



Washington Division



---

## Safety and RadCon Metrics and Leading Indicators

Marvin Dexter Ray,  
Assurance Processes Manager  
May 6, 2009

# SRS Performance Metric

- Recordable Injuries
- Total Recordable Case (TRC) – 12 Month Moving Total

Lagging

- BBS
- Electrical Safety

Leading

# SRS Performance Metric

Radiological Events - 12 Month Moving Total

---

Lagging

Control of Radioactive Material

Breach of PPE/Respiratory Equipment Failure

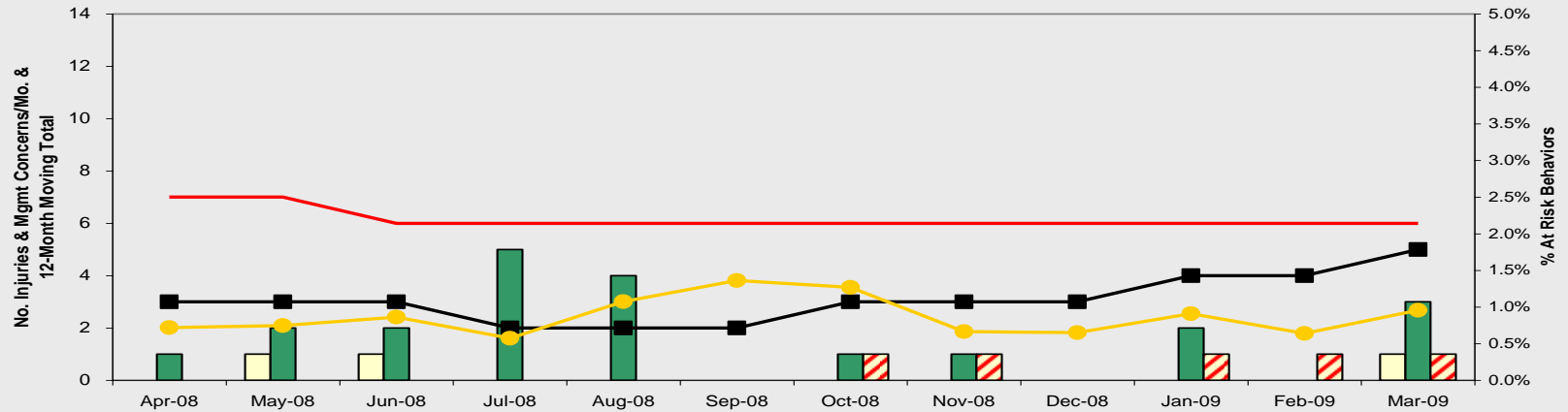
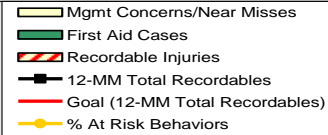
Unanticipated EPD Dose Alarms

10CFR835 & ORPS Non-Reportable Area and Personal Contamination Events

Leading

# Recordable Injuries Metric

## SAFETY PERFORMANCE WSRC LIQUID WASTE OPERATIONS Recordable Injuries - Leading Indications Through March 31, 2009



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
BBS Observations	475	303	283	280	254	349	331	560	386	352	401	427
% At Risk Behaviors	0.72%	0.75%	0.86%	0.57%	1.07%	1.36%	1.27%	0.66%	0.65%	0.91%	0.64%	0.96%
Mgmt Concerns/Near Misses	0	1	1	0	0	0	0	0	0	0	0	1
First Aid Cases	1	2	2	5	4	0	1	1	0	2	0	3
Recordable Injuries	0	0	0	0	0	0	1	1	0	1	1	1
12-MM Total Recordables	3	3	3	2	2	2	3	3	3	4	4	5
Goal (12-MM Total Recordables)	7	7	6	6	6	6	6	6	6	6	6	6
Score	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
This metric measures the number of recordable injuries in a 12-month period against a goal. This metric also includes the percentage of At Risk Behaviors as compared to the number of Safe Behaviors and the number of First Aid Cases. BBS observations are as reported by the LWO LSIT's, specifically FTF BeAST, HTF BeAR, DWPF/SS Best, ETP and Saltstone. Management Concerns/Near Misses are as reported in the Site SIRIM database.

**Goal**  
The LWO goal is a 12-month moving total of no more than 6 injuries. The goal was lowered from 9 to 7 effective March 1, 2008, and from 7 to 6 effective 6/1/08.

Blue	≤ 5 Recordable Injuries
Green	6-7
Yellow	8-9
Red	≥ 10

**Analysis / Action**

**BLUE: Analysis:** A recordable injury (DART-R) occurred in March at HTF. There were also 3 FAC's, 2 in Saltstone and 1 in the Fire Protection group. The number of BBS observations increased, as did the % of at risk behaviors. The 12 MM Total Recordables now stands at 5. **Action:** A refocus package was prepared and presented to each LW employee between 3/25 and 3/27. The package addressed the recent injuries and events and presented the components of HPI, BBS, and ISM that could have served to prevent the events. The ISM transition plan was also revised and reissued.

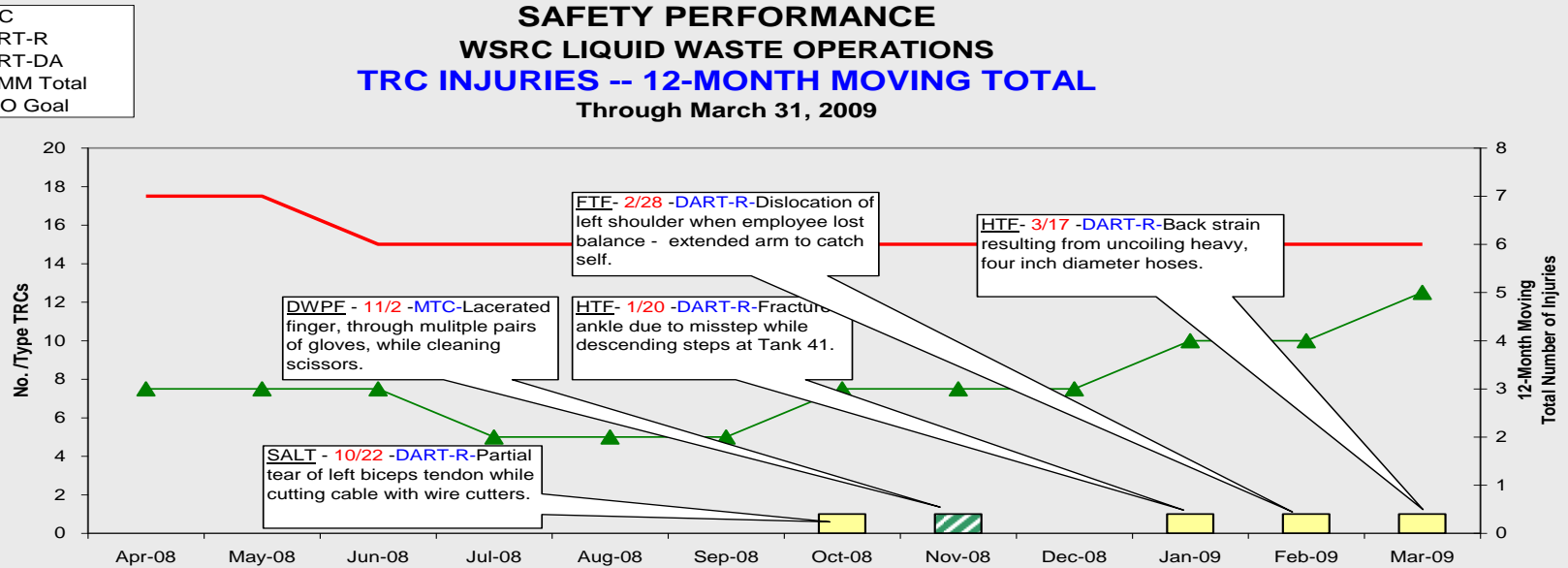
**Comments**

KPI Owner:

SME:

# TRC Injuries Metric

## SAFETY PERFORMANCE WSRC LIQUID WASTE OPERATIONS TRC INJURIES -- 12-MONTH MOVING TOTAL Through March 31, 2009



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
DART-DA												
DART-R												1
MTC												1
Mo. Total TRCs	0	0	0	0	0	0	1	1	0	1	1	1
LWO Goal	7	7	6	6	6	6	6	6	6	6	6	6
12 MM Total	3	3	3	2	2	2	3	3	3	4	4	5
Score	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
This metric demonstrates the number and types of Total Recordable Case (TRC) injuries as well as the 12-Month Moving Total. The 12 Month Moving total is the total number of injuries in the past 12-month period.

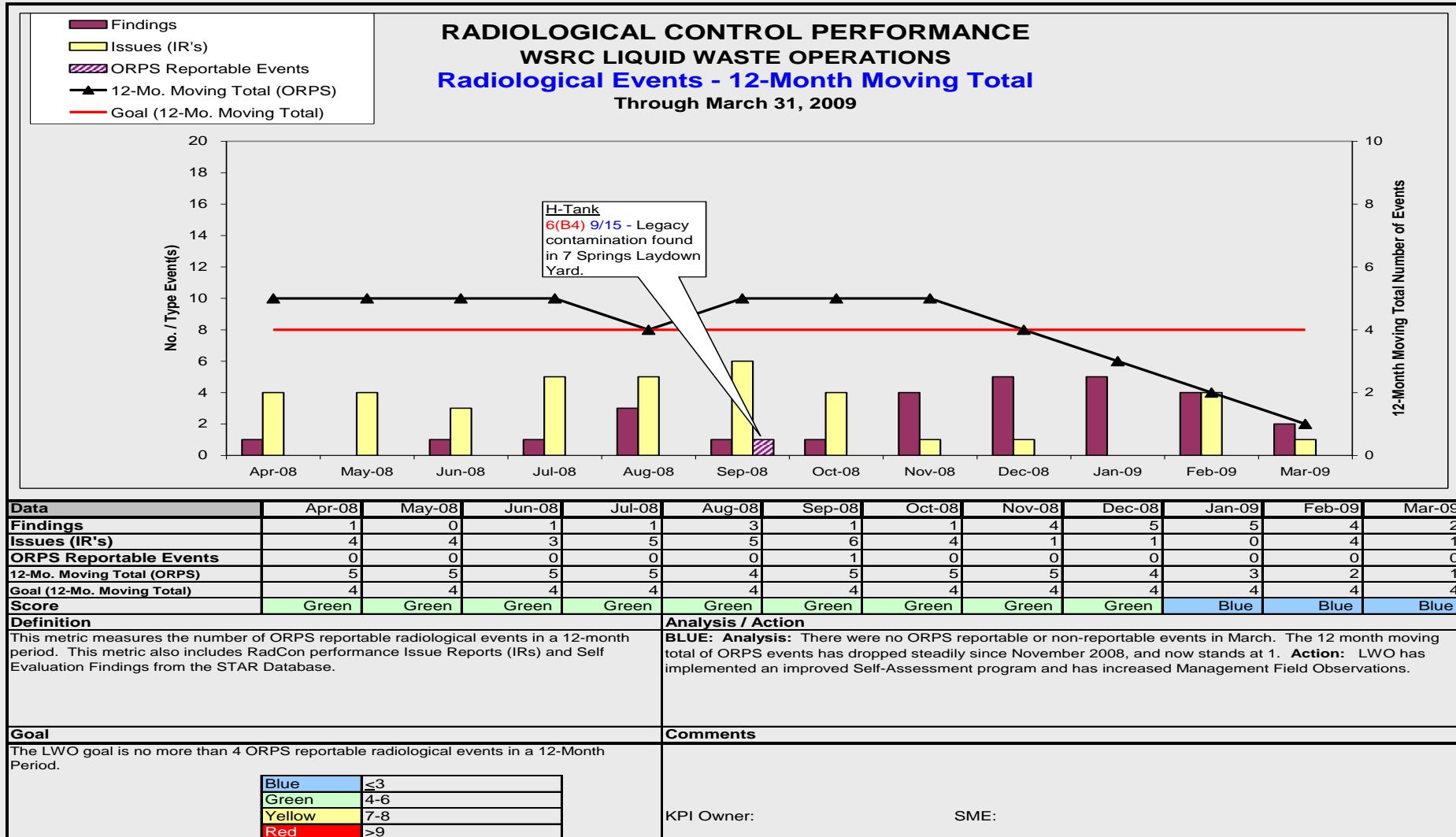
**Analysis / Action**  
**BLUE:** **Analysis:** A recordable injury (DART-R) occurred in March at HTF. Employee suffered back strain in the process of uncoiling ten heavy, 4 inch diameter hoses. **Action:** A refocus package was prepared and presented to each LW employee between 3/25 and 3/27. The package addressed the recent injuries and events and presented the components of HPI, BBS, and ISM that could have served to prevent the events. The ISM transition plan was also revised and reissued.

**Goal**  
The LWO goal is a 12-month moving total of no more than 6 injuries. The goal was lowered from 9 to 7, effective March 1, 2008, then from 7 to 6, effective 6/1/2008.

Blue	≤ 5 Injuries
Green	6-7
Yellow	8-9
Red	≥ 10

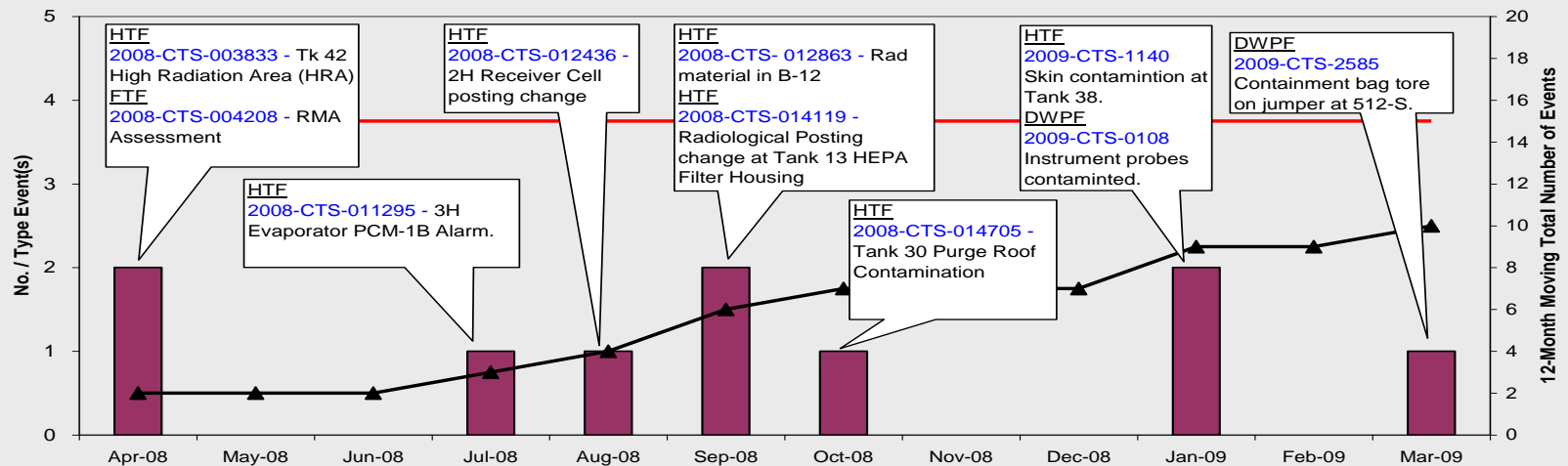
**Comments**  
  
KPI Owner:                      SME:

# Radiological Events Metric



# Control of Radioactive Material Metric

## RADIOLOGICAL CONTROL PERFORMANCE Liquid Waste Operations Control of Radioactive Material Through March 31, 2009



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
Control of Rad Material	2	0	0	1	1	2	1	0	0	2	0	1
12-Mo. Moving Total	2	2	2	3	4	6	7	7	7	9	9	10
Goal (12-Mo. Moving Total)	15	15	15	15	15	15	15	15	15	15	15	15
Score	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
This Leading Indicator tracks: 1. Unanticipated posting changes or an area requiring posting not previously posted (STAR Bin 11.10.70); 2. Radioactive spills/leaks (STAR Bin 11.10.71); 3. Practices - Improper handling of rad material - loss of integrity of containment resulting in spread of contamination (STAR Bin 11.10.72); and 4. Loss of integrity of Radiological Waste Bag (STAR Bin 11.10.77)

**Analysis / Action**  
**BLUE: Analysis:** LWO has had ten STAR issues over the past 12 months and three issues in the last quarter. Seven of these issues have occurred in HTF, one in FTF, and two in DWPF.  
**Action:** Corrective actions have been implemented in STAR.

**Goal**  
The LWO goal is no more than 15 Control of Radioactive Material events.

**Comments**

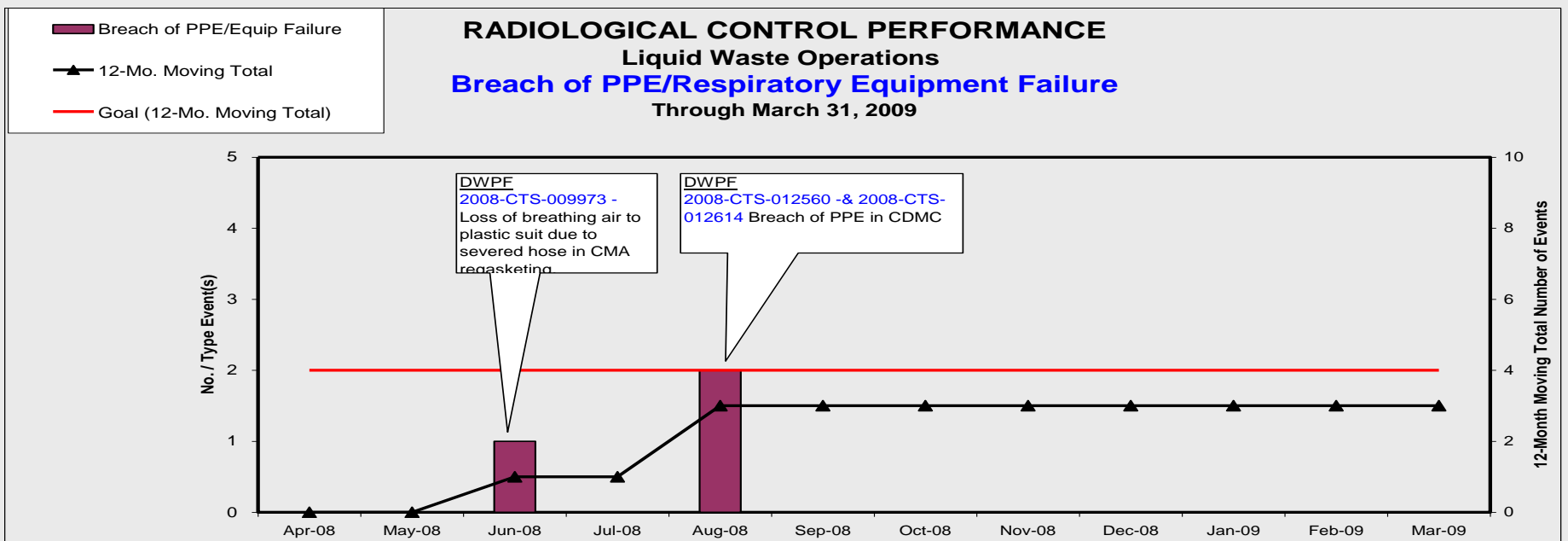
Blue	≤14
Green	15-16
Yellow	17-18
Red	≥19

KPI Owner: SME:

# Breach of PPE/Respiratory Failure Metric



Washington Division



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
<b>Breach of PPE/Equip Failure</b>	0	0	1	0	2	0	0	0	0	0	0	0
<b>12-Mo. Moving Total</b>	0	0	1	1	3	3	3	3	3	3	3	3
<b>Goal (12-Mo. Moving Total)</b>	4	4	4	4	4	4	4	4	4	4	4	4
<b>Score</b>	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
 This Leading Indicator tracks 1: Instances of tears or breaches in PPE (other than respiratory type PPE) (STAR Bin 11.06.71) and 2. Malfunctions or loss in integrity of respiratory equipment while in use in radiological areas (e.g., broken or clogged HEPA cartridge, loss of breathing air while in use, etc.) (STAR Bin 11.06.72)

**Analysis / Action**  
**Blue: Analysis:** Over the past year there have been two issues of Breach of PPE/Respiratory equipment failure. These issues occurred in DWPF with one tear to the plastic suit and one severed breathing air hose. We are below the goal and the trend is stable.  
**Action:** Action was taken to ensure that exposed bolts were taped and personnel were briefed. We will continue to monitor performance.

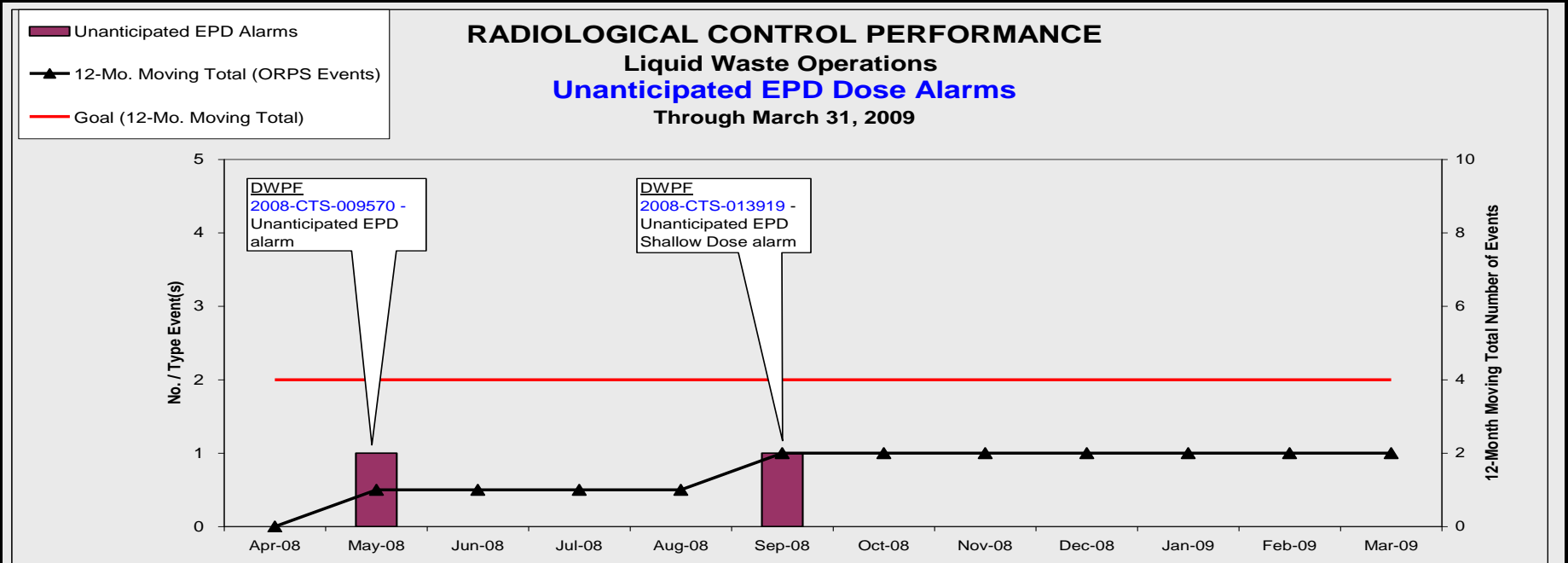
**Goal**  
 The LWO goals is no more than 4 Breaches of PPE or Respiratory Equipment Failures

Blue	<3		
Green	4-6		
Yellow	7-8		
Red	≥9		

**Comments**

KPI Owner: \_\_\_\_\_ SME: \_\_\_\_\_

# Unanticipated EPD Dose Alarms Metric



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
Unanticipated EPD Alarms	0	1	0	0	0	1	0	0	0	0	0	0
12-Mo. Moving Total (ORPS Events)	0	1	1	1	1	2	2	2	2	2	2	2
Goal (12-Mo. Moving Total)	4	4	4	4	4	4	4	4	4	4	4	4
Score	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
This Leading Indicator tracks: Unanticipated EPD External Dose Alarms (STAR Bin 11.05.73)

**Analysis / Action**  
**BLUE: Analysis:** There have been two STAR issues over the past year with the EPD reaching the alarm setpoint for skin dose while working in the CDMC in DWPF. We are currently below the goal and the trend is stable.  
**Action:** DWPF took corrective action by requiring the use of remote real time monitoring (Teletrac) to be used when performing work on plant equipment in the CDMC or the CMA.

**Goal**  
The LWO goal is no more than 4 Unanticipated EPD Dose Alarms.

Blue	<3	
Green	4-6	
Yellow	7-8	
Red	>9	

**Comments**

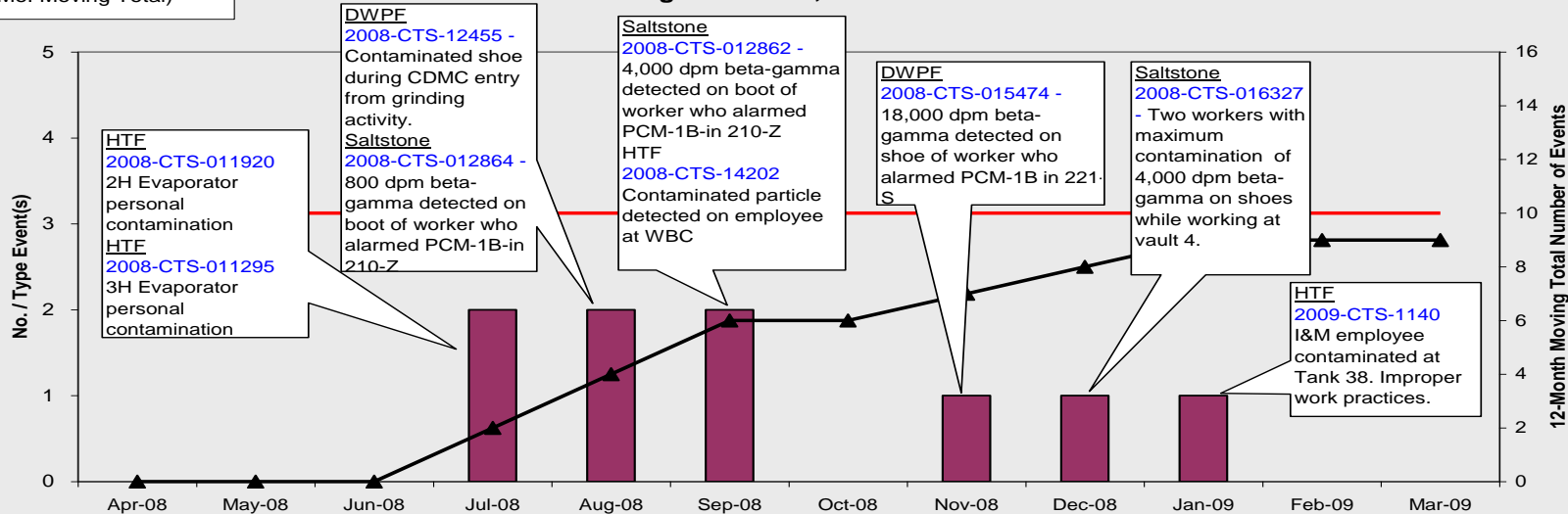
KPI Owner: \_\_\_\_\_ SME: \_\_\_\_\_

# Contamination Events below Reportable Levels



Washington Division

## RADIOLOGICAL CONTROL PERFORMANCE Liquid Waste Operations Contamination below 10CFR835 & ORPS Non-Reportable Area and Personal Events Through March 31, 2009



Data	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09
Non-Reportable Area & Perso	0	0	0	2	2	2	0	1	1	1	0	0
12-Mo. Moving Total	0	0	0	2	4	6	6	7	8	9	9	9
Goal (12-Mo. Moving Total)	10	10	10	10	10	10	10	10	10	10	10	10
Score	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue

**Definition**  
**This Leading Indicator tracks:** Any contamination that does not exceed 10CFR835 Appendix D values on individual's skin, personal effects, or area contaminations and ORPS Non-Reportable Area and Personal Events. (STAR Bin: 11.10.73, 11.10.92 & 11.10.94)

**Analysis / Action**  
**GREEN: Analysis:** LWO has had nine STAR issues over the past year. There have been five issues in DWPF/Saltstone and four issues in HTF/FTF. Three of these issues were HPI related.  
**Action:** Low level shoe contamination at Saltstone is being addressed by an LWO Vault 4 Water Management Plan. I&M Camera Inspection procedures are being revised to include increased radiological controls. Also, camera inspection expectations have been issued to RCO. LWO is continuing to monitor performance.

**Goal**  
 The LWO goal is no more than 10 events for Contamination below 10CFR835, Orps Non-Reportable and Personal Events.

Blue	<9	
Green	10-12	
Yellow	13-14	
Red	≥15	

**Comments**  
 KPI Owner: \_\_\_\_\_ SME: \_\_\_\_\_

Comments

&

Questions