May 7, 2018

Created by Pamela A Powell

Site ALARA Committee Meeting Minutes

The Site ALARA Committee and Change Control Board Teleconference was held at 1pm.
Rollcall was performed and Quorum was met for the SAC and CCB. (See Attached)

1) Introduction: Kent Williams
Kent welcomed everyone to the meeting.

2) Environmental ALARA: Teresa Eddy
Teresa presented the 2018 Environmental ALARA Overview and Guide Status. Question was asked about the S Area Environmental Airborne ALARA goal at 46.40% of YTD guide. It was stated that this monitoring station has been known to spike at the beginning of the year, but it settles out by the end of the year. There was no concern about the goal being exceeded.

3) Review of 1st Quarter Performance and Review of 2017: Pamela Powell
1st Quarter PI were reviewed (See Attached)
Question was asked were there any lessons learned from the March M&O Non ORPS PerCon event. It was stated that the root cause of the event has not been determined. There was a dish pan with legacy contamination found in a drawer of the lab.

4) Review of +/- 25% Discrepancy: Facility Representatives
(Note: All doses are in rem)

SRNL - Target 5 vs Actual 3.684 (-26.32%)
Donnie Barfield stated that actual dose for the quarter reviewed in HP Warehouse was 4.738. This discrepancy was due to badges turned in late after the quarterly dose report was run. The facility was challenged to make sure that personnel are returning their badges on time.

HBL Target 0.4 vs Actual 0.182 (-54.5%)
Rick Burns stated that due to the transition of missions occurring in HBL the dose for the quarter was lower than expected. As the transition proceeds throughout the year, adjustments will be made to the goals.
C Lab Target 2.4 vs Actual 1.735 (-27.71%)
Terry Pifer stated that the dissolver work did not produce as many high rad samples as expected. These samples should increase in the next quarter. No changes to goals will be made at this time.

KAC Target 3.7 vs Actual 2.152 (-41.84%)
Page Courtney state that the stack battery change out and RFTIDs did not occur in the 1st quarter. No changes to goals will be made at this time.

Tritium Target 0.575 vs Actual 0.753 (+30.96%)
Adam Reese stated that the extractions project was moved up to 1st quarter accounted for the increase in dose. No changes to goals will be made at this time.

SWM Target 0.9 vs Actual 0.533 (-40.78%)
Todd Brantley stated that the overpack of high rad containers and the construction work on pad 4 and 6 work occurred in 1st quarter. No changes to goals will be made at this time.

LWO - WT Target 9.22 vs Actual 4.201 (-54.44%)
LWO – TF Target 13.51 vs Actual 8.789 (-34.94%)

Jim Wilson stated that process systems were down during January in TF. Joel Cantrell stated that there were ventilation outages in WT. No changes to goals will be made at this time.
# SITE ALARA COMMITTEE & CHANGE CONTROL BOARD

## ATTENDANCE ROSTER

<table>
<thead>
<tr>
<th>Meeting Date: 05/07/2018</th>
<th>Quarter/Year: 1st 2018</th>
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<table>
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<th>Alternate</th>
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<tr>
<td>David Eyler (Chair)</td>
<td>Wyatt Clark</td>
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<td>Doug Bumgardner (Vice Chair)</td>
<td>Jim Wilson</td>
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<table>
<thead>
<tr>
<th>SAC Voting Member</th>
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<tr>
<td>Greg Tunno (Ex. Secretary)</td>
<td>Kent Williams</td>
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<tr>
<td>Kliss McNeel (ESH&amp;Q)</td>
<td>Mary Flora</td>
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<td>Deborah Solomon (SRTE)</td>
<td>Ruby Parks</td>
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<td>Verne Mooneyhan (SWM/TRU)</td>
<td>Robert Minnick</td>
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<td>Steve Wilkerson (NMD)</td>
<td>Richard Burns</td>
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<td>Janice Lawson (NMSP)</td>
<td>Durwood Melvin</td>
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<td>Donald Barfield (SRNL)</td>
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<td>Joel Cantrell (WT)</td>
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<td>William Harris</td>
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<td>Jim Wilson (LWO RPD)</td>
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<td>Tim West (EC&amp;ACP)</td>
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**Quorum Requirements:** SAC = Chair/Vice Chair + 7 other members* = 8 total  
*Member may be represented by designated alternate. At least 2 members from each company are required for an official vote.  
CCB = Chair/Vice Chair* + 5 other members = 6 Total May be represented by designated alternate.

Quorum Met SAC: Yes ☑ No  
Quorum Met CCB: Yes ☑ No
## SITE ALARA COMMITTEE & CHANGE CONTROL BOARD

### ATTENDANCE ROSTER

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<th>Other Meeting Attendees (print name)</th>
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<td>Robbie Black</td>
<td></td>
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<tr>
<td>Lillie Gordon</td>
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<td>Teresa Eady</td>
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<td>Wendy Jordan</td>
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<td>Dennie Barfield</td>
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<td>Dave Potocik</td>
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<tr>
<td>Ruby Parks</td>
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<td>Page Courtney</td>
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<tr>
<td>Cindy Head</td>
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<td>Tommy Chalker</td>
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<tr>
<td>Jon Boll</td>
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1st Quarter Site ALARA Committee Meeting

Kent Williams
Radiological Protection Director
Savannah River Nuclear Solutions, LLC
05/07/2018

1st Quarter Review

735-B/Teleconference
AGENDA

1. Introduction
   Kent Williams

2. Environmental ALARA
   Teresa Eddy

3. 1st Quarter Performance Indicators
   Pamela Powell

4. ± 25% Discrepancy
   Facility Reps

Ask about the Dose Reports - Excel sheets only
2018 Environmental
ALARA Overview and Guides Status

Teresa Eddy
Environmental ALARA Chair

Savannah River Nuclear Solutions, LLC
May 07, 2018

Site ALARA Committee
Brief History of Environmental ALARA at SRS

- **1989 - DOE Order 5400.5**
  - Required an Environmental ALARA Program
  - 1990 - SRS/SRNL Developed Dose-Based Program

- **1991 Christmas**
  - K-Reactor Release of 5,700 Ci of Tritium to the River over 3 days

- **1992 High Focus**
  - Formalized Program with Procedures
  - Vice Presidents in charge of Environmental ALARA Committee

- **2002 Low Focus**
  - ALARA Procedure Cancelled
  - Dose-Based Program Continued by Environmental Monitoring Section

- **2012 DOE Order 458.1**
  - Refocused Management Attention
  - Part of RadCon ALARA Program
Purpose of Environmental ALARA

- Maintain exposures to the public and releases to the environment As Low As Reasonably Achievable (ALARA)

- Comply with current regulations and DOE Orders (DOE O 458.1)

A Documented ALARA process must be implemented to optimize control and management of radiological activities so that doses to members of the public (both individual and collective) and releases to the environment are kept as low as reasonably achievable.

The Environmental ALARA process must: to the extent practical and when appropriate, be coordinated with the 10 CFR Part 835 (RadCon) ALARA process.
Dose to the Public Requirements

- **DOE Order 458.1 Radiation Protection of the Public and the Environment**
  - All Pathway Exposure Limit - 100 mrem/yr Total Effective Dose
  - Derived Concentration Standards Compliance

- **40CFR61, Subpart H - National Emission Standards for Hazardous Air Pollutants (NESHAP)**
  - Airborne Total Effective Dose Limit - 10 mrem/yr

- **40CFR141- National Primary Drinking Water Regulations**
  - Drinking Water Limit – MCLs are roughly based on 4 mrem/yr
Derived Concentration Standard Defined

Derived Concentration Standard (DCS) - The value for a radionuclide in air and water that equates to a dose of 100 mrem (millirem) in one year to a gender-weighted and age-weighted reference person conservatively assuming continuous exposure to the actual undiluted/undispersed effluent (DOE-STD-1196-2011, Derived Concentration Technical Standard).

- Not regulatory release limits, but rather are screening values for best available technology (BAT) investigations.

- Applicable at the point of discharge from the conduit to the environment.
Environmental ALARA Guides

- ALARA Guides (Airborne and Liquid) are established annually in accordance with
  - DOE Order 458.1, *Radiation Protection of the Public and Environment,*
  - 3Q, Procedure 18.5, *Radiological Effluent Monitoring, Reporting and Environmental ALARA Process*

- Guides take into account
  - Historical releases
  - Sampling schedule
  - Projected releases (consistent with projected operational scope forecasts)

- Environmental ALARA Guides are documented monthly in the Radiological Releases Report.
Environmental ALARA Release Guide Exceedance

- If at any time during the calendar year, actual atmospheric or liquid releases exceed the respective area ALARA Release Guides:
  - ECA communicates with the appropriate Facility Operations/Line Management personnel to determine the cause of the exceedance
  - Exceedance investigation memorandum is documented in the next month’s Monthly Radiological Release Report

- If subsequent to the issuance of an investigation memorandum, additional releases occur that individually or cumulatively exceed the area ALARA Release Guide
  - Addendum to the pertinent memorandum shall be issued and reported as above
DCS Exceedance Process

- DCS compliance is demonstrated when the sum of the fractional DCS values (based on consecutive twelve-month average concentrations) for all radionuclides measured (with the exception of tritium) in the effluent is less than 1.00.

- BAT investigations are required for
  - Exceedance of the DCS at any liquid discharge point except for tritium and sanitary sewers.
  - Liquid Effluent discharges which contribute greater than 10 mrem annual TED

- For airborne exceedances of the DCS, a similar type of investigation will be performed by the appropriate Facility Operations/Line Management per 3Q 18.5.
# Environmental ALARA Liquid TED Status

**February 2018 Liquid Discharges TED Vs ALARA Guide**

<table>
<thead>
<tr>
<th>Area</th>
<th>YTD TED (mrem)</th>
<th>ALARA Guide (mrem/yr)</th>
<th>YTD % of Guide</th>
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<tr>
<td>A-Area</td>
<td>6.54E-07</td>
<td>4.00E-05</td>
<td>1.60%</td>
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<td>F-Area</td>
<td>1.52E-05</td>
<td>4.00E-04</td>
<td>3.80%</td>
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<td>F-Tk Farm</td>
<td>2.58E-07</td>
<td>1.00E-03</td>
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<td>H-Area</td>
<td>8.57E-06</td>
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<td>H-ETP</td>
<td>5.53E-05</td>
<td>7.25E-03</td>
<td>0.80%</td>
</tr>
<tr>
<td>H-Tk Farm</td>
<td>1.94E-04</td>
<td>8.65E-03</td>
<td>2.20%</td>
</tr>
<tr>
<td>K-Area</td>
<td>0.00E+00</td>
<td>1.14E-05</td>
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<td>L-Area</td>
<td>0.00E+00</td>
<td>9.45E-05</td>
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<td>S-Area</td>
<td>4.32E-07</td>
<td>1.50E-05</td>
<td>2.90%</td>
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<tr>
<td>Tritium</td>
<td>1.07E-06</td>
<td>9.30E-05</td>
<td>1.10%</td>
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<tr>
<td>Site Totals</td>
<td>2.76E-04</td>
<td>1.89E-02</td>
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Environmental ALARA Airborne TED Status

February 2018 Air Emissions TED Vs ALARA Guide

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<th>ALARA Guide (mrem/yr)</th>
<th>YTD % of Guide</th>
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<td>3.90%</td>
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<td>C-Area</td>
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<td>Site Totals</td>
<td>3.85E-03</td>
<td>9.82E-02</td>
<td>3.90%</td>
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February 2018 DCS Status

- No radiological effluent locations, other than the 291-F stack, exceeded the DOE Order 458.1 Derived Concentration Standards (DCS) requirement. The 291-F stack rolling 12-month DCS sum of fractions is 6.46, which is above the requirement of 1.00.
  - The actinides Pu-239, Am-241, U-238, and U-234 currently make up about 98% of the DCS sum of fractions; Pu-239 represents 85% of the sum of fractions.
  - SOF has had ~150 times increase since May 2016.
  - An exceedance investigation is ongoing.
Backup Slide

291-F Filter Radionuclide Results

Pu-238  Pu-239  Am-241  Sr-90  Cs-137  U-234  U-235  U-238  Np-237
### Site Cumulative Dose vs. Goal (YTD)
#### Radiological Protection Facility Specific
Through March 31, 2018

<table>
<thead>
<tr>
<th>Date</th>
<th>Centerra YTD Target</th>
<th>Centerra YTD Dose</th>
<th>Centerra Percent</th>
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<tr>
<td>Jun-15</td>
<td>0.8</td>
<td>1.2</td>
<td>1.8</td>
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<td>Sep-15</td>
<td>0.8</td>
<td>1.075</td>
<td>2.173</td>
<td>0.506</td>
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<td>0.8</td>
<td>2.173</td>
<td>3.811</td>
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<td>0.8</td>
<td>4.206</td>
<td>6.515</td>
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<td>4.206</td>
<td>2.078</td>
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<td>17.57%</td>
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<td>3.527</td>
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<tr>
<td>Jun-17</td>
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<td>Sep-17</td>
<td>14.4%</td>
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<tr>
<td>Dec-17</td>
<td>0.8%</td>
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<tr>
<td>Mar-18</td>
<td>4%</td>
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<td>6.18%</td>
<td>4.21%</td>
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<td>3.0%</td>
<td>3.75%</td>
<td>14.28%</td>
<td>2.94%</td>
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<tr>
<td>Dec-15</td>
<td>5%</td>
<td>8.26%</td>
<td>24.18%</td>
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<td>Mar-15</td>
<td>14.28%</td>
<td>8.26%</td>
<td>24.18%</td>
<td>2.94%</td>
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<tr>
<td>Jun-16</td>
<td>24.18%</td>
<td>8.07%</td>
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<tr>
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<td>7.19%</td>
<td>7.19%</td>
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<td>9.29%</td>
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<td>21.12</td>
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<td>14.62</td>
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<td>22.88</td>
<td>35.885</td>
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<td>20.09%</td>
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<td>22.88</td>
<td>35.885</td>
<td>13.29%</td>
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<td>0.5%</td>
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<td>22.88</td>
<td>35.885</td>
<td>0.01%</td>
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<td>Mar-18</td>
<td>35.885</td>
<td>22.88</td>
<td>35.885</td>
<td>18.84%</td>
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### Maximum Individual Dose

**Site Maximum Individual Cumulative Dose (YTD)**  
Radiological Protection Facility Specific  
Through March 31, 2018

![Bar chart showing cumulative doses for different categories]

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<th>Annotate:</th>
<th>Title</th>
<th>Mar-18</th>
<th>2017</th>
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<td>0.6</td>
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<tr>
<td>EM Maximum Dose YTD</td>
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<td>0.131</td>
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</tr>
<tr>
<td>EM Maximum Dose QTR</td>
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<td>0.131</td>
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</tr>
<tr>
<td>LWO ACL</td>
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<td>0.5</td>
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<tr>
<td>LWO Maximum Dose YTD</td>
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Maximum Extremity

SRS Historical Extremity Dose (YTD)
Radiological Protection Facility Specific
Through April 25, 2018

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# M&O ORPS PerCon

## Radiological Safety Performance (EM, NNSA, Centerra)

**ORPS Personnel Contamination Events**

Through March 31, 2018

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15/31 - Skin Contamination in 775-1F Lab 183

1st Qtr - 0

2017 - 1
M&O Non ORPS PerCon

Radiological Safety Performance (EM, NNSA, Centerra)
Non-ORPS Personnel Contamination Events/Cases
Through March 31, 2018

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<th>Apr-17</th>
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<th>Jun-17</th>
<th>Jul-17</th>
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1131 - Personal effect contamination 755, F lab 158
311 - Shoe contamination in 393, F
415 - Personal contamination due to liquid return bottle spill 778-1F
610 - Personnel contamination during manipulator repair shop oil drum sampling
A Lab Tech working in the B-162 Radiological Buffer Area (RBA) alarmed the Argos Personnel Contamination Monitor (PCM). Contamination on the inside of the left wrist at 4000 dpm detectable levels was confirmed. The skin was decontaminated to non-detectable levels. The Lab Tech was then able to clear the Argos PCM twice. Internal Dosimetry was contacted. The Lab Tech received a Whole Body Count, Lung Count, and submitted two 24-hour timed bioassay samples.
M&O ORPS Rad Mat/Area

Radiological Safety Performance (EM, NNSA, Centerra)
ORPS Radioactive Material/Area Contamination
Detected Outside of Radiological Areas
Through March 31, 2018

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5/3 - Contamination found on TFP of TRU Waste Drum on Rd 4.
Non-ORPS (EM, NNSA, Centerra)
Radioactive Material/Area Contamination
Radiological Protection
Through March 31, 2018

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LWO ORPS Percon

LWO RADIOLOGICAL SAFETY PERFORMANCE
Reportable Personnel Contamination Events
Events
Through March 31, 2018

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666 Personnel Contamination during Manipulator Repair/Drum Sampling
## LWO Radiological Safety Performance

**Non-ORPS Reportable Personnel Contamination Errors/Cases**

Through March 31, 2018

### Graph

- **X-axis:** Jan-17 to Mar-18
- **Y-axis:** Number of Events

### Table

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<th>Date</th>
<th>Jan-17</th>
<th>Feb-17</th>
<th>Mar-17</th>
<th>Apr-17</th>
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- **1st Qtr. - 0**
- **2017 - 0**
### LWO RADIOLOGICAL SAFETY PERFORMANCE

Number of Occurrences of Radioactive Material/Contamination (ORPS)
Detected Outside of Radiological Areas
Through March 31, 2018

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1st Qtr. - 0
2017 - 1
### LWO Non-ORPS Radioactive Material/Contamination
**LWO**
Through March 31, 2018

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<th>Jan-18</th>
<th>Feb-18</th>
<th>Mar-18</th>
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<td>Non-ORPS Material Issues</td>
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## Intakes – M&O

### Internal Uptakes Through March 31, 2018

<table>
<thead>
<tr>
<th>Title</th>
<th>Apr-17</th>
<th>May-17</th>
<th>Jun-17</th>
<th>Jul-17</th>
<th>Aug-17</th>
<th>Sep-17</th>
<th>Oct-17</th>
<th>Nov-17</th>
<th>Dec-17</th>
<th>Jan-18</th>
<th>Feb-18</th>
<th>Mar-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases &gt; 10 mrem</td>
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</tr>
<tr>
<td>Cases &gt; 100 mrem</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>Cases &gt; 500 mrem</td>
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<td>Cases &gt; 5 Rem</td>
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Intakes - LWO

LWO Internal Exposure
Through March 31, 2018

<table>
<thead>
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<th>Title</th>
<th>Jun-15</th>
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<th>Dec-15</th>
<th>Mar-16</th>
<th>Jun-16</th>
<th>Sep-16</th>
<th>Dec-16</th>
<th>Mar-17</th>
<th>Jun-17</th>
<th>Sep-17</th>
<th>Dec-17</th>
<th>Mar-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases &gt; 100 mrem</td>
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<tr>
<td>Cases &gt; 500 mrem</td>
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<td>0</td>
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YTD SRNL Cumulative Dose vs. Goal by Facility
Radiological Protection
Through March 31, 2018

<table>
<thead>
<tr>
<th>Title</th>
<th>Mar-18</th>
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</thead>
<tbody>
<tr>
<td>SRNL YTD Target</td>
<td>5</td>
</tr>
<tr>
<td>SRNL YTD Dose</td>
<td>3.684</td>
</tr>
<tr>
<td>SRNL Percent</td>
<td>26.32%</td>
</tr>
<tr>
<td>Score: SRNL Percent</td>
<td>&gt;=25%</td>
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</table>

YTD YTD 4.736 < 5.010

Randy Sullivan
HP Warehouse
Late Badges
### +/- 25% Discrepancy - HBL

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>HBL Quarterly Target</td>
<td>0.4</td>
</tr>
<tr>
<td>HBL Quarterly Dose</td>
<td>0.182</td>
</tr>
<tr>
<td>HBL Percent</td>
<td>54.5%</td>
</tr>
<tr>
<td>Score: HBL Percent</td>
<td>&gt;=25%</td>
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*Rick Burns
Mission Transition*
### +/- 25% Discrepancy – CLAB

<table>
<thead>
<tr>
<th>Central Lab YTD Target</th>
<th>2.4</th>
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<tbody>
<tr>
<td>Central Lab YTD Dose</td>
<td>1.735</td>
</tr>
<tr>
<td>Central Lab Percent</td>
<td>27.71%</td>
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<tr>
<td>Score: Central Lab Percent</td>
<td>&gt;=25%</td>
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</table>

Terry Difer
Dissolver Work & HTA Samples
Will J in 2nd
### +/- 25% Discrepancy – KAC

<table>
<thead>
<tr>
<th>K-Area Quarterly Target</th>
<th>3.7</th>
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<tbody>
<tr>
<td>K-Area Quarterly Dose</td>
<td>2.152</td>
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<tr>
<td>K-Area Percent</td>
<td>41.84%</td>
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<tr>
<td>Score: K-Area Percent</td>
<td>&gt;=25%</td>
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*Stack Battery Did Not RFTIDS NO Campaign*
### +/- 25% Discrepancy – Tritium

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Tritium YTD Target</td>
<td>0.575</td>
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<tr>
<td>Tritium YTD Dose</td>
<td>0.753</td>
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<tr>
<td>Tritium Percent</td>
<td>30.96%</td>
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<tr>
<td>Score: Tritium Percent</td>
<td>&gt;=25%</td>
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*Adam Reese extraction pulled up*
+/- 25% Discrepancy – SWM

<table>
<thead>
<tr>
<th>Solid Waste YTD Target</th>
<th>0.9</th>
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<tr>
<td>Solid Waste YTD Dose</td>
<td>0.533</td>
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<tr>
<td>SWM Percent</td>
<td>40.78%</td>
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<tr>
<td>Score: SWM Percent</td>
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</table>

Todd
1st Qtr Work
Overpack H2A Cont
CST WRK Pd 4+6
### +/- 25% Discrepancy – LWO

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>WT (Target)</td>
<td>9.22</td>
</tr>
<tr>
<td>WT (Actual)</td>
<td>4.201</td>
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<td>WT Percent</td>
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<td>&gt;=25%</td>
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<tr>
<td>TF (Target)</td>
<td>13.51</td>
</tr>
<tr>
<td>TF (Actual)</td>
<td>8.789</td>
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<td>TF Percent</td>
<td>34.94%</td>
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<tr>
<td>Internal Non- Tritium Dose</td>
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<tr>
<td>Internal Tritium Dose</td>
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<tr>
<td>Total Target</td>
<td>22.73</td>
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<tr>
<td>Total Dose</td>
<td>12.99</td>
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<tr>
<td>LWO Percent</td>
<td>42.85%</td>
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<tr>
<td>Score: LWO Percent</td>
<td>&gt;=25%</td>
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