparatus had to be sourced impacting readiness of upcoming work activity (ensure clean inspection) for: 0531061124 BPF:TIE IN 3-33410-L125 INTO 3-33410-L8.	OPG project team, Vendor project team and Vendor construction management notified. Vendor project team requesting support from other work groups. SCR field to document adverse condition.
N-2022-15593	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Air Flow in 33410-L8- D8NF1 Causing Delay - As-Found Field Condition, Project # 73600	Vendor work group drilled into 33410-L8- D8NF1 to perform tie- in and noted air flow. This has impacted welding activities from progressing. As a result, the T0 task 0531061124 BPF:TIE IN 3-33410-L125 INTO 3-33410-L8 is delayed and impacting project critical path.	OPG project team, Vendor project team and Vendor construction management notified. SRE notified and exploring options to help progress welding activities. SCR submitted to document delay due to as-found field condition.
N-2022-15592	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Ensure Clean Inspection Not Accepted for 33410-L8-D8NF1 Tie-In, Project # 73600	During cleaning activities, Vendor and SRE completed Ensure Clean inspection of 33410- L8-D8NF1 and found particulate in pipe from drilling activities.	OPG project team, Vendor project team, Vendor construction management, OPG FME coordinator and System Engineer notified. Vendor work group advised by SRE to continue cleaning pipe and complete a re- inspection of pipe below the new penetration. SCR submitted to document FM found through Ensure Clean inspection.

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N-2022-15385	D4	COMPLETE	DNRU3: Project 73600: PC1 Submitted Within T-16	PC1 DA 193317 is a new permit application submitted Saturday, 01-Oct-22 and is in the review process. Permit is required for application by 14-Oct-22 to support DNRU3 6-shift activities for Emergency Heat Sink Project.	Reached out for operations to support PC1 review and application. Initiated SCR.
N-2022-15139	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - R3-105 Installation OPEX, Project # 73600	Vendor QC inspector noted that a Swagelok elbow in NK38-BOM-33419-100011-U1 (Item #10) was not installed per drawing NK38-DRAW-33419-10006-U1.	OPG and Vendor project team notified. Vendor QCI identified discrepancy during in-process inspections. SCR submitted to document good-catch by Vendor QC team, and to document OPEX and lessons learned for future units.
N-2022-15138	D4	COMPLETE	DNRU3 - Emergency Heat Sink Unit 3 - FW25 and FW43 Failed RT Examination, Project # 73600 - Rework	Field weld 25 and field weld 43 failed RT examination. Apparent cause of failure is lack of fusion.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QC to initiate an NCR to repair weld.
N-2022-15137	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Low Level Worker Injury, Project # 73600	A worker bumped their knee on a scaffold handrail when working inside the vault on a scaffold build on the 107.5EL	OPG project team, Vendor project team and Vendor construction management notified. Worker taken to site nurse and identified was ready to return to full duties the same shift. Worker coached on importance of situational awareness and two minute job site drill.

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N-2022-15070	D4	COMPLETE	DNRU3 - ES Fox Job# 18-5186 OPG # 10-73600 - Expedited CMS Permit (#28307) Required for Pull Ahead Work	Scope of work pulled ahead to take advantage of available window in work location. Power pack and welding machine required to complete scope of work. Both items require current and in force CMS to store in location.	CMS permit (#28307) submitted.
N-2022-14610	D4	COMPLETE	Project 73600 DNRU3 Emergency Heat Sink R3-309 work on hold	Reduced float to RCHP4. U3 EHS and U3 PHT Pump motor replacement both have conflicting work in R3-309. Two different work groups are unable to work in R3-309 at the same time and due to scaffold interference and footprint between both work groups. Both projects are tied to DNRU3 RCHP4. Work control has prioritized the PHT pump motor project and EHS project R3- 309 work has been stood down.	Coordination meetings were held between WCTL, PHT Pump Motor Team and EHS Pump Motor team. Following direction was provided from Refurb Outage Manager: EHS can progress work in R3-309 in WW38, EHS would stand down from WW39 until WW42 while PHT Pump motor replacement progresses from WW39 to WW41. Direction to stand down was provided to ESFL EHS team. Both EHS and PHT pump motor program will be going on the DNRU3 6-shift for increased visibility and coordination.
N-2022-14235	D4	COMPLETE	DNRU3: Project 73600: FICREQ's beyond FICREQ20	Project 73600 EHS Unit 3, MEC 123042, EC 141008 - Leak Detection System Modification, recommended to use FICREQ's 21 to 30.	Pre-agreement requested from design and installation section managers. SCR to document condition per N-GUID-00700-10000 1.6.3 3 (B2).

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N-2022-14091	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Adapter Lost in the Field, Project # 73600	Vendor work group identified that adapter required for tie-in install scope could not be located. Reference DEC 141005, DBOM NK38-BOM-33819- 10023-U3, and item #5.	OPG project team, Vendor project team and Vendor construction management notified. SCR filed to document adverse condition. Efforts on-going to source a replacement adapter to mitigate impact to downstream scheduled activities.
N-2022-14090	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Argon Bottle Taken from Work Area Inside the Vault, Project # 73600 - Critical Path Delay	Vendor work group noted that argon bottle was missing from the work face inside the vault on the 111EL after lunch on 13 September 2022. The following T0 task for field weld 04 repair did not progress as scheduled: 0531060704 BPF:PREP & INSTALL SPOOLS 10 TO 15 FOR 3-33410- L124, L125. Project critical path schedule impacted by 0.5 shift.	OPG project team, Vendor project team and Vendor construction management notified. Work group retrieved additional argon bottle from depot to progress work. SCR filed to document adverse condition and document 0.5 shift delay to project critical path.
N-2022-14089	NE0	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Hot Work Area Standards, Project # 73600	CNSC has advised that plastic weld screens are no longer adequate to use on site. Vendor work group stopped work to replace plastic screen with fire blankets in hot work areas and re-directed workers to other activities. Project critical path schedule impacted 0.5 shift.	OPG project team, Vendor project team and Vendor construction management notified. Vendor project team working to procure additional material required for hot work areas. SCR submitted to document OPEX, lessons learned, and document 0.5 shift delay to project critical path.

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N-2022-14088	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - FW- 04 Failed RT Examination, Project # 73600	Field weld 04 failed RT examination. Apparent cause of failure are lack of fusion and concave root of weld.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QC to initiate an NCR to repair weld.
N-2022-14004	D4	COMPLETE	DNRU3 EHS - FW-01 Failed UT Examination - OPG Project 73600	Field weld FW-01 failed on UT examination, apparent cause of failure is a lack of fusion below weld cap 2mm in depth. Repair of FW-01 is required.	Notified direct line management and project teams. SCR filed to document adverse condition and lessons learned.
N-2022-13392	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Documenting As- Found Field Condition of Bent Tube, Project # 73600	Vendor QC inspector found the 3/8" tube (L142/143) previously installed and welded per design, east 107.5EL, to be damaged by others post install.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QC to initiate an NCR to repair tube back to it's original configuration.
N-2022-13380	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - HDOC Submission for CCD#1, Project # 73600	DEC141006 R006 was uploaded to AS9 on 26AUG2022. As a result, an extension is required for the associated history docket submission to allow Vendor Doc Control to process the history docket (i.e.: route to internal stakeholders for review and approval prior to submission). Extension note to be added to AR# 28247896-2 for the extension required for the submission.	OPG project team and Vendor project team notified. 60 day extension granted to submit HDOC to OPG for review and acceptance.

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N-2022-13280	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Documenting As- Found Field Condition for Spool 14, Project # 73600	During fit-up of spool 14, Vendor work group identified NC1- spool 14 weld (FW01) was directly inline with conduit.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QCI initiating NCR to cut off a stub piece of pipe on spool 15 and adding it to spool 14 to change location of weld. SCR filed to document adverse condition due to differences in system arrangements between units.
N-2022-12940	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Breathing Air Header Interference, Project # 73600	Vendor work group responsible for installation of 3- 33410-L125-D4NF1 identified breathing air station header STN 402 RB on the 111EL was an interference to NC1 spool installation.	OPG project team, Vendor project team and Vendor construction management notified. TCR applied to isolate at valve 3-75130-V402 (reference NK38-CMP- 75130-03) and remove breathing air header. RFI-12217 submitted to DSP to determine path forward for reinstall of Breathing Air header in new location to avoid interference with NC1 spool. SCR filed to document adverse condition and lessons learned for subsequent units.

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N-2022-12938	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Completed Without Vendor QCI Present for Witness Point, Project # 73600	Work group responsible for installation of resistors and fuses under ITP 5186-7003- E completed install without Vendor QC inspector present to perform witness signoff in the ITP. MASTROCN 2022/08/25 17:35 : OPG Maintenance (CM) completed the work without the vendor Fox QC present to witness as required per the WO task instructions.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QCI requesting a walk down to complete a visual inspection of the installation completed by the responsible party to fulfill QA requirements per ITP 5186-7003-E. SCR filed to document adverse condition.
N-2022-12936	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - ITP Steps Signed-Off Without Completion of Work, Project # 73600	Party responsible for install of fuses and resistors on PL 3485 signed off 2 verification sequences (350 and 470) in ITP 5186- 7003-E without confirmation of installed components in the field. MASTROCN 2022/08/25 17:32 : Fox QC signed the witness points in the ITP without the work being completed or witnessed per CWP requirements.	OPG project team, Vendor project team and Vendor construction management notified. Vendor QCI requesting a walk down to complete a visual inspection of the completed installation per ITP requirements. SCR filed to document adverse condition.

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N-2022-12254	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Delay to Scheduled Tasks Due to Hot Work Stand Down, Project # 73600	As of 2022 July 30, all hot work was suspended due to an incident on site based around hot work activities within another work program. As a result, the following T-0 task could not progress as scheduled: 0531060702 BPF: INST SUPPORTS 33410- L124/L125/L127 (ELEV 107.5 TO111.0) and 73600D7221 BPF: INSTALL 33410- HG268 HSS&PIPE STRAP(0531060702).	OPG project team, Vendor project team and Vendor construction management notified. Hot work (ISP) compliance reviewed by Vendor Construction Management and OPG construction oversight. Areas deemed compliant by all parties involved and subsequently released for resumption of hot work activities.
N-2022-11890	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Group Backed Out of the Vault, Project # 73600	Delay to scheduled task as the work group was backed out of the vault. The following scheduled tasks could not progress as planned: 0531060702 BPF: INST SUPPORTS 33410- L124/L125/L127 (ELEV 107.5 TO111.0) and 73600D7221 BPF: INSTALL 33410- HG268 HSS&PIPE STRAP (0531060702). MASTROCN 2022/08/04 15:33 : Backed out due to CP12 breathing air compressor tripped on high CO2.	OPG project team, Vendor project team and Vendor construction management notified. SCR filed to document adverse condition and impact to planned work.

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N-2022-10835	D4	COMPLETE	DNRU3 Emergency Heat Sink, Project # 73600 - Work Delay Due to Breathing Air Compressor out of service,	Delay to scheduled task due to breathing air compressor outage in the Unit 3 Vault. The following scheduled task could not progress as planned: 0569985896 BPF:PREP & INSTALL SPOOLS 1 TO 2 FOR 3-33410- L124, L125. Work group redirected to other work activities.	OPG project team, Vendor project team and Vendor construction management notified. Work group redirected to other activities.
N-2022-10086	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Issue with Sub-Vendor TLD Badge, Project # 73600	Sub-vendors radiological qualifications were changed to "On removal" as the individual's TLD from the previous quarter could not be located during the last badge change; hence the individual was not able to enter a radiological work area. As a result, the work group was not able to progress with the scheduled RT work in the U3 vault. MASTROCN 2022/06/30 14:58 : When the previous badge was pulled from the rack the data was not correctly uploaded. This placed the worker "on removal". There was a current badge available on the rack.	OPG project team, Vendor project team and Vendor construction management contacted Health Physicist and Rad Data office to identify issue, and resolution. The RT task has been rescheduled to the following weekend.

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N-2022-09908	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Unit 3 Breathing Air Diverted for Unit 1 Vault Testing, Project # 73600	Work group was restricted from accessing the Unit 3 vault as breathing air was diverted to Unit 1 to support the vault test. As a result, the work group was not able to progress with pipe welds in the vault on the 107.5EL as scheduled. The following WOT will be rescheduled as required: 0569985890 BPF: PERFORM FW11R02 REPAIR OF NC1 SPOOLS.	OPG project team, Vendor project team and Vendor construction management notified. Task currently rescheduled to be completed 2022JUN27.
N-2022-09194	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - RE in Use by Another Work Group, Project # 73600	The vendor electrical work group discovered that the power supply to feed the temporary power panel for the tube welder was being used by another work group. As a result, the vendor pipefitter work group was not able to progress with tube welds in R105 for L138/139 at EP0463 as scheduled. The following WOTs will be rescheduled as required: 0531060633 BPF: CONNECT LEAK DETECTION L138/139 @ EP000463 0531060632 BPF: PERFORM DEMobilization AND CLEAN UP??	OPG project team, Vendor project team and Vendor construction management notified, and raised to PCC manager.

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N-2022-08978	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Tube Weld Failure at EP 5129, Project # 73600	During tube welding in R107 of L142 and L143 at EP5129, 2 production welds failed with significant deviations in the weld readings. The work group backed out to consult with weld supervisor. The scheduled work did not progress as planned.	OPG project team, Vendor project team and Vendor construction management notified. Vendor work group reviewed and eliminated possible concern of purge issues through gauge-reads and electrical interference. Work group communicated with the welding SPOC and identified concern with welding machine staged at work face. Work group will attempt to use another weld machine to progress tube welds.
N-2022-08585	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Material Lost During Transit to PA, Project # 73600	On 30 May 2022 at 1630hrs, work group identified that 1 of 2 EA weld-o-let (BRANCH, PIPE, PB, -, NPS 8" SCH 100 RUN, NPS 4" SCH 80, BUTTWELD, CS, DSGN P 12.9MPA(G), DSGN T 310C, ASME SA- 105N OR SA-105, NC1) was not delivered to site as stated on the packing slip issued by the Vendor warehouse.	OPG project team and Vendor project team notified. Vendor project team to issue PR to procure additional quantities and identify impact to the schedule.

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N-2022-08583	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Group Delayed Due to Late Issuance of WA & IFB Traverse, Project # 73600	Work group stood down with progressing scheduled SCAR RT on NC1 pipe weld inside the vault due to delay with the receiving work authorization, teamster support not being aligned at the start of shift, and due to the forecasted vault evacuation that was scheduled at 15:00hrs for the Unit 4 IFB traverse. A conservative decision was made to stand down the work group.	PG project team, Vendor project team and Vendor construction management notified. Vendor construction management reviewed and approved a plan to allow personnel onsite to support with transporting the RT source into the station; however, WA was not received for this work. Notice of Delay to be submitted as applicable.
N-2022-08568	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Expedited Support Required to Approve CMS Permit, Project # 73600	During advancement of new scope, it was identified on 31MAY2022 that the work group will require a CMS permit in R105 for a temporary power supply. Permit is required to store electrical equipment from June 1 to June 15.	OPG project team, Vendor project team and Vendor construction management notified. SCR initiated to support with review.

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N-2022-07593	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Delay due to EP5066 Pressure Test as Scheduled , Project # 73600	During a look ahead review for the EP5066 Flued Head Pressure Test it was determined that the nitrogen gauges provided by OPG stores, were out of calibration. As a result, EP Flued Head Pressure Test could not be completed as scheduled. The following T-0 tasks did not progress as scheduled: 0531060710 BPF: TEST FLUED HEAD 0531060787 QC: VERIFY PRESSURE TEST ON EP5066	OPG project team, Vendor project team and Vendor construction management notified. Work group working on transferring regulator from Other Vendor project and requesting OPG maintenance to support calibration. Rescheduled tasks as required.
N-2022-07430	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Tubing Tee Discovered Missing, Project # 73600	During material transfer between the protected area (PA) and the vendor staging area (ESA), it was discovered that tubing tee was misplaced.	OPG project team and Vendor Management notified. Vendor has initiated the procurement of a replacement tubing tee and submitted internal CAR.
N-2022-04401	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 - Work Assignment Uncertainty with Moisture Beetle Install Scope, Project # 73600	Work assignment for the repair and install of the moisture beetle (ME390) was unclear with another work group resulting in no authorization being given to progress with PPT application. The following T-0 task did not progress as scheduled: 0518566835 BEL: INSTALL 3-63861- ME390 IN L324-W1F .	OPG project team, Vendor project team, and Vendor construction management notified. Scope delineation confirmed between both work groups and meeting aligned to review scope of each work group.

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N-2022-02910	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Tube Tee Welding , Project # 73600	Vendor identified tube tee does not fit into the orbital welding chill block and the wall thickness is thinner than the tubing being used. As a result, tube welding along L448 and L450, WOT# 0569985-81, cannot progress as scheduled.	Vendor Project Team, Construction Management and OPG Project Team notified. Vendor Welding Engineer engaged to determine if there is an approved WPS to perform the weld with the two materials. If not, vendor project team to identify if the weld can be completed at a fabrication shop.
N-2022-02909	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Material Delivery Delay Impact on T0 Schedule, Project # 73600	Vendor received incorrect material receipt status from other vendor. As a result, scheduled T-0 tasks cannot progress as planned: 0569985881 BPF:MOBILIZE TO (R3-309) 5699858-87 BPF: WELD FLUED HEAD TO PIPE(R3-309)	Vendor Project Team, Construction Management and OPG Project Team notified. Vendor procurement team following up with Other vendor to confirm delivery timeline of material, and vendor project team to simultaneously initiate MR for the required pipe.
N-2022-02908	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Vendor Third Party Subcontractor Delay with Tooling Delivery, Project # 73600	Vendor third party subcontractor receipt of new coring bit delayed resulting in the following T-0 tasks not progressed as scheduled: 0531060732 BPF: SUPPORT VENDOR WITH CORE DRILLING EP05066 0531060734 BEL: PROVIDE TEMPORARY POWER FOR CORING EQUIPMENT R3-309	OPG and Vendor Project Team notified. Vendor third party subcontractor to confirm when drill bit received to reschedule tasks.

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N-2022-02604	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Nelson Stud Training Impacted by Inclement Weather Conditions, Project # 73600	Due to inclement weather conditions, other Vendor was not able to make it to site to conduct Nelson Stud Training for boilermakers at the MCDF.	OPG, Vendor Project Team and Vendor Construction Team notified. Other Vendor to advise on new time and date for training.
N-2022-01970	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Delay Due to COMM Bell Packs Connecting with Another Work Group, Project # 73600	Crew experienced communication interferences when COMM Bell packs connected with another work group. Crew obtained support from COMMS work group to resolve; however, the BPF work group was delayed entry into the vault.	Vendor Project Team, Construction Management and OPG Project Team notified.
N-2022-01929	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Vault (107.5EL) Tubing Found Damaged, Project # 73600 - As-Found Condition	During walk down of the work area in the Vault 107.5EL, it was found that previously installed tubing was damaged (L138/L139 & L142/L143).	OPG and Vendor Project Team notified. Vendor to develop repair/replace strategy through NCR.
N-2022-01927	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Delay Due to COMMS Issues, Project # 73600	Due to connection issue with COMMS Bell packs, the BPF work group experienced delayed entry into the vault. As a result, the following T-0 task did not progress as scheduled: 5826735-16 BPF: WELD TUBING 100EL FOR L142/L143.	Vendor Project Team, Construction Management and OPG Project Team notified. COMMS Bell packs were dropped off for reprogramming with COMMS work group by 1400hrs and committed to be reprogrammed by start of next shift.

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N-2022-01511	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - T0 Non-Compliance WW04, Project # 73600	Scheduled tasks were not completed as per T0 schedule as the work group required additional time to complete practice and pre-qualification orbital welds prior to executing NC1 welds in the Vault. As a result, the project has incurred a 1.5 day push to the critical path of window 105 execution and missed the following T-0 tasks: 5826735-15 BPF: WELD TUBING 100EL FOR L138/L139 5826735-16 BPF: WELD TUBING 100EL FOR L142/ L143 5826735-10 BCR: REMOVE SCAFFOLD ON L138/139 100EL NORTH 5699858-72 BPF: REMOBILIZE ORBITAL WELDING EQUIPMENT TO 107.5EL VAULT	Notified vendor line management and OPG projects.
N-2022-00981	D4	CLOSED	DNRU3-73600-U- 3 EHS-Non- Compliance Tool Missing-2, 10 mm Wrenches	DOT362205- 00014, and DOT362205-00015 (2 wrenches, 10 mm.) have been used during project 73600- U-3 execution and could not be located after task demobilization. SCR to record missing/lost equipment.	Line Supervision notified. Checks made at SATM areas and other work groups and unable to locate. Initiated SCR in accordance with N- PROC-MA-0015, Tool Control, TDR filed (N- Form-10976).

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N-2022-00926	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Weather & COVID Related Absences Causing Schedule Impact, Project # 73600	Due to combination of weather related and COVID related absences, there were no available piping or scaffolding crews to progress tasks on the Unit 3 EHS project. As a result, the project has incurred a one day push to the critical path of Window 105 execution. Reference: SCR# N- 2022-00745	Vendor line management notified. OPG Project Team notified.
N-2022-00474	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Reduced Crews Due to COVID Related Absences, Project # 73600	Due to COVID related absences, the piping crew on the Unit 3 Emergency Heat Sink Project has been reduced. As a result, the project is incurring schedule delays.	OPG Project Team notified. Vendor and OPG Project Teams are reviewing impact of reduced crew over an extended duration for additional risk identification and response strategy development.
N-2022-00473	D3	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Plate Material Condition Unacceptable for Use, Project # 73600	Plate material required for baseplate and shielding box was found to be rusted beyond acceptable condition. Plate to be sandblasted or replaced prior to fabrication. The following scheduled tasks will be moved off the T-4 schedule until replacement material is received: 5310607-32, 5310607-09, 5310607-10.	OPG and Vendor Project Team notified. Procurement for replacement plate initiated. Initiated a review of the procurement strategy for plate materials to ensure order and delivery timelines are optimized to reduce risk of degradation between delivery and installation.

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N-2021-19393	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Scaffold Contract with Vault 107.5EL Tubing (L142/143) Causing Damage, Project # 73600 - As-found condition	When the work group returned to work location (Vault 107.5EL) at start of shift, it was found that a rolling scaffold had made contact with previously installed tubing (L142/143) causing damage.	OPG and Vendor Project Team notified. Vendor to develop repair/replace NCR.
N-2021-19391	D3	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - L179 Tubing Found Bent Damaged in RM-309, Project # 73600 - As-found condition	During stakeholder CCD walk down it was discovered that the tubing line (L179) installed under the Unit 3 Emergency Heat Sink project had been bent damaged.	OPG and Vendor Project Team notified. Vendor to develop repair/replace NCR.
N-2021-18416	D4	CLOSED	DNRU3 Emergency Heat Sink Unit 3 - Vault Temporary Hoist Way Location Interference, Project # 73600	During look ahead field walk down in Unit 3 Vault, work group identified that the temporary hoist way required to transport spools to the Vault 111EL could not be installed due to an interference with other vendors tooling area.	OPG and Vendor Project Team notified. Project team reached out to other Vendor Partner, and it was confirmed the tooling area could not be relocated without significant cost and schedule impacts. Vendor analyzed five alternate strategies for material travel and confirmed two feasible alternatives. Project Team is completing an assessment of the feasible options with coordination with other Vendor Partners to incorporate into project schedule.

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N-2021-17923	NE0	CLOSED	DNRU3 - 73600 - Improper Use of Scaffold	While hanging fire blanket, worker was leaning on handrail with foot on mid-rail to get proper balance during task..	Crew was backed out of the vault and met with Safety Representative. Safety performed investigation and requested copy of vault video recording. Construction Oversight and OPG Project notified.
N-2021-17922	D3	CLOSED	DNRU3: 73600 EHS - Improper Scaffold Use - Exposure to a fall less than 3M	While hanging fire blanket, worker utilized midrail of scaffold to get access to location of task.	Crew was backed out of containment to discuss the finding. Crew Learning Brief compiled and rolled out across the organization to documents lessons learned. Notified Line Management, Construction Oversight, Project Teams.
N-2021-16795	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3 - Emergent Support Request, Project # 73600	Emergent support requested to complete unplanned work on the Unit 3 Emergency Heat Sink Project to avoid impact on DNRU3 critical path. Vendor's scaffolding work group was pulled off of T-0 planned work to support emergent request. Vendor supported the following emergent activity per work order task: 0531060896 BCR: REMOVE SCAFFOLD ON 100EL IN VAULT	Vendor and OPG reviewed planned T-0 work and agreed on planned work that was placed on hold to support emergent request. Notified supervisor, line management, and ESFL construction management.

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N-2021-16526	D4	CLOSED	DNGS Emergency Heat Sink Unit 3 - Crew Not Able to Progress with Scheduled Tasks (100EL), Project # 73600	Scheduled task not progressed as other vendor required access through safe work area. Crew redirected to the north side of the vault; however, due to radiation restrictions access was denied. Unable to progress the following work order tasks: 5310608-02 BPF: INSTALL SUPPORTS FOR L138/L139-100 ELEVATION 5310608-60 BPF: INSTALL SUPPORTS FOR L142/ L143 - 100 ELEVATION	Notified supervisor, line management, OPG projects and ESFL construction management. Work group was deployed to other tasks to mitigate delay. Notice of delay to be submitted as applicable.
N-2021-15960	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3 - Work Group not Granted Access to Vault (100EL) Due to CT/PT Removals, Project # 73600	Work group not granted access to the vault (100el) by RP due to shine during CT/PT removals. Issue persisted for the entire shift and vendor was unable to perform scheduled work activities per work order task 531060802 BPF: INSTALL SUPPORTS FOR L138/L139-100 ELEVATION.	Notified supervisor, line management, OPG projects and ESFL construction management. Work group was redirected to support other tasks. Notice of delay to be submitted as applicable.
N-2021-15952	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3 - Work Group not Permitted Access to Work Face Due to CT/PT Removals, Project # 73600	Work group backed out of the vault (North 100el) due to high radiation at work face from CT/PT removals. Vendor unable to perform scheduled work activities per work order task 531060837 BCR: MODIFY SCAFFOLD U3 VAULT FOR EHS.	Work group stopped and backed out of the vault. Notified supervisor, line management, OPG projects and ESFL construction management. Notice of delay to be submitted as applicable.

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N-2021-15414	D3	CLOSED	DNRU3: DNGS EHS- Weld consumable non-compliance. Project#73600	Power outage within U4 107.5 elevation triggered rod oven timer, timer recorded 35hrs 13mins. Timer was not verified therefore welding rod oven contents were not scrapped per Quality program, weld supervisor potentially proceeded to issue welding rods for tubing supports WO#5310608 HA871 FW0 & 02. Discovered by OPG Weld supervision during oversight walk down.	Timer reset, rod oven contents discarded. Investigation initiated, NCR initiated. Extent of condition in progress to identify impacted WO#s that may have been issued welding between 08:00hrs, 6OCT2021 & 15:00hrs, 7OCT2021. Additional SCR to follow as applicable post investigation.
N-2021-15361	D4	CLOSED	DNRU3: DNGS U3 Emergency Heat Sink - Low Level Injury Inside Vault- Project # 73600	While traversing the vault, worker bumped their head.	Notifications were made to Line Management, OPG Projects/ Oversight and ESFL Construction Management. Low level injury report filed with safety. The individual declined medical attention, and returned to normal duties.
N-2021-14454	D4	CLOSED	DNRU3 - DNGS Emergency Heat Sink Unit 3 - Welding Hoods Removed by Another Work Group - Project # 73600	Vendor welding hoods provided by OPG weld supervision were removed by another work group from the storage location directed by OPG.	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor work group notified RP and OPG weld supervisor, and signed out new welding hoods.

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N-2021-14453	D4	CLOSED	DNRU3 - DNGS Emergency Heat Sink Unit 3 - Entry to the Vault Delayed due to Connection Issue with COMMS - Project # 73600	Work group was delayed entry to the vault due to their COMMS not being able to connect with Teledose and with each other.	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor was provided another COMMS pack, however it was not compatible to communicate with Teledose. Vendor was later provided radio for COMMS to use for entry into vault at 13:00.
N-2021-14452	D4	CLOSED	DNRU3 - DNGS Emergency Heat Sink Unit 3 - Work Group Restricted Access to the Vault due to a Breathing Air Compressor Shutdown, Project # 73600	Work group was restricted from accessing the vault, due to a breathing air compressor shutdown. Breathing air limitations were reduced, maximum capacity available were restricted to 32 people.	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor was provided papers to use for entry into vault at 13:00, however the over ear headphone style of comms were not compatible. Access again was restricted due inability to communicate with Teledose.
N-2021-13617	D4	CLOSED	DNRU3 - 73600 - U3 EHS - Welding Resources	Due to resource constraints the following WW35 T-0 tasks were not progressed as planned. WO 5310608 Tasks: 57, 63 & 38 WO 5699858 Tasks: 15 & 14	Escalated to Vendor Construction Manager, Site Manager and OPG Management. Tasks rescheduled based on resource availability.
N-2021-12446	D4	CLOSED	DNRU3 EHS - Worker Tripped Over TMOD Hosing within U3 Vault - 73600 Low Level Report	While traversing the vault, worker tripped on installed TMOD hosing. Worker felt a twinge in groin. No medical attention required. Worker returned to normal duties.	Notified line management, Safety, Construction Oversight, Project teams.

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N-2021-11713	D3	CLOSED	DNRU3- DNGS Emergency Heat Sink Unit 3 - Delay to Scheduled T-0 Task (ME390 Install), Project # 73600	During the execution of work order task 0531061429 (BEL: TERMINATE 3- 63861-ME390) a configuration management issue was identified by the crew and backed out. The wiring insulation documented in OLW does not match field conditions. OLW update required. As a result, T-0 task missed.	Notified supervisor, OPG Projects and ESFL Construction Management. Initiated OLW Update. Initiated MR from OPG Stores. Rescheduled task pending OLW and CWP update.
N-2021-11253	D3	CLOSED	DNRU3 EHS 10- 73600 Hydrostatic Testing Delay	During look ahead review for the hydrostatic testing requirements, it was determined that the testing could not be completed due to design details requiring update and testing components required to successfully implement testing criteria. As a result, the hydrostatic test was delayed 4 weeks. T0 task missed as a result, but has no negative impact on downstream scorecard milestones.	Reviewed hydrostatic testing requirements with OPG design and TSSA for concurrence on testing requirements. Procured and transferred testing materials from other Vendor project. Rescheduled tasks as required.

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N-2021-09869	C3	CLOSED	MB-73600-FM2 failed and requires replacement	At the morning meeting on 16Jun2021 it was identified that an alarm had come in on the Johnson Controls system and that the exhaust fan MB-73600-FM2 would not run. WR 1869481 submitted to investigate and was flipped to WO 05790538 as a breakplan. CLWW checked the fan motor and determined that the motor had a short to ground rendering it inoperable. (see pictures attached). SCR N-2021-08002 was entered several weeks ago for the failed contactor in the VFD panel that feeds this fan and it is suspected that the two issues are related.	<p>1. Control Maintenance inspected the motor and determined that the wires from the stator winding had broken off (see pictures attached).</p> <p>2. Engineering Brief generated to indicate proper replacement part to support creation of CATID.</p> <p>3. CATID created and MR generated to drive procurement of new fan motor.</p> <p>4. Meeting held with RMT and Radiation Protection to communicate the impact to the Active Ventilation system and the package maintenance program.</p> <p>Note: Alternative measures were pursued including</p> <p>1. Replacing the fan motor with one that is in stock under a NICR, however there are no suitable replacements in stock.</p> <p>2. Having the CATID set as "repairable" and sending it off site to be re-wound (this is still being pursued in parallel).</p>
N-2021-09361	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3 - Relocation of Temporary Power Pack, Project# 73600	Per OPG direction, the temporary power pack in R3-309 will be relocated to allow another vendor's project. Use of power supply 16.	Notified supervisor, line management, OPG projects and ESFL construction management. Crew is working to support the move of the temporary power supply. Notice of delay to be submitted as applicable.

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N-2021-09037	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3 - Entry to the Vault not permitted due to incorrect REP assigned to work order task, Project # 73600	It was identified during the pre-job with RP, the incorrect REP was assigned to work order task 5310608-86 BPF:LAYOUT TUBE/ PIPING SUPPORTS (107.5EL), preventing issuance of EPDs to the crew.	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. The RP FLMA updated the workorder task with the correct REP and the crew were issued EPDs. Notice of delay to be submitted as applicable.
N-2021-05927	D4	CLOSED	DNRU3- DNGS Emergency Heat Sink Unit 3 - Work Group not Permitted Access to R3-309, 115 elevation, Project # 73600	Work group was not permitted access to R3-309 due to a loose contamination event caused by another project. The issue persisted during work week 12, and had an adverse impact on completion of scheduled work.	Stopped and backed out. Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable.
N-2021-02660	D4	CLOSED	DNR- DNGS Emergency Heat Sink Unit 3 - Work Group Not granted Access to R3-051 to Perform Scheduled Work, Project # 73600	R3-051 is inaccessible from 08:00 - 14:00, while operations performed heat transport pumping activities. Vendor unable to perform scheduled work activities per work order task 5310606-42 BPF: INSTALL LINE 3- 33410-L140 & L141.	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor granted access to R3- 051 at 14:00. Notice of delay to be submitted as applicable
N-2021-02636	D4	CLOSED	DNRU3- DNGS Emergency Heat Sink Unit 3 - R3- 002 Inaccessible Due to Helium Purge, Project # 73600	R3-002 inaccessible due to AGS skid helium purge, vendor unable to perform scheduled work activities per work order task 5310606- 19 BPF: INSTALL PIPE SUPPORTS FOR 3-33410-L140 & L141.	Notified supervisor, Line management, Field Engineering, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable

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N-2021-02635	D4	CLOSED	DNR- DNGS Emergency Heat Sink Unit 3 - Work Group Not granted Access to R3-051 to Perform Scheduled Work, Project # 73600	R3-051 is inaccessible while operations are performing activities related to the moderator pumps, vendor unable to perform scheduled work activities per work order task 5310606-42 BPF: INSTALL LINE 3- 33410-L140 & L141.	Notified supervisor, Line management, Field Engineering, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable.
N-2021-02350	D4	CLOSED	DNRU3- DNGS Emergency Heat Sink Unit 3 - Work Group Requested to Leave While Performing Scheduled Work, Project # 73600	While performing work order task 531061320 BEL: INSTALL PANEL MOUNTS &CONDUIT/ CABLE SUPPORTS, work group was requested to leave R3-105 to allow operations to perform moderator purge. The purge is performed periodically at the request of chemistry. Affects rooms R3- 105, R3-051, and R3- 002.	Stopped and backed out. Notified supervisor, Line management, Field Engineering, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable.

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N-2021-02349	D4	CLOSED	DNRU3- DNGS Emergency Heat Sink Unit 3 - Contacted Rebar while Drilling Pilot Holes, Project # 73600	Rebar was contacted while drilling pilot holes per CDAC NR1298, the CDAC and drawing search identified no known mechanical or electrical obstructions. However due to the high density (lead content) of the wall, scans were not able to detect "visible embedments". Precautions and back out conditions followed per CDAC. Discovered while performing work order task 531061320 BEL: INSTALL PANEL MOUNTS &CONDUIT/ CABLE SUPPORTS	Stopped and backed out. Notified supervisor, Line management, Field Engineering, OPG Projects and ESFL Construction Management. The hole will be grouted and anchor location will be relocated within tolerance. Notice of delay to be submitted as applicable.
N-2021-01315	D4	CLOSED	DNRU3 BOP 10- 73600 Field Configuration Issue, R3-105	During layout activities for work order 5310613, a configuration issue was identified in R3- 105 between field condition and NK38- DOS-53000-0009-U3 (south wall on COL.J).	10/30/60 issued from the field construction staff to the ES Fox and OPG Project Managers. RFI issued to OPG Construction Engineering
N-2021-00183	D4	CLOSED	DNRU3: DNGS Emergency Heat Sink Unit 3- Incomplete Setup of Orbital Welders - Project # 73600	Unable to comence setup of orbital welders, due to identifying missing parts and documents only upon receipt. Scheduled work order task delayed 5310606-05 BPF: SETUP ORBITAL WELDING MACHINE	Notifications made to Line Management, OPG Projects, Construction Oversight, and ESFL Construction Management. OPG Projects contacted for direction/ resolution

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N-2020-19000	D4	CLOSED	DNRU3 - BOP 10-73600 Scaffold Delays	<p>The following tasks delayed one shift due to pending radiation surveys in R3-002 and R3-051.</p> <p>0531060655 BCR: PERFORM MOBILIZATION - Delayed one shift</p> <p>0531060623 BCR: ERECT SCAFFOLD AT L140 R-051 - At risk for T-0 finish</p> <p>0531060624 BCR: ERECT SCAFFOLD AT L140 R-002 - At risk for T-0 finish</p>	Escalated through supervision to OPG and ES Fox Project Manager. RP support was provided to complete surveys and crew walkdown completed for both rooms. One Altair qualified resource support confirmed for next shift. Escalated request for second qualified resource to mitigate additional task delays. CARTERM 2020/12/18 07:23 : This is a stand alone issue. Resolution reached Schedule float will allow vendor to meet schedule commitments
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N-2020-17274	CO4	CLOSED	DWMF - Active ventilation filters in WD-73600-HFR2-FR2 found extremely dirty & distorted. Filter change required. Ref: SCR N-2020-12451.	The pre-filters (WD-73600-HFR2-FR2) on active ventilation unit WD-73600-F18 were reported to be extremely dirty and distorted on September 4, 2020. SCR N-2020-12451 was initiated at that time. An inspection of the filters was completed again on November 16, 2020 and the same extremely dirty and distorted filters are still present inside the unit. The "as found" condition of the filters allows air to go around the filters due to the distorted shape. As noted in SCR N-2020-12451 there is a "PM" work order to replace the filters, but the filter change frequency is driven by a "delta-P" number, not by the physical condition of the filters.	Informed FLM. Informed IA. Took picture (attached.) Initiated SCR.
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N-2020-14815	C3-NFE	CLOSED	DWMF- WD-73600-FM18-VFD-1 faults causing active ventilation to become unavailable.	Active ventilation WD-73600-FM18-VFD-1 are tripping at a greater frequency. WR#01843306 (FM17-VFD-1) and WR# 01804499 (FM18-VFD-1) are scheduled for replacement. This equipment is critical to the facility operations for processing DSC at various stages. Associated MCC's were opened for approve. 1 min to clear any ground faults then closed to bring the fan motors in-service. During the time FM17 or FM18 are shut down, stages of DSC's processing such as welding lids and drain plugs along with Backfills and leak check's will be unavailable. This equipment has become suspect for facility operation and requires greater attention to provide more reliability of equipment performance.	Identified equipment fault with support of maintenance. Informed FLM, and filed WR's to address Earth faults and unavailability of active ventilation. Request higher priority on replacement or repair of VFD's for both active ventilation, FM17 and FM18.
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N-2020-12451	C3	CLOSED	DWMF - Pre-filters (WD-73600-HFR2-FR2) for active ventilation unit WD-73600-F18 found extremely dirty and distorted	The pre-filters (WD-73600-HFR2-FR2) on active ventilation unit WD-73600-F18 were found to be extremely dirty and distorted. According to work report 5446468, these filters were installed less than 9 months ago (December 2019) and the existing filters at the time were found to be "plugged". Filter replacement frequency as per model work order 2302887 is based on a delta-p (pressure) value of 375 Pa. As the unit was not "in alarm" and did not display a delta-p value that indicated filter replacement was necessary, a more frequent filter replacement based on different criteria is likely required. The "as found" condition of the filters allowed air to go around the filters due to the distorted shape. See attached pictures. A work request has been previously submitted (ref work order 5636696) but the work has not been scheduled. Note: The replacement frequency for the "final filters" (WD-73600-HFR2-FR1) for WD-73600-F18, as well as the pre-filters (WD-73600-HFR1-FR2) and final filters (WD-73600-HFR1-FR1) for WD-73600-F17 may also be required.	Informed FLMa. Informed IA. Took pictures. Initiated SCR.
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N-2020-07118	D4	CLOSED	DWMF: WD-73600-FM18-VFD1 found tripped - ground fault	When performing rounds this AM, OPs found WD-73600-FM18 (our only active ventilation train) tripped off on ground fault.	<p>ODFD performed a reset of local disconnect. FM18 is running now. Will continue to monitor. No WR filed at this time.</p> <p>WD-73600-FM18-VFD1 was cleaned 13MAR2020 under WO 5243522. Unlikely that it needs cleaned again.</p> <p>Filed SCR to document. Normal total flow is 7.13 E8, this week's stack sample total flow is 6.37E8 Litres. It is unknown when the trip occurred.</p>
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N-2020-05637	D4	CLOSED	DNR: Delay of design completion for Unit 3 Emergency Heat Sink Project# 73600	Due to the discovery issues on U2 EHS identified during commissioning activities along with impact of COVID 19, the detail design completion milestone for U3 EHS has been pushed from the current due date of 31 March 2020.	<p>Projects scheduled meeting with design to provide revised design timelines to develop the recovery plan. NR Replication Design worked on revised timeline with vendor for stress analysis which will then be communicated to the broader team and RMO Action 18492 to reflect the new strategy (recovery Plan) and path-forward. Design provided revised TCD for the approval of Design Engineering Change (EC): 04 September 2020 And Design DA release TCD is 15 October 2020 CARTERM 2020/04/21 11:15 : ESFL and Projects are using the previous approved design ECs to progress the assessment and prefabrication. An ESFL WARR has been accepted by Projects with a HOLD point on field installation.</p> <p>There is a HOLD point for field installation because the U3 EHS EC packages are pending revision of transient analysis. OPEX from U2 indicates that the transient analysis is not expected to impact the piping layout. The same design (piping layout) was used for U2 and recently obtained TSSA registration acceptance (April 17, 2020).</p> <p>Currently, support is being provided to Replication Design to expedite the design package so that the intended CWP's being provided by ESFL can undergo a minor update and thus have zero impact on the target start of the DRU3 installation for window #106 ~ May 2021. The official U3 EHS design release need to be</p>
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					<p>complete by October 15, 2020 to meet recovery plan.</p> <p>Documentation to support an official milestone extension is being assessed. A level 1 recovery plan is attached.</p>
N-2019-11914	D4	CLOSED	<p>DNRU3 EHS #73600- Worker Experienced Discomfort From a Pre-Existing Medical Condition U3 EL 122.5</p>	<p>Employee felt ill while working on 122.5 EI, ERT responded. Nurse assessed as possible dehydration. Employee is going to see their own doctor. Employee was working on WO#05310602-32 - BNS: INSULATE PIPING AS REQUIRED 2-72800-L326.</p>	<p>Conventional safety and SM notified.</p>

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N-2019-11172	D4	CLOSED	DNRU3 EHS #73600 - NEW SCOPE DELAYING LIGHT REINSTATEMENT	New scope added to U3 EHS Sequence A to perform a hydrostatic test on 2- 72800-L326, is resulting in a schedule delay affecting the following task: WO# 05310602-42 - BEL: RESTORE INTERFERENCE (LGHT FIXTURE) WO# 05310602-32 - BNS: INSULATE PIPING AS REQUIRED 2-72800- L326	Notified OPG and ESFL Project Team
N-2019-09005	D4	CLOSED	DNRU3 EMERGENCY HEAT SINK #73600 - HG2 INTERFERENCE	During the layout of 72800-HG2 on NK38- DRAW-72808-10004- U3, it was noted that at the hanger location, there is an interference with an existing support. A FIC will be required to proceed with the install which results in a delay.	Notified ESFL management and OPG project team. RFI-8954 was initiated.

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N-2019-08941	D4	CLOSED	WF-73600-F4 and WF-73600-F5 flow troubleshooting	<p>WO 5390577 was executed today to confirm the accurate flow measurement of WF-67360-FEF4 and WF-67360-FEF5. This was to be done after the execution of WO 5357136 to extend the signal wires to the sensors.</p> <p>We started troubleshooting the flows from WF-67360-FEF5. The following tests were completed.</p> <p>NOTE: The system runs the fan to 1.5m3/s as measured from WF-67360-FEF4 or FEF5.</p> <p>For test 1, WF-67360-FEF5 was removed from the duct and found to be installed sideways. It was then turned to allow the flow to go through the hole in the tip as the sensor is designed.</p> <p>Test 1 VFD (Hz) 21.8 P&T Measured Flow Velocity (m/s) 5.24 Calculated volumetric flow rate (m3/s) 0.658</p> <p>This 0.658 m3/s is significantly less than the 1.5 m3/s required, so the sensor was re-oriented so that it wasn't as deep in the duct and also turned slightly to restrict the flow the sensor detected, so that the fan sped up. Test 2 was then conducted.</p> <p>Test 2 VFD (Hz) 25 P&T Measured Flow Velocity (m/s) 6.12 Calculated volumetric flow rate (m3/s) 0.765</p> <p>Again this 0.765 m3/s is still not close to the 1.5 m3/s required, so the sensor was again pulled further out of the duct and slightly</p>	<p>Sensors were re-positioned to get the fans to deliver closer to the 1.5m3/s design value. This SCR was entered to document the findings. Operations were informed of the as left conditions.</p>
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				<p>turned to reduce the flow detected, to force the fan to speed up. Test 3 was then conducted.</p> <p>Test 3 VFD (Hz) 30.7 P&T Measured Flow Velocity (m/s) 7.9 Calculated volumetric flow rate (m3/s) 0.9875</p> <p>Again this 0.9875 m3/s is still not close enough to 1.5 m3/s, so the sensor was adjusted again to reduce the flow detected, so the fan ramped up a bit higher. Test 4 was then conducted.</p> <p>Test 4 VFD (Hz) 41.5 P&T Measured Flow Velocity (m/s) 10.4 Calculated volumetric flow rate (m3/s) 1.3</p> <p>It seemed that there were no more adjustments that could be made to get Fan 5 to run any higher so the sensor was left in this configuration. Please see the picture attached.</p> <p>To summarize, the as found flow for WF-73600-F5 was 0.658 m3/s, the as left condition is approximately 1.3 m3/s, and the design</p>	
N-2019-08025	D4	CLOSED	DNUR3 EMERGENCY HEAT SINK #73600 - ABANDONED LIGHT FIXTURE RESTING ON DUCTING AT EL. 122	While erecting scaffold to access hanger location, scaffolders came across an abandoned light fixture sitting on duct work on the 122 EL. U3 PHT PUMP R309. Light fixture is not at risk of falling, however, a work request should be put in.	Notified ESFL management and OPG project team.

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N-2019-07605	D4	CLOSED	DNRU3 Emergency Heat Sink Prj 73600 - Minor Errors (Typos) in FICREQ03 (DEC 141005)	Awaiting changes to FICREQ03 for pipe support details delaying in field activities affecting task below and subsequent tasks: 0531060202 - BPF: INSTALL PIPE SUPPORTS Work Group Affected: 4 Pipefitters	Notified ESFL management and OPG project team.
N-2019-07246	D4	CLOSED	DNR U3 Emergency Heat Sink Project #73600 - T0 Non- Compliance WE 06Apr19	The following work order tasks were not completed as scheduled due to a scheduling error. 05310602-17 BEL: PREPARE AND SUBMIT PC1 FOR ELECTRICAL ISOLATION 05310602-31 BCR: INSPECT AND APPROVE RIGGING SCAFFOLD	The logic of these tasks will be corrected and rescheduled accordingly.

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N-2019-06899	D4	CLOSED	DNR U3 EMERGENCY HEAT SINK PROJECT #73600 - REBAR INTERFERENCE AT PIPE SUPPORT ANCHORS	While laying out pipe supports for the Emergency Heat Sink installation, it was noted that support anchors interfered with concrete reinforcement for the following supports: HG1 at EL.100 HS3 at EL. 115 HR7 at EL. 122.5 HG8 at EL.122.5 Reinforcement interferences resulted in a delay affecting the follow tasks: 0531060211 - BPF: LAY OUT WALL SUPPORT LOCATIONS DRILL CARD SCAN 0531060202 - BPF: INSTALL PIPE SUPPORTS 0531060203 - BPF: INSTALL CLASS 6 PIPING 3-72800-L326 and any subsequent tasks.	Notified ESFL management and OPG project team.
N-2018-19722	D4	CLOSED	WF-73600-F4 and WF-73600-F5 Functional Failure	As per SCR N-2018-08192 the flows measured downstream of WF-73600-F4 and WF-73600-F5 need to be corrected. This SCR is being entered to document the Functional Failure of the flow sensors. This is not a repeat of the last occurrence as it has yet to be corrected.	SCR N-2018-08192 was entered back in march to identify the issue. Initial WO 5307685 was set to complete to clean the flow sensors.

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N-2018-19715	D4	CLOSED	MB-73600-F2 shutdown	On 11SEP2018 Operations identified F2 tripped and would not stay running for 5 minutes after being reset in WR 1771735.	Fan reset and WR 1771735 entered.
N-2018-11133	C3-NFE	CLOSED	DWMF: WD-73600-F12 Nederman Not in Use (Legacy)	<p>Issue: The WD-73600-F12 Nederman weld fume extraction fan installed at DWMF is not currently used. A potential legacy gap exists.</p> <p>Discovered During: Questioning attitude by Assessor performing field walkdown revealed that WD-73600-F12 was not isolated and brought this information to the weekly T12 work planning meeting. It was discussed that perhaps a TCR should have been issued to document that the fan is not currently used.</p> <p>Background: The fan was part of the original design to capture exhaust from DSC lid welding activities and discharge to the stack (00044-DRAW-73600-10001). Of note is that the DWMF Safety Report (00044-SR-01320-10002) calls out the presence of the system in Sections 3.4.5.1 and 4.3.1.</p> <p>As documented in C3 NFE SCR N-2013-00258 however, fume exhaust is not currently captured during lid welding. Reasons at the time were given as the following: 1) flow rate was high enough to affect weld quality by removing cover gas</p>	Interim actions: SCR initiated to document ODFD have placed TCR 438 on WD-53340-MCC4-CB4E to remove the system from service

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				<p>2) the fan was excessively loud, limiting communications on the weld deck</p> <p>3) the fume hood was ergonomically poor, and interfered with work on the weld head and blocked camera views</p> <p>Interviews with senior staff indicate that the OEM was brought in at that time to investigate the possibility of reducing flow rate to mitigate the above concerns, but could not be accomplished without modification. Air quality testing was subsequently performed to confirm no conventional safety hazards during welding operations.</p> <p>As a result of N-2013-00258, ECR#23141 was initiated to address modifying the system. This ECR did not result in an approved modification however, and the system has remained unused.</p>	
N-2018-04822	D4	CLOSED	Instrumentation tubing deteriorated on WF-73600-F5	<p>Discovered during operational rounds, WF-73600-F5 filter differential pressure gauge tubing for WF-67360-PG8 is cracked. As an extent of condition all the instrumentation tubing for WF-73600-F4 and F5 should be inspected/replaced.</p>	Filed work request 01752805, informed line management.

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N-2018-03486	D4	CLOSED	MB-73600-FM3 - Toggle Switch in poor condition from Vendor - WO#5295358	While replacing MB-73600-FM3 we noticed that there was a 600V toggle switch(NB-73600-SW1)SCT on the fan which was supplied directly from the supplier. The control technicians questioned the integrity and the safety of this switch as the connections weren't covered and were bare if anyone were to take the box cover off this would be a safety issue, also the connections were too close together and were accidentally moved and came in contact with each other could cause a short in the system.	We involved our RSE and the ESA(Electrical safety Authority) was contacted and brought on site and his recommendation was this switch was a safety issue and shouldn't be used.
N-2017-27429	CO3	CLOSED	Western Waste Management Facility - MB-73600-F3 fan slip potential recurrence	SCR N-2017-25898 was recently entered to document the fan slip on MB-73600-F3. The immediate action taken was to repair the fan wheel and put it back in service. WR 1740055 was entered and flipped to WO 05268086 to replace the F3 unit. It is suspected that the fan wheel of F3 has failed again since the interim repair was done as suction flows are lower at the elephant trunks and F3 has minimal vibrations.	This SCR was filed and forwarded to Operations and Maintenance.

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N-2017-25898	C3	CLOSED	Western Waste Management Facility - MB-73600-F3 fan slip	WO 5230357 was done to investigate MB-73600-F3. It was identified that the sheaves were replaced on July 24, the belt was replaced on Sept 7 and the motor had been recently changed and that these were not the issue. WO 5263886 was then completed to investigate further because there was no suction from F3 and no rad work could be done while ventilation was down. Under this WO it was discovered that the fan wheel was damaged.	Fan wheel was temporarily repaired and put back into service. WR 1740055 was entered to get a new part, MR 6664985 entered to order the whole f3 unit. Supply Chain contacted to assist in expediting parts.
N-2017-19657	D4	CLOSED	TPMB active ventilation MB-73600-F3 belts are off.	On operator rounds on Aug 28 2017 it was noticed that TPMB F3 belts are off. In passport there was a WR submitted in July of 2017 and then again on Aug 20th indicating that the belts need to be changed out due to bad vibration and smell of burning rubber. Belts are now off.	Submitted this SCR to document WI-73600-F3 belts are off.

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N-2017-07980	D4	CLOSED	DWMF: Configuration Management: WD- 73600-HFRs not found as drawn	00044-DRAW-73600- 10001 shows HFR1- DPG1 & 3 and HFR- DPG5 & 7 measuring the delta P across 2 prefilters in the units. This is the same layout found on 00044-WD-O-73600- FS1. In the field only one set of pre-filters exist in each unit. Discovered while executing WO 05117422 to replace WD-73600-HFR2- FR3 - found no filters in this location.	Had task added to WO to replace HFR2-FR2 filters. Contacted SRE who confirmed only one set of pre-filters installed as per 00044-DRAW- 73600-10003
N-2016-28723	D4	CLOSED	HEPA Filter WF- 73600-FR2 bypass re-test needs to be scheduled	WF-73600-FR2 failed the Filter Bypass Test on March 30th, 2016. SCR N-2016-09841 was initiated on April 18th, 2016 to capture this bypass test failure. WF-73600-FR2 was replaced on September 28th, 2016 under WO 05002330. According to N- PROC-OP-0042 section 3.6, REMEDIAL ACTIONS, Filters shall be repaired and a bypass retest scheduled within 26 weeks of the SCR initiation date.	Contacted Performance and Testing Department that does HEPA Filter Bypass Testing to schedule this test at earliest date. Work Request 01701958 has be initiated to schedule this retest for newly replaced HEPA filter.

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N-2016-09841	D3	CLOSED	WF-73600-FR2 - Bypass Test Failure	<p>While performing WO 04726339 it was identified that WF-73600-FR2 failed the filter bypass test.</p> <p>An SCR is required as per N-PROC-OP-0042, Section 3.6, Remedial Actions, for the System Engineer (SE) to initiate a SCR identifying the deficiency and what remedial actions are required. Remedial actions shall be initiated by the SE in accordance with the instructions in Table 1, Normal Operations Filters and Table 2, Emergency Filters of N-PROC-OP-0042.</p>	<p>Reviewed N-PROC-OP-0042, Contaminated Exhaust Ventilation Control Filter Testing</p> <p>Filed SCR.</p> <p>Initiated WR 01679551.</p>
N-2015-27496	D4	CLOSED	DWMF: REWORK - ODFD to prepare second permit for WD-73600-HFR1 work	<p>ODFD applied and verified permit for filter change on WD-73600-HFR1 on Wednesday November 18, 2015. Work could not be completed as written as REFERENCE procedure (00004-SMP-73600-00001) calls for rubber area set up and special Hepa filter bags.</p> <p>On Monday November 23, 2015, WD-73600-F18 was removed from service due to excessive bearing noise (N-2015-27494). Permit removed from WD-73600-HFR1 (on WD-73600-F17) prior to work being completed.</p>	<p>Filed SCR to document rework.</p> <p>Assessing to submit second PC1 for filter change. ODFD will prepare a second permit when time and resources permit.</p>

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N-2015-27494	D4	CLOSED	DWMF: WD-73600-F18 noisy bearing - taken out of service	WD-73600-F18 (active ventilation) found to be suddenly extremely noisy from bearings.	<p>Remove WD-73600-F18 from service. WD-73600-F17 to be placed in service after WD-73600-HFR1 permit removed (N-2015-27496).</p> <p>Last known readings of HFR1 (taken June 1, 2015) Pre filters: 447.2 Final Filters: 154.6. The Pre-filter is greater than the 375 Pa limit given on W-FORM-10609 - Rounds. F17 will be placed in service to see currently delta P readings. Continued operability of active ventilation will be determined based on those readings.</p> <p>Notified DWMF management that active ventilation may be taken completely out of service which will stop the flow of work in the processing area.</p> <p>Filed WR 1663523.</p> <p>Filed SCR to document functional failure of equipment.</p>
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N-2015-16053	D4	CLOSED	DWMF: WD-73300/73600-VFD - drawings and MEL updates required	<p>00044-WD-O-53340-FS6 R00 shows WD-73600-VFD1, -VFD2 and WD-73300-VFD3, -VFD4 which is the correct equipment codes for this equipment.</p> <p>Asset Suite has 3 correct equipment codes and WD-73600-VFD3 - correct SCI should be 73300 MEL update required.</p> <p>TCR WE0000017 for flowsheet revision was initiated 2009-08-11 to update the equipment codes to WD-73600-FM17-VFD1, WD-73600-FM18-VFD1, WD-73300-HVU3-FM22-VFD1 and WD-73300-FM16-VFD1 - currently showing in Flowsheet available in ESMII</p> <p>00044-DRAW-53340-100007 R001 shows WD-73600-FM17-VFD1, WD-73600-FM18-VFD1, and WD-73300-FM16-VFD1. Field labeling (legacy P-Touch) also is WD-73600-FM17-VFD1, WD-73600-FM18-VFD1, WD-73300-HVU3-FM22-VFD1 and WD-73300-FM16-VFD1.</p>	Filed SCR to document.
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N-2015-11753	D4	CLOSED	DWMF: WD-73600-F17 & F18 found not operating	WD-73600-F18 tripped on earth fault (ground fault) at 12:28 and F17 did not automatically pick up. F18 taken out of service by local disconnect. WD-73600-F17 started up after F18 selected off but ran only 20 minutes before tripping off at 13:37. DWMF will have no active ventilation over the weekend. Note: stack sampler is still running. All releases from DWMF are still being monitored. Having no active ventilation stops any backfills or leak checks from being performed.	Notified Facility Manager and Maintenance Manager
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N-2015-11006	CO3	CLOSED	DWMF: WD-73600-F17 & F18 found not operating	During pre-op checks for DSC leak check, discovered active ventilation not operating. Investigation found WD-73600-F18 had "Earth Fault" error message. WD-73600-F17 had "Calling to run" message. When power was shutdown to F18 to clear the alarm message, F17 began to run. Selected F17 off and started F18 without issue. HENDRIXP 2015/05/13 15:38 : Active ventilation (stack monitoring was not working from 06:38-09:05 according to Building Management System (BMS)	<p>Contacted FLM and SRE. Notified CM & MM that active ventilation was out of service. Troubleshooting in progress.</p> <p>WR 1642340 filed for CM troubleshooting of Earth Fault HENDRIXP 2015/05/13 15:38 : As per SRE instructions on WR 1642340 "SIMILAR ISSUE WAS FIXED IN WO# 03001179(2013). IN THIS WORK ORDER CONTROL BOARDS WERE REPLACED. BUT THIS EARTH FAULT HAS BEEN COPPING INTERMITTENTLY SINCE. THIS ISSUE IS NOT ISOLATED TO THIS FAN BUT IS IN EXISTENT WITH BOTH FANS." HENDRIXP 2015/05/13 16:35 : Notified Safeguards SRE to see if any notification needs to be made for the unplanned 2.5 hour active ventilation outage. HENDRIXP 2015/05/14 08:38 : DGS-606 filled out and sent to Safeguards officer to record unplanned stack sampler outage.</p>
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N-2015-09366	C3-NFE	CLOSED	DWMF: WD-73600-F17 found not operating during daily rounds	<p>During daily rounds, WD-73600-F17 (active ventilation) was found not operating. The redundant fan, WD-73600-F18, did not automatically start with the loss of F17. Welding was in progress at the time of discovery.</p> <p>Both F17 (WR 1639723) and F18 (WO 3254722) have high delta Ps on their pre-filters.</p>	<p>NO notified SNO who then notified FLM and CM FLMA. MM FLMA notified of no active ventilation - investigation I/P. BMS display was reviewed and both fans showed operating normal. Went to WD-73600-F17 to further diagnose and found fan running.</p> <p>A search into the history log revealed the following fan failures: 04/23/2015 11:04 F-17 AVS Failure Off. Priority=16 - Custom Programming - Low by AVS_ROTATE_ALARM. F17 appears to have restarted by 11:36 as there is a pre-filter sensor alarm.</p> <p>04/22/2015 2:20 PM same alarm as above. Cleared by 2:44 PM</p> <p>04/22/2015 9:09 AM same alarm as above. Cleared by 09:32. SRE was in BMS at the time looking to find out why F17 and F18 did not swap duty on the 15th of the month as per program.</p> <p>Discussed fan failures with SRE who indicated that this strange phenomenon happens one day a month - previously on March 27th and February 24th (from memory).</p>
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N-2014-25410	D4	CLOSED	NWMD Modifications List: Detailed Design TCD will not be met for WF-73600- F11 Replacement	<p>The NWMD Modifications list includes a mod for replacement of weld fume extraction fan WF-73600-F11 at the Western Used Fuel Dry Storage (WUFDS) facility, with a TCD of September 12, 2014 for issue of the detailed design. This date will not be met due to significant delays in obtaining detailed technical information from the vendor on the proposed replacement equipment. Without this information the suitability of the replacement equipment and any related interface issues could not be evaluated or incorporated into the modification.</p> <p>Repeated attempts to obtain the required information were unsuccessful until September 5, 2014. This represents roughly a 1 month delay from the time this information was expected to be available.</p>	<p>The delay to schedule was communicated to the facility manager and section manager, with the promise of a recovery plan once a date for receipt of the technical information was available.</p> <p>A recovery plan was drafted with the assumption that the required technical information would become available by September 2, 2014 and that the proposed equipment would prove suitable for the intended application after review of the information.</p> <p>The receipt of the information on September 5 will not affect the recovery schedule. The assumption that the equipment will prove suitable is still built in to the recovery schedule.</p>
N-2014-13269	D4	CLOSED	WUFDSF Transfer Schedule Changes Due to Equipment Failure of 73600- Fan 11 (See W/O- 3158476 and N- 2014-12121) WWK16\17	<p>due to the failure of WF-76100-Fan11 the transfer schedule in WWK16 and 17 needed to be revised as we could not weld and free up DSC Transfer clamps.</p>	<p>Elevated this equipment failure and obtained concurrence to install a temporary Needermen Smoke eater to allow DSC Lid Welding to restart. By this time two DSC transfer needed to be reschedule to the 3rd and 4th quarters of the year, BB is -10 behind, BA is -2 behind for a total of -12 for the year.</p>

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N-2014-12121	C3	CLOSED	Electrical operating issue with WF-73600-F11	Informed by Mechanical Maintenance that fan unit WF-73600-F11 was not running when they selected the local floor switch to "ON". Attempted to start unit from local controls located on F11 unit on east mezzanine. Found "Reset" indicating push button illuminated. Pressed "Reset" button and "Reset" light turned off. Pressed "Start" button and green "Start" light illuminated briefly and then unit shut down or "tripped-off".	Informed FLMA of issue with F11. Initiated work request. Applied PPT to F11 and began investigating issue. JOHNSDWA 2014/04/23 09:28 : PE contacted to see if a TAlt could be installed to allow welding to continue. DE approval received to install a portable smoke eater to the weld system temporarily so welding could resume. DE has the lead to procure replacement parts or create a NICR.
N-2013-21063	D4	CLOSED	WF-73600-F11 not operating as per design	Fan WF-73600-F11 is not working as designed, the start up sequence has changed because of an obsolete circuit board that cannot be replaced.	Discussed with FLM , entered controled area and started fan 11 manually, This deviates from normal operating proceedure
N-2013-00155	D4	CLOSED	MB-73600-DP5 not functioning	MB-73600-DP5 on MB-73600-FH2is not closing when the power switch was shut off. Discovered while attempting work order package #02836542-01.	Work Request created #00879629 and wrote this SCR.

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D-2021-14247	D4	CLOSED	Permit Application Delayed on 0- 73600-HTE9006 due to STOP Applied	PC17 2220178 was scheduled to be applied, however, when employing the Nuclear Safety Trait of the week (vigilance), the duty IA discovered PC17 had a stop against it. Investigation revealed that the STOP was input due to a "peer review required". N- INS-08400111-10002 (N-INS) details certain criteria for a peer review (Emergent work, or work a CA/IA deems necessary) but IA could not determine what criteria from N-INS was used to put this STOP in place and, despite PC17 (and its supporting PC2 # 41810) appearing to conform to all the requirements of both N-Proc-MA-0012 (MA-12) and the N- INS, IA was unwilling to remove the STOP without a better understanding of the underlying rationale behind it, displaying the Op Fundamental of the week (Conservatism).	Discussed with CRSS during start of shift brief.
D-2008-06338	D4	CLOSED	SCR for Trending Equipment Failure 0-73600-F9007 CED-EFFAN-OTH	The washroom exhaust fan in the sheet metal shop (0- 73600-F9007) was found to be stopped on 15 May 2008 and failed to start when the local switch was selected to ON. The cause of this failure is not yet known. The component specialist discovered this condition while reviewing new work requests.	Initiated this SCR to document the failure of this fan.

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			<p>hoisting to RMD and PHT pump rooms</p> <p>The U3 RMD hoistway that is used to hoist materials from 100EL to Reactivity Mechanism Deck and the PHT pump rooms has been turned into an RMSA and preventing access to other work groups to perform any hoisting activity.</p> <p>During the walkdown in preparation for the RMD hoist, the FTL identified that the hoistway was completely occupied. This prevents project from hoisting materials and equipment as planned into R3-309.</p>	<p>been scheduled between the workgroups to identify a way to free up some space. Walkdown completed and both groups agreed to allocation of space for hoisting</p> <p>No schedule impact. No further action</p>
N-2022-00474	D4	COMPLETE	<p>DNRU3 Emergency Heat Sink Unit 3 – Reduced Crews Due to COVID Related Absences, Project # 73600</p> <p>Due to COVID related absences, the piping crew on the Unit 3 Emergency Heat Sink Project has been reduced. As a result, the project is incurring schedule delays.</p>	<p>OPG Project Team notified. Vendor and OPG Project Teams are reviewing impact of reduced crew over an extended duration for additional risk identification and response strategy development.</p>
N-2022-00473	D3	COMPLETE	<p>DNRU3 Emergency Heat Sink Unit 3 – Plate Material Condition Unacceptable for Use, Project # 73600</p> <p>Plate material required for baseplate and shielding box was found to be rusted beyond acceptable condition. Plate to be sandblasted or replaced prior to fabrication. The following scheduled tasks will be moved off the T-4 schedule until replacement material is received: 5310607-32, 5310607-09, 5310607-10.</p>	<p>OPG and Vendor Project Team notified. Procurement for replacement plate initiated. Initiated a review of the procurement strategy for plate materials to ensure order and delivery timelines are optimized to reduce risk of degradation between delivery and installation.</p>

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N-2021-19393	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 – Scaffold Contract with Vault 107.5EL Tubing (L142/143) Causing Damage, Project # 73600 – As-found condition	OPG and Vendor Project Team notified. Vendor to develop repair/replace NCR.
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SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
			When the work group returned to work location (Vault 107.5EL) at start of shift, it was found that a rolling scaffold had made contact with previously installed tubing (L142/143) causing damage.	
N-2021-19391	D3	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 – L179 Tubing Found Bent Damaged in RM-309, Project # 73600 – As-found condition During stakeholder CCD walk down it was discovered that the tubing line (L179) installed under the Unit 3 Emergency Heat Sink project had been bent damaged.	OPG and Vendor Project Team notified. Vendor to develop repair/replace NCR.
N-2021-18416	D4	COMPLETE	DNRU3 Emergency Heat Sink Unit 3 – Vault Temporary Hoist Way Location Interference, Project # 73600 During look ahead field walk down in Unit 3 Vault, work group identified that the temporary hoist way required to transport spools to the Vault 111EL could not be installed due to an interference with other vendors tooling area.	OPG and Vendor Project Team notified. Project team reached out to other Vendor Partner, and it was confirmed the tooling area could not be relocated without significant cost and schedule impacts. Vendor analyzed five alternate strategies for material travel and confirmed two feasible alternatives. Project Team is completing an assessment of the feasible options with coordination with other Vendor Partners to incorporate into project schedule.
N-2021-17923	NE0	COMPLETE	DNRU3 - 73600 - Improper Use of Scaffold While hanging fire blanket, worker was leaning on handrail with foot on mid-rail to get proper balance during task..	Crew was backed out of the vault and met with Safety Representative. Safety performed investigation and requested copy of vault video recording. Construction Oversight and OPG Project notified.

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N-2021-16795	D4	COMPLETE	<p>DNRU3: DNGS Emergency Heat Sink Unit 3 - Emergent Support Request, Project # 73600</p> <p>Emergent support requested to complete unplanned work on the Unit 3 Emergency Heat Sink Project to avoid impact on DNRU3 critical path. Vendor's scaffolding work group was pulled off of T-0 planned work to support emergent request.</p>	<p>Vendor and OPG reviewed planned T-0 work and agreed on planned work that was placed on hold to support emergent request.</p> <p>Notified supervisor, line management, and ESFL construction management.</p>
SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
			<p>Vendor supported the following emergent activity per work order task:</p> <p>0531060896 BCR: REMOVE SCAFFOLD ON 100EL IN VAULT</p>	
N-2021-16526	D4	COMPLETE	<p>DNGS Emergency Heat Sink Unit 3 - Crew Not Able to Progress with Scheduled Tasks (100EL), Project # 73600</p> <p>Scheduled task not progressed as other vendor required access through safe work area. Crew redirected to the north side of the vault; however, due to radiation restrictions access was denied. Unable to progress the following work order tasks:</p> <p>5310608-02 BPF: INSTALL SUPPORTS FOR L138/L139-100 ELEVATION</p> <p>5310608-60 BPF: INSTALL SUPPORTS FOR L142/ L143 - 100 ELEVATION</p>	<p>Notified supervisor, line management, OPG projects and ESFL construction management. Work group was deployed to other tasks to mitigate delay.</p> <p>Notice of delay to be submitted as applicable.</p>

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N-2021-15960	D4	COMPLETE	<p>DNRU3: DNGS Emergency Heat Sink Unit 3 - Work Group not Granted Access to Vault (100EL) Due to CT/PT Removals, Project # 73600</p> <p>Work group not granted access to the vault (100el) by RP due to shine during CT/PT removals. Issue persisted for the entire shift and vendor was unable to perform scheduled work activities per work order task 531060802 BPF: INSTALL SUPPORTS FOR L138/L139-100 ELEVATION.</p>	Notified supervisor, line management, OPG projects and ESFL construction management. Work group was redirected to support other tasks. Notice of delay to be submitted as applicable.
N-2021-15952	D4	COMPLETE	<p>DNRU3: DNGS Emergency Heat Sink Unit 3 - Work Group not Permitted Access to Work Face Due to CT/PT Removals, Project # 73600</p> <p>Work group backed out of the vault (North 100el) due to high</p>	Work group stopped and backed out of the vault. Notified supervisor, line management, OPG projects and ESFL construction management. Notice of delay to be submitted as applicable.
SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
			radiation at work face from CT/PT removals. Vendor unable to perform scheduled work activities per work order task 531060837 BCR: MODIFY SCAFFOLD U3 VAULT FOR EHS.	
N-2021-15414	D3	COMPLETE	<p>DNRU3: DNGS EHS- Weld consumable non-compliance. Project#73600</p> <p>Power outage within U4 107.5 elevation triggered rod oven timer, timer recorded 35hrs 13mins. Timer was not verified therefore welding rod oven contents were not scrapped per Quality program, weld supervisor potentially proceeded to issue welding rods for tubing supports WO#5310608 HA871 FW0 & 02.</p> <p>Discovered by OPG Weld supervision during oversight walk down.</p>	Timer reset, rod oven contents discarded. Investigation initiated, NCR initiated. Extent of condition in progress to identify impacted WO#s that may have been issued welding between 08:00hrs, 6OCT2021 & 15:00hrs, 7OCT2021. Additional SCR to follow as applicable post investigation.

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N-2021-15361	D4	COMPLETE	<p>DNRU3: DNGS U3 Emergency Heat Sink - Low Level Injury Inside Vault- Project # 73600</p> <p>While traversing the vault, worker bumped their head.</p>	<p>Notifications were made to Line Management, OPG Projects/ Oversight and ESFL Construction Management. Low level injury report filed with safety. The individual declined medical attention, and returned to normal duties.</p>
N-2021-14454	D4	COMPLETE	<p>DNRU3 - DNGS Emergency Heat Sink Unit 3 - Welding Hoods Removed by Another Work Group - Project # 73600</p> <p>Vendor welding hoods provided by OPG weld supervision were removed by another work group from the storage location directed by OPG.</p>	<p>Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor work group notified RP and OPG weld supervisor, and signed out new welding hoods.</p>
N-2021-14453	D4	COMPLETE	<p>DNRU3 - DNGS Emergency Heat Sink Unit 3 - Entry to the Vault Delayed due to Connection Issue with COMMS - Project # 73600</p> <p>Work group was delayed entry to the vault due to their COMMS not</p>	<p>Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor was provided another COMMS pack, however it was not compatible to communicate with Teledose. Vendor was later provided radio for COMMS to use for entry into vault at 13:00.</p>

SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
			being able to connect with Teledose and with each other.	
N-2021-14452	D4	COMPLETE	<p>DNRU3 - DNGS Emergency Heat Sink Unit 3 - Work Group Restricted Access to the Vault due to a Breathing Air Compressor Shutdown, Project # 73600</p> <p>Work group was restricted from accessing the vault, due to a breathing air compressor shutdown. Breathing air limitations were reduced, maximum capacity available were restricted to 32 people.</p>	<p>Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Vendor was provided paps to use for entry into vault at 13:00, however the over ear headphone style of comms were not compatible. Access again was restricted due inability to communicate with Teledose.</p>
N-2021-13617	D4	COMPLETE	DNRU3 – 73600 – U3 EHS – Welding Resources	Escalated to Vendor Construction Manager, Site Manger and OPG Management.

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			<p>Due to resource constraints the following WW35 T-0 tasks were not progressed as planned.</p> <p>WO 5310608 Tasks: 57, 63 & 38 WO 5699858 Tasks: 15 & 14</p>	Tasks rescheduled based on resource availability.
N-2021-12446	D4	COMPLETE	<p>DNRU3 EHS - Worker Tripped Over TMOD Hosing within U3 Vault - 73600 Low Level Report</p> <p>While traversing the vault, worker tripped on installed TMOD hosing. Worker felt a twinge in groin. No medical attention required. Worker returned to normal duties.</p>	Notified line management, Safety, Construction Oversight, Project teams.
N-2021-11713	D3	COMPLETE	<p>DNRU3- DNGS Emergency Heat Sink Unit 3 - Delay to Scheduled T-0 Task (ME390 Install), Project # 73600</p> <p>During the execution of work order task 0531061429 (BEL: TERMINATE 3-63861-ME390) a configuration management issue was identified by the crew and backed out. The wiring insulation documented in OLW does not match field conditions. OLW update required. As a result, T-0 task missed.</p>	<p>Notified supervisor, OPG Projects and ESFL Construction Management.</p> <p>Initiated OLW Update.</p> <p>Initiated MR from OPG Stores.</p> <p>Rescheduled task pending OLW and CWP update.</p>

SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
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N-2021-11253	D3	COMPLETE	<p>DNRU3 EHS 10-73600 Hydrostatic Testing Delay</p> <p>During look ahead review for the hydrostatic testing requirements, it was determined that the testing could not be completed due to design details requiring update and testing components required to successfully implement testing criteria. As a result, the hydrostatic test was delayed 4 weeks.</p> <p>T0 task missed as a result, but has no negative impact on downstream scorecard milestones.</p>	Reviewed hydrostatic testing requirements with OPG design and TSSA for concurrence on testing requirements. Procured and transferred testing materials from other Vendor project. Rescheduled tasks as required.
N-2021-09361	D4	COMPLETE	<p>DNRU3: DNGS Emergency Heat Sink Unit 3 - Relocation of Temporary Power Pack, Project# 73600</p> <p>Per OPG direction, the temporary power pack in R3-309 will be relocated to allow another vendor's project. Use of power supply 16.</p>	Notified supervisor, line management, OPG projects and ESFL construction management. Crew is working to support the move of the temporary power supply. Notice of delay to be submitted as applicable.
N-2021-09037	D4	COMPLETE	<p>DNRU3: DNGS Emergency Heat Sink Unit 3 - Entry to the Vault not permitted due to incorrect REP assigned to work order task, Project # 73600</p> <p>It was identified during the pre-job with RP, the incorrect REP was assigned to work order task 5310608-86 BPF:LAYOUT TUBE/ PIPING SUPPORTS (107.5EL), preventing issuance of EPDs to the crew.</p>	Notified supervisor, Line management, OPG Projects and ESFL Construction Management. The RP FLMA updated the workorder task with the correct REP and the crew were issued EPDs. Notice of delay to be submitted as applicable.
N-2021-05927	D4	COMPLETE	<p>DNRU3- DNGS Emergency Heat Sink Unit 3 - Work Group not Permitted Access to R3-309, 115 elevation, Project # 73600</p> <p>Work group was not permitted access to R3-309 due to a loose contamination event caused by another project. The issue persisted during work week 12, and had an adverse impact on completion of scheduled work.</p>	Stopped and backed out. Notified supervisor, Line management, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable.

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N-2021-05348	D4	COMPLETE	<p>DNRU3: Cable tray label identified on EHS design drawing does not match field label</p> <p>During the walk down to review the design drawing against field configuration, it was discovered that the cable tray label (2FL01A) identified in the OLW was missing and the label is on the wrong tray (2FL03A)</p>	<p>1. Vendor requested information on the cable tray's correct label</p> <p>2. Drawing Office has confirmed the OLW was correct and the cable tray needs to be labelled correctly</p>
N-2021-04778	D4	COMPLETE	<p>DNRU3- Scheduled tasks impacted by late issuance of FICs</p> <p>The following scheduled tasks are at risk, or have been missed due to late issuance of Field Initiated Changes. The time interval between field discovered issues, communicated through RFIs, and design resolution has not met expectations and resulted in significant impact on scheduled tasks.</p> <p>Missed Tasks:</p> <p>531061308 BPF: INSTALL 3-63341- PT36</p> <p>531061324 BPF: INSTALL 3-63341- PT37</p> <p>Tasks at Risk:</p> <p>531060529 BPF:</p> <p>INSTALL</p> <p>HANGERS FOR 3-3340-L179</p> <p>531060525 BPF: INSTALL</p> <p>TUBING FOR 3-3340-L179</p> <p>531060515 BFRD:</p> <p>PERFROM SCANS AND</p> <p>PREPARE CDAC</p>	<p>Notified supervisor, line management, OPG Construction Engineering, OPG Projects and ESFL Construction Management. SCR filed to document negative trend. Notice of delay to be submitted as applicable.</p>

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N-2021-04417	D4	COMPLETE	<p>DNRU3: EHS U3 Discrepancy between piping support drawing and Isometric drawing</p> <p>During construction review of the design drawings, it was discovered that HSG 276 was showing north of the line 14 on the pipe support drawing. However, the same HSG</p>	Vendor submitted and RFI to the construction engineering (CE) team for clarification. CE confirmed the correct location of the hanger and dispositioned the RFI. Additionally, they confirmed that this does not affect any design calculations and performed a FIC to make the change.
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SCR Number	Category	Status	Titles and Description	Actions Taken/Comments
			276 was showing south of the line 14 on the ISO. This lead to a confusion on the location of the support.	Project has reached out to Replication Engineering to review and make corrections if required for U1 & U4 and confirmed that this will be addressed for U1 & U4.
N-2021-02636	D4	COMPLETE	<p>DNRU3- DNGS Emergency Heat Sink Unit 3 - R3-002 Inaccessible Due to Helium Purge, Project # 73600</p> <p>R3-002 inaccessible due to AGS skid helium purge, vendor unable to perform scheduled work activities per work order task 5310606-19 BPF: INSTALL PIPE SUPPORTS FOR 3-33410-L140 & L141.</p>	Notified supervisor, Line management, Field Engineering, OPG Projects and ESFL Construction Management. Notice of delay to be submitted as applicable

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Design EC	Revision	FICREQ No.	Asset Suite Status
141005	000	FICREQ01	APPROVED
141005	000	FICREQ02	APPROVED
141005	000	FICREQ03	APPROVED
141005	000	FICREQ04	CANCELED
141005	000	FICREQ05	APPROVED
141005	000	FICREQ06	APPROVED
141005	000	FICREQ07	APPROVED
141005	002	FICREQ01	APPROVED
141005	004	FICREQ01	CLOSED
141005	004	FICREQ02	CLOSED
141005	004	FICREQ03	CLOSED
141005	004	FICREQ04	CLOSED
141005	004	FICREQ05	CLOSED
141005	004	FICREQ06	CLOSED
141005	004	FICREQ07	CLOSED
141005	004	FICREQ08	CLOSED
141005	004	FICREQ09	CLOSED
141005	004	FICREQ10	CLOSED
141005	004	FICREQ11	CLOSED
141005	004	FICREQ12	CLOSED
141005	004	FICREQ13	CLOSED
141005	004	FICREQ14	CLOSED
141005	004	FICREQ15	CLOSED
141005	004	FICREQ16	CANCELED
141005	004	FICREQ17	CLOSED
141005	004	FICREQ18	CLOSED
141005	004	FICREQ19	APPROVED
141005	004	FICREQ20	CANCELED

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141005	006	FICREQ01	CLOSED
141005	006	FICREQ02	CANCELLED
141005	006	FICREQ03	CLOSED
141005	006	FICREQ04	CLOSED
141005	006	FICREQ05	CANCELLED
141005	006	FICREQ06	APPROVED
141005	006	FICREQ07	APPROVED
141005	009	FICREQ01	CLOSED
141005	009	FICREQ02	CANCELLED
141005	009	FICREQ03	CLOSED
141005	009	FICREQ04	CLOSED
141005	009	FICREQ05	CANCELLED
141005	009	FICREQ06	CLOSED
141005	009	FICREQ07	CLOSED
141005	009	FICREQ08	CLOSED
141005	009	FICREQ09	CLOSED

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141006	000	FICREQ01	CLOSED
141006	001	FICREQ01	CLOSED
141006	001	FICREQ02	CLOSED
141006	002	FICREQ01	CLOSED
141006	004	FICREQ01	CLOSED
141006	004	FICREQ02	CLOSED
141006	004	FICREQ03	CLOSED
141006	004	FICREQ04	CLOSED
141006	004	FICREQ05	CLOSED
141006	007	FICREQ01	CLOSED
141006	007	FICREQ02	CLOSED
141006	007	FICREQ03	CLOSED
141006	007	FICREQ04	CLOSED
141006	007	FICREQ05	CLOSED
141006	007	FICREQ06	CANCELLED
141006	007	FICREQ07	CLOSED
141006	007	FICREQ08	CLOSED
141006	007	FICREQ09	CLOSED
141007	003	FICREQ01	CLOSED
141007	003	FICREQ02	CLOSED
141007	003	FICREQ03	CLOSED
141007	003	FICREQ04	CLOSED
141007	003	FICREQ05	CLOSED
141007	003	FICREQ06	CLOSED
141007	003	FICREQ07	CLOSED
141008	003	FICREQ01	CLOSED
141008	003	FICREQ02	CLOSED
141008	003	FICREQ03	CLOSED
141008	003	FICREQ04	CLOSED

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141008	003	FICREQ06	CLOSED
141008	003	FICREQ07	CLOSED
141008	003	FICREQ08	CLOSED
141008	003	FICREQ09	CLOSED
141008	003	FICREQ10	CLOSED
141008	003	FICREQ11	CLOSED
141008	003	FICREQ12	CLOSED
141008	003	FICREQ13	CLOSED
141008	003	FICREQ14	CLOSED
141008	003	FICREQ15	CLOSED
141008	003	FICREQ16	CLOSED
141008	003	FICREQ17	CLOSED
141008	003	FICREQ18	CLOSED
141008	003	FICREQ19	CLOSED
141008	003	FICREQ20	CLOSED
143660	001	FICREQ01	CLOSED

Note: There were no FICREQ's under EC 143659.

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Appendix C: Non Conformance Reports

NCR Number	Stage	Description of Non Conformance	ESFL Job #	Related SCR(s)
2023-4172-20272	Closed	Installed grating penetration for 3-33410-L124-D4NF1 has not enough radial pipe clearance for insulation installation.	18-5186-7002	N/A
2023-4160-20260	Closed	3-63341-TT60 was not installed as per the design.	18-5186-7003	N-2023-02557
2022-4078-20178	Closed	Installed tube lines L142/L143 above HA356 were bent by other. Weld tag W-195 was damaged and lost identification.	18-5186-7003	N-2022-13392
2022-4058-20158	Closed	A 5mm blow hole occurred during welding on last tie-in weld (FW-40) at R3-309 Flued head. FW-40 will be cut off and re-work is required.	18-5186-7000	N/A
2022-4039-20139	Closed	Replace installed adaptor on L140-D3/8ITA at tie in L214-D3SF3 due to Sheered drill bit was stuck inside.	18-5186-7000	N/A
2022-4018-20118	Closed	Field weld failed on Radiographic Examination	18-5186	N/A
2022-4017-20117	Closed	Field weld failed on Radiographic Examination	18-5186	N/A
2022-4004-20104	Closed	Field weld FW-04 failed on RT examination and repair will be performed.	18-5186	N/A
2022-4003-20103	Closed	Field weld FW-01 failed on UT examination and repair will be performed.	18-5186	N/A
2022-3996-20096	Closed	Construction Team can not perform welding on FW-01 due to interference of existing conduit beside field weld FW-01.	18-5186	
2022-3995-20095	Closed	ESFL were told by the customer that work was completed without ESFL present for their witness. Associated ITP steps were then inadvertently signed off without the work being complete.	18-5186-7003	N-2022-12938 & N-2022-12936
2022-3889-19989	Closed	During receipt inspection of 3-33410-V115, ESFL QC identified the valve handle was broken (see attached photo) and needs to be replaced.	18-5186-7000 (DEC 141005)	N/A
2022-3880-19980	Closed	Field weld FW-07 on line L124-D6NF1 was rejected on Ultrasonic Examination.	18-5186-7000	N/A
2022-3869-19969	Closed	Field weld FW-08 was failed on radiographic examination.	18-5186-7000	N/A
2022-3862-19962	Closed	Field weld FW-11 on line L124-D6NF1 was rejected on Radiographic Examination.	18-5186-7002	N/A
2022-3857-19957	Closed	Nelson stud weld on 3-33410-HG268 at north east corner is failed on visual inspection.	18-5186-7002	N/A
2022-3835-19935	Closed	ME390 lead ring connectors were found to be damaged.	18-5186-7001	

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2022-3834-19934	Closed	Due to construction ability, ESFL had to cut off existing weld (SW-A) at 45 deg elbow from pre-fab spool#1 and replace with new field weld (FW-15). All inspection records associated with existing weld (SW-A) will be eliminated. Background: Due to design dimension, limited space occurred between 45 elbow to EP05066 ceiling. Additional field weld (FW-15) will be too closed to existing weld and ceiling, which will cause difficulty on fit-up and no access on UT performance. Removing existing weld (SW-A) also minimize weld joints on NC1 piping as benefit.	18-5186-7002	N/A
2022-3833-19933	Closed	Line L138-D3/8NTG1 tube to pipe adapter on pre-fab spool #10/11 was damaged on tube side after spool returned back to site.	18-5186-7003	N/A
2022-3826-19926	Closed	There's about 5 to 8mm gap between flued head baseplate and existing steel liner at EP05066, which is supposed to be contacted for fillet welding as per drawing NK38-DRAW-21131-10001-U3.	18-5186-7002	N/A
2022-3817-19917	Closed	ME390 (spark plug) failed during commissioning	18-5186-7001	N-2022-01968
2021-3779-19879	Closed	E.S. FOX has installed nuclear class 1 tubing lines 3-33410-L142/L143-D 3/8 NTG1 & 3-33410-L1138/L139-D 3/8 NTG1 as per design in the Vault 107.5EL. It was later observed the installed tubing L142/143 & L138/L139 has been damaged at multi-locations in a rolling scaffold by another work group.	18-5186-7003	N-2021-19393
2021-3772-19872	Closed	It was identified 3-72800-HG1 upper plate will interfere with the installation of 3-72800-V629 (on L326-W6BA spool) for the tie in to 3-72800-L15-W12BA under 5186-7000-TIE IN REV.01 ITP. 3-72800-HG1 pipe support was installed by ESFL as per design (DEC141005) under ITP 5186-7000-1M SEQ A in 2019. During a preliminary field walkdown for the 5186-7000-TIE IN ITP ESFL construction determined the upper plate on HG1 will be too close to V629 interfering with the the installation.	18-5186-7000 (DEC 141005)	N/A
2021-3761-19861	Closed	E.S. FOX has installed nuclear class 3 tubing line L179-G3/8NTG1 in room R3-309. It was observed the installed tubing line L179 was slightly damaged at support 3-33340-HSG273 by other group.	18-5186-7000	
2021-3747-19847	Closed	Support 3-33710-HA861 was pre-fabricated as per EC141005 NK38-DRAW-33818-10015-U3. However, it was observed the support Unistrut is short for final field installation.	18-5186-7004	N/A
2021-3733-19833	Closed	E.S. Fox has pre-fabricated EHS support 3-3341-HG369 as per EC 141008 DWG NK33418-10103-U3. During field installation, it was discovered that HG369 can not align with adjacent support HA377 due to incorrect dimension supplied from EC drawing.	18-5186-7004	N/A
2021-3732-19832	Closed	E.S. FOX has Pre-fabricated support 3-3341-HG378 as per EC141008 DWG NK38-DRAW-33418-100112-U3. However, HSS (2"x2"x1/4") on HG378 is too short,	18-5186-7004	N/A

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		which can not be installed in field due to incorrect dimension supplied.		
2021-3726-19826	Closed	There was a power outage in Unit 4 107.5EL causing the weld ovens (MSA-RH-800D004 & MSA-RH-800D005) to lose power for an unknown amount of time. Once power is lost, the ovens engage a timer however by the time the issue was identified, the ovens were back on and the timers were reading over 35 hours. Upon further investigation through our ESFL Weld Filler Traceability Log it was determined E7018 weld rod was issued (after the power outage) to complete the install (FW01) of support 3-33810-HG871 for the U3 EHS project. Note: The support is currently not in use and has been quarantined until the NCR resolution/disposition has been obtained and approved.	18-5186	N-2021-15414
2021-3688-19788	Closed	There is a vertical unistrut between HG322 and HA309 inside the reactor vault 107.5 el near north wall and column 'M'. The unistrut must be raised by 2" to prevent interference with tubing as per RFI 10147. Reference Drawings: NK38-DRAW-33419-10011-U3 (Isometric) NK38-DRAW-33418-10046-U3 (Hanger 309) NK38-DRAW-33418-10057-U3 (Hanger 322)	18-5186	N/A
2021-3687-19787	Closed	HA 289 attaches to existing support HSG502 inside reactor vault at 107.5 el near column Oy-12.6. There are existing pipe straps on the east vertical angle of HSG502. Pipe straps are for pipes which have been removed previously. Pipe straps are not shown on design drawing (NK38-H4H-33818-2025-U3 SHT. 13), serve no purpose and should be removed to ensure new tube routing does not interfere. Refer to U3 (NK38-DRAW-33419-10005-U3) as per RFI 10139 REV01	18-5186	N/A
2021-3686-19786	Closed	The following field interferences are affecting installation of HA373, HA372, HG371 & HG378 as per RFI 9876: HA373- Is 70MM in to cable tray RFR-3-TRY023B (RFR-3-TRY008A) HA372- The edge of the support is touching cable tray RFR-3-TRY023B (RFR-3-TRY008A) HG371-Is located is located in the coping (notch) of the structural beam, needs to be moved 10MM to the West to avoid the interference HG378-There is an electrical cable running along the same beam, where this support is to be installed (inside the webbing of the I-beam)	18-5186	N/A

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2021-3543-19643	Closed	ESFL was unable to successfully qualify the OPG automatic instrument tube welding equipment (Orbital Tube Welding Machine MK Product Cobra Tig 150) as per N-STW-04800-10010 (Automatic Instrument Tube Welding Standard/Procedure). During the visual examination of the 1/2" diameter tubing (0.065" wall thickness) qualifying test coupons, ESFL Construction & QC determined the test weld roots did not meet the minimum internal bead width acceptance standards. Upon further review, it was identified the 1/2" tubing procured for testing/qualifying the equipment only under PO727347 did not meet the technical specification requirements of N-TSM-01140-10048. Note: No 1/2" tubing is being installed under this SOW. This 1/2" tubing was procured only to qualify the tube welding equipment.	18-5186-7003	N/A
2020-3445-19545	Closed	TEAM Industrial identified a linear indication on the parent material on SPOOL #3 near weld GG while performing MT inspections. The indication itself was not apart of the weld however resulted in a rejection on TEAM NDE REPORT 50702996.	18-5186-7004	N/A
2020-3407-19507	Closed	It was discovered that incorrect WPS was referenced on ITP 5186-7004-Pre-Fab-Oshawa Nuclear Piping. WPS 1-1-TS-N-P107 was referenced, the correct WPS should have been 1-1-TS-N-PN107. Welding had commenced at time error was identified.	18-5186	N/A
2020-3394-19494	Closed	Materials bought under PO# 712502, PO line item# 4,5,7,8,9,10,11 and 59, are missing required markings. With regards to PO LINE# 4, CATID# 992584-1 (1EA), PO LINE# 5, CATID# 992562-1 (2EA), PO LINE# 7, CATID# 992563-1 (10EA), PO LINE# 11, CATID# 992574-1 (1EA) and PO LINE# 59, CATID# 992585-1 (3EA) are missing the TIOGA logo as required by the statutory declaration. PO LINE# 8, CATID# 992564-1 (2EA) is missing the TIOGA logo as required by the statutory declaration and missing 1 metal tag with the CAT. ID. Finally, PO LINE # 9 CAT ID # 100553-1 (1EA) and PO LINE # 10 CAT ID # 992570-1 (2EA) is missing the TIOGA logo as required by the statutory declaration and CAT. ID. marking on the material as per N-TSM-01140-1009 Section 17.1.4, which is a PO requirement.	18-5186	n/a
2020-3357-19457	Closed	ESFL construction & QC noticed misalignment between the valve to mounting flange and gear (where handle would attach). This is a Velan manufacturing issue and was identified onsite (As Found Condition).	18-5186-7004 (DEC141005)	N/A

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2020-3339-19439	Closed	EC 141005 R01 & EC141008 R00 are under revision and the TCD for release has pushed to Aug 31 2020. In order to continue work to maintain refurbishment readiness milestones and take advantage of available resources, the project will proceed with pre-fabrication for the remaining Unit 3 piping and supports and leak detection tubing supports under this POSITIVE RECALL NCR, ITPs & signed Work At Risk Release (WARR), FORM#1075	18-5186	N/A
2020-3325-19425	Closed	EC 141005 R01 & EC141008 R00 are under revision and the TCD for release has pushed to Aug 31 2020. In order to continue work to maintain refurbishment readiness milestones and take advantage of available resources, the project will proceed with pre-fabrication for the remaining Unit 3 piping and supports and leak detection tubing supports under this POSITIVE RECALL NCR, ITPs & signed Work At Risk Release (WARR), FORM#1075	18-5186	N/A
2019-2997-19097	Closed	Manufacturer Welded Tube of Canada Corp has provided a letter stating that their ISO certification is current however there is a gap identified between July 20, 2018 and December 3, 2018 when the new cert was issued. Items under PO# 683455 (Canada Steel) are to be set under POSITIVE RECALL.	18-5186	n/a

FORM 9
CERTIFICATE OF SUBSTANTIAL PERFORMANCE OF THE
CONTRACT UNDER SECTION 32 OF THE ACT

Construction Act

Bowmanville, Ontario, Canada.

(County/District/Regional Municipality/Town/City in which premises are situated)

1 Holt Road South

(street address and city, town, etc., or, if there is no street address, the location of the premises)

This is to certify that the contract for the following improvement:

Unit 3 Emergency Heat Sink

(short description of the improvement)

to the above premises was substantially performed on 01-June-2023

(date substantially performed)

Date certificate signed: N/A

(payment certifier where there is one - signature required)

DocuSigned by:

Mno (Nunzio) Mastrocola

E7D9D802774B463...

DocuSigned by:

Rubinder Gill

85D5252F3F494B5...

(owner and contractor, where there is no payment certifier - signatures required)

Name of owner: Ontario Power Generation

Address for service: 1 Holt Road South, Bowmanville, Ontario

Name of contractor: E.S. FOX Limited- Nuclear Services

Address for service: 9127 Montrose Road, Niagara Falls

Name of payment certifier (where applicable): N/A

Address: N/A

(Use A or B, whichever is appropriate)

☐ A. Identification of premises for preservation of liens:

(if a lien attaches to the premises, a legal description of the premises, including all property identifier numbers and addresses for the premises)

☒ B. Office to which claim for lien must be given to preserve lien:

Ontario Power Generation, 1 Holt Road South, Bowmanville, ON L1C 3Z8 Attention: Nunzio Mastrocola

(if the lien does not attach to the premises, the name and address of the person or body to whom the claim for lien must be given)