

INPO

Institute of Nuclear Power Operations

INPO Update:

2017 North American ISOE

ALARA Symposium

January 2017

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INPO Radiation Protection Manager

Update Topics

- Industry Performance Summary:
 - U.S. Industry Performance
 - AFI Trends
 - Continuous Monitoring
- INPO 05-008

Radiological Protection 770-644-ext



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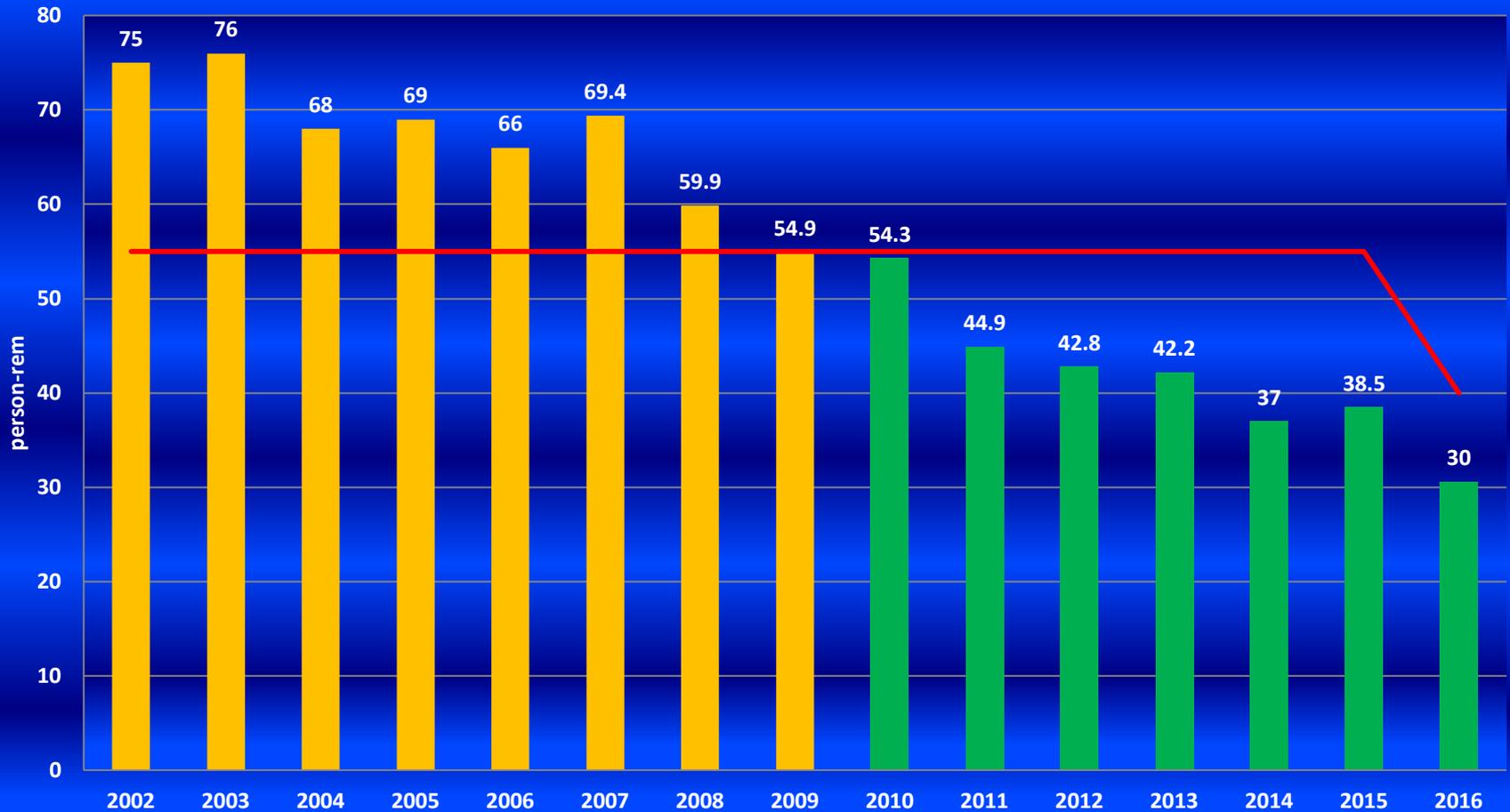


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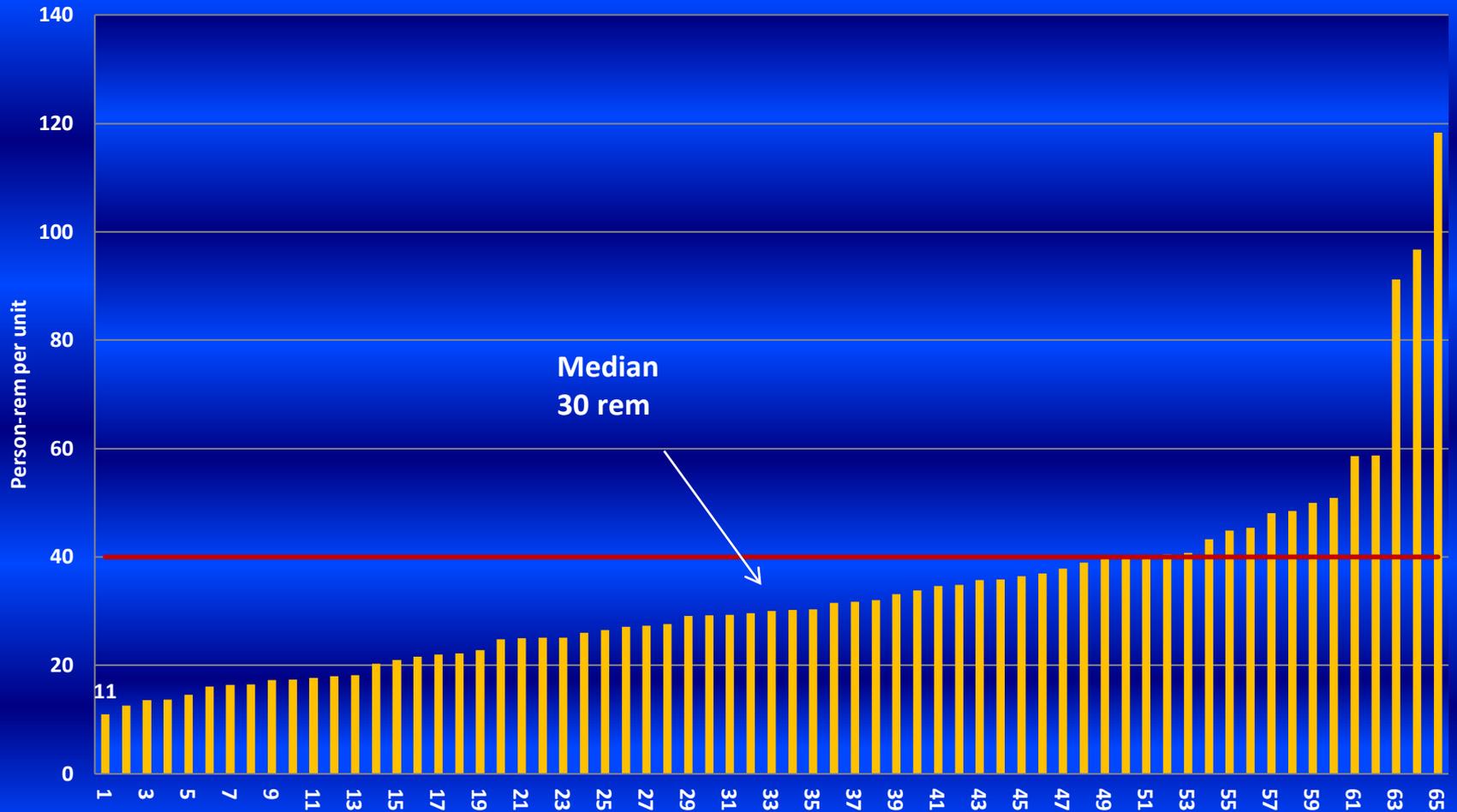
CRE PWR Performance

U.S. Collective Radiation Exposure (PWR)
Median Values – 3rd Quarter 2016



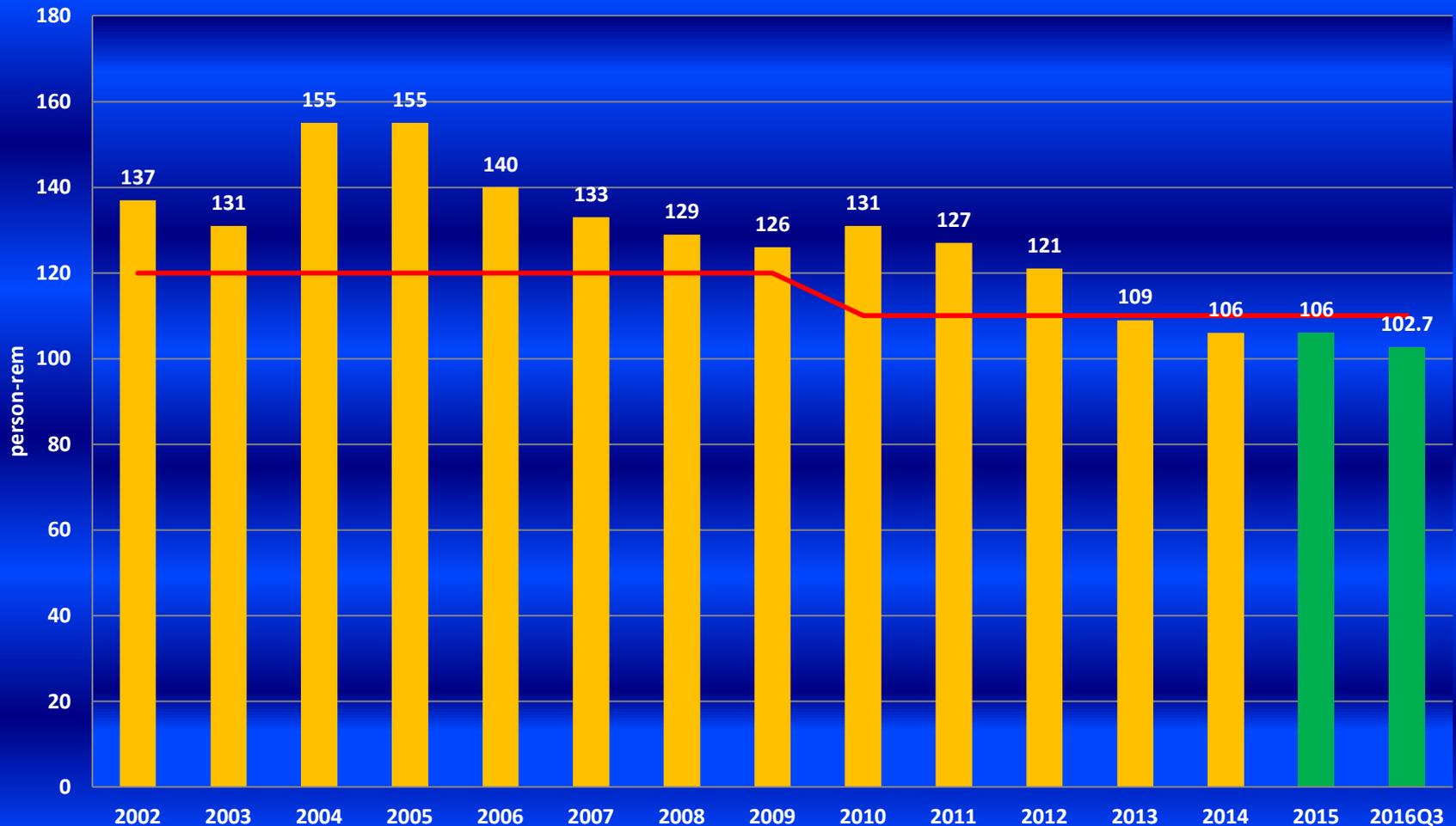
CRE PWR Performance

U.S. Collective Radiation Exposure (PWR)
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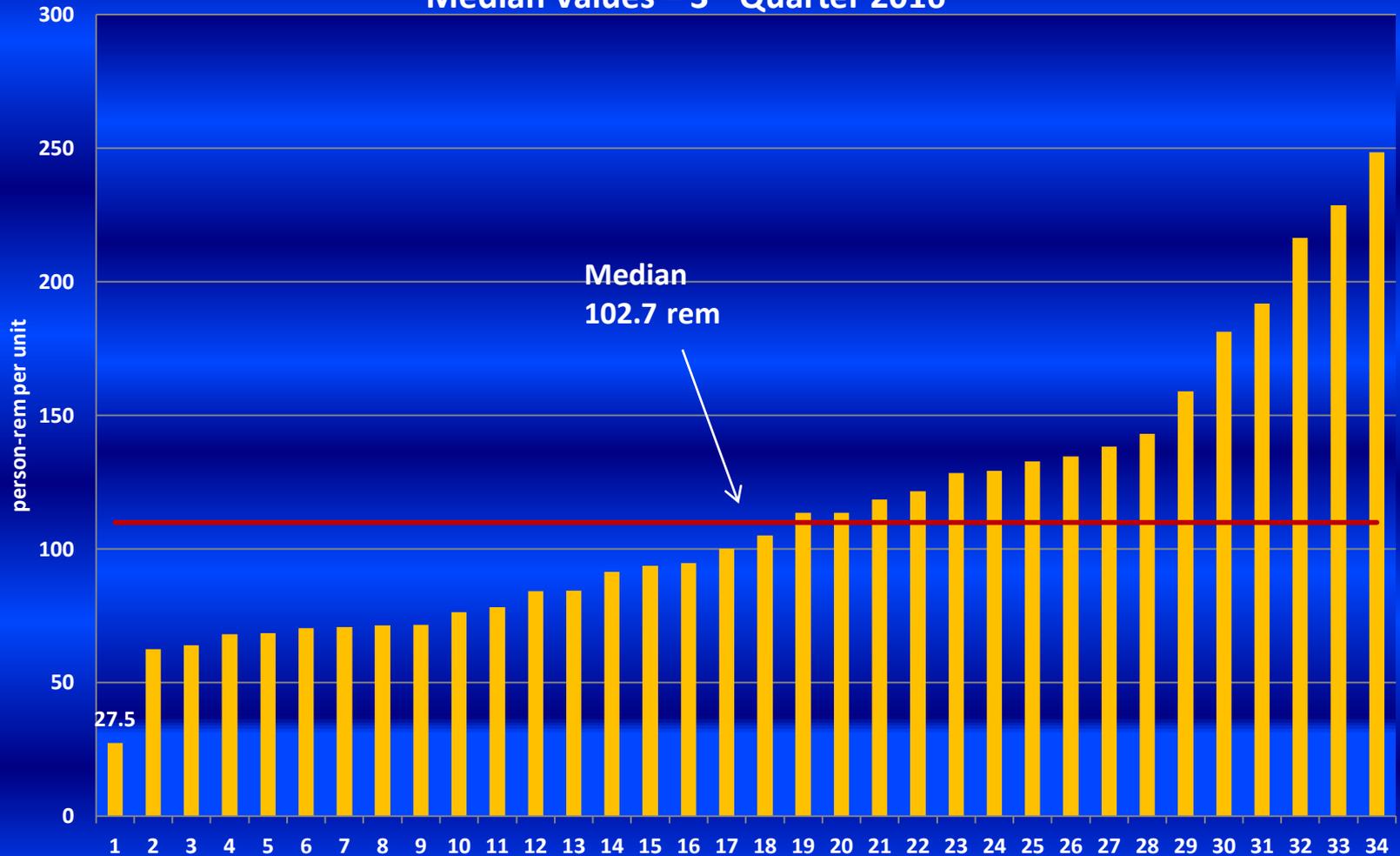
CRE BWR Performance

U.S. Collective Radiation Exposure (BWR)
Median Values – 3rd Quarter 2016



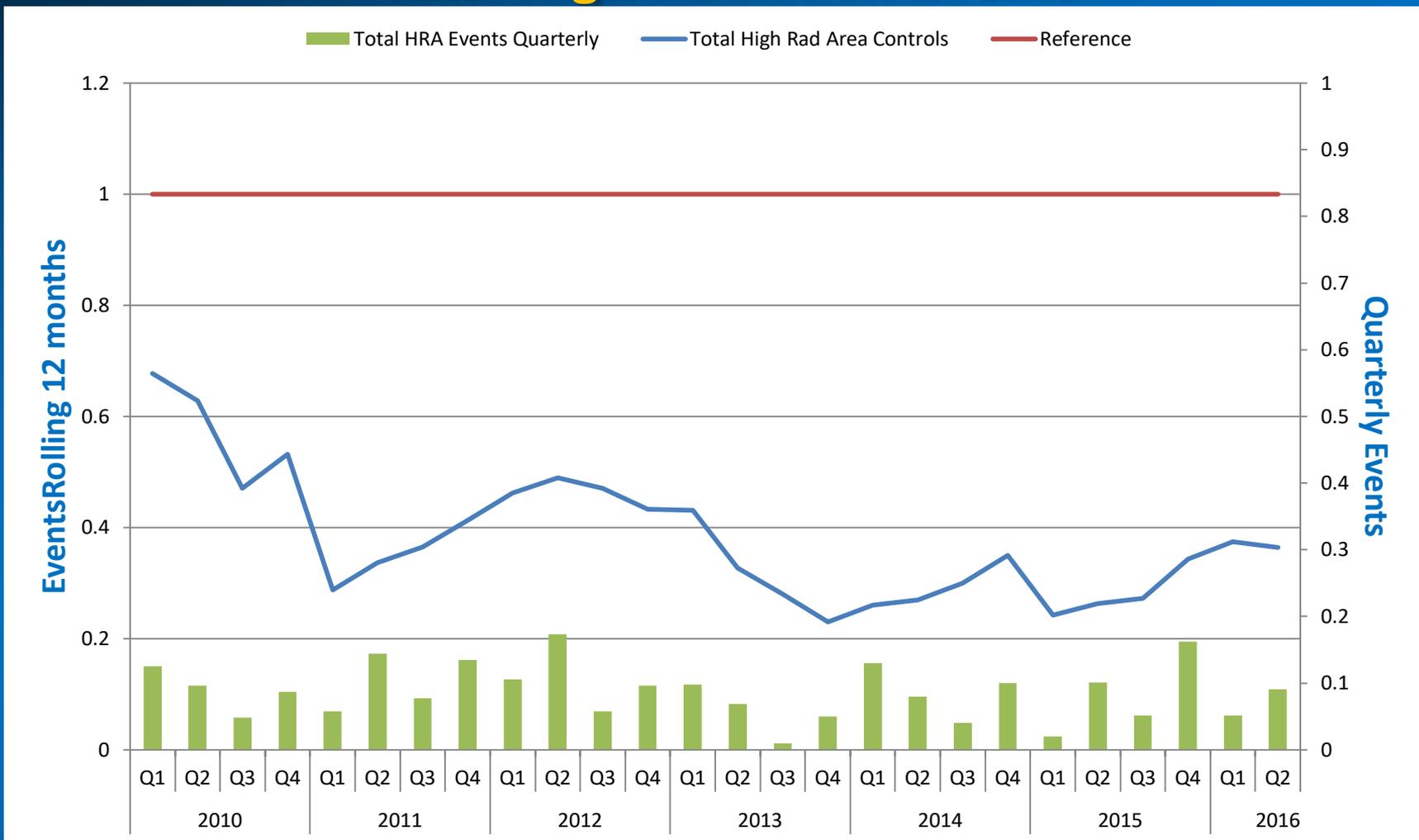
CRE Performance

U.S. Collective Radiation Exposure (BWR)
Median Values – 3rd Quarter 2016



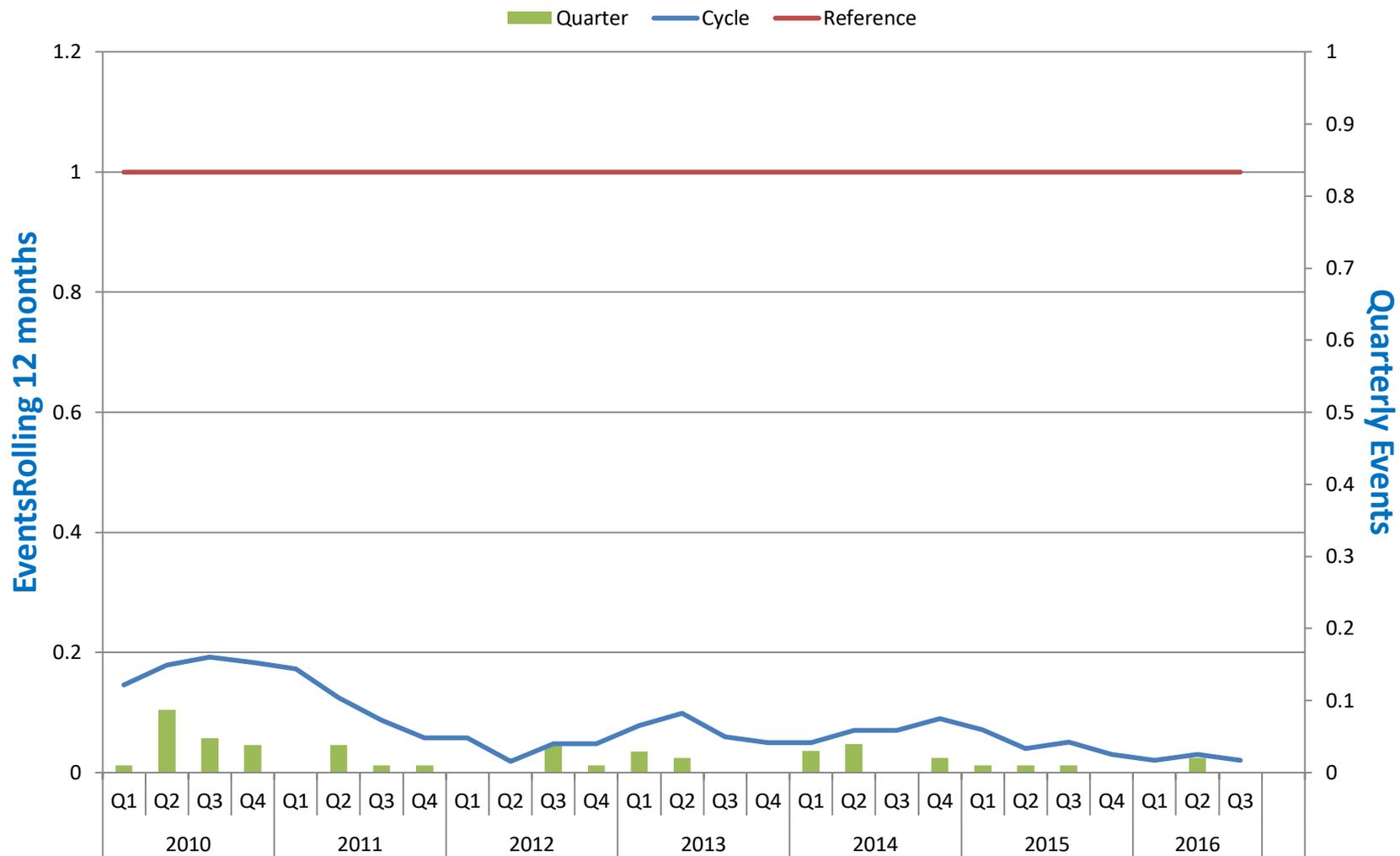
Industry Performance and Trends (PIC Data)

Total High Radiation Events



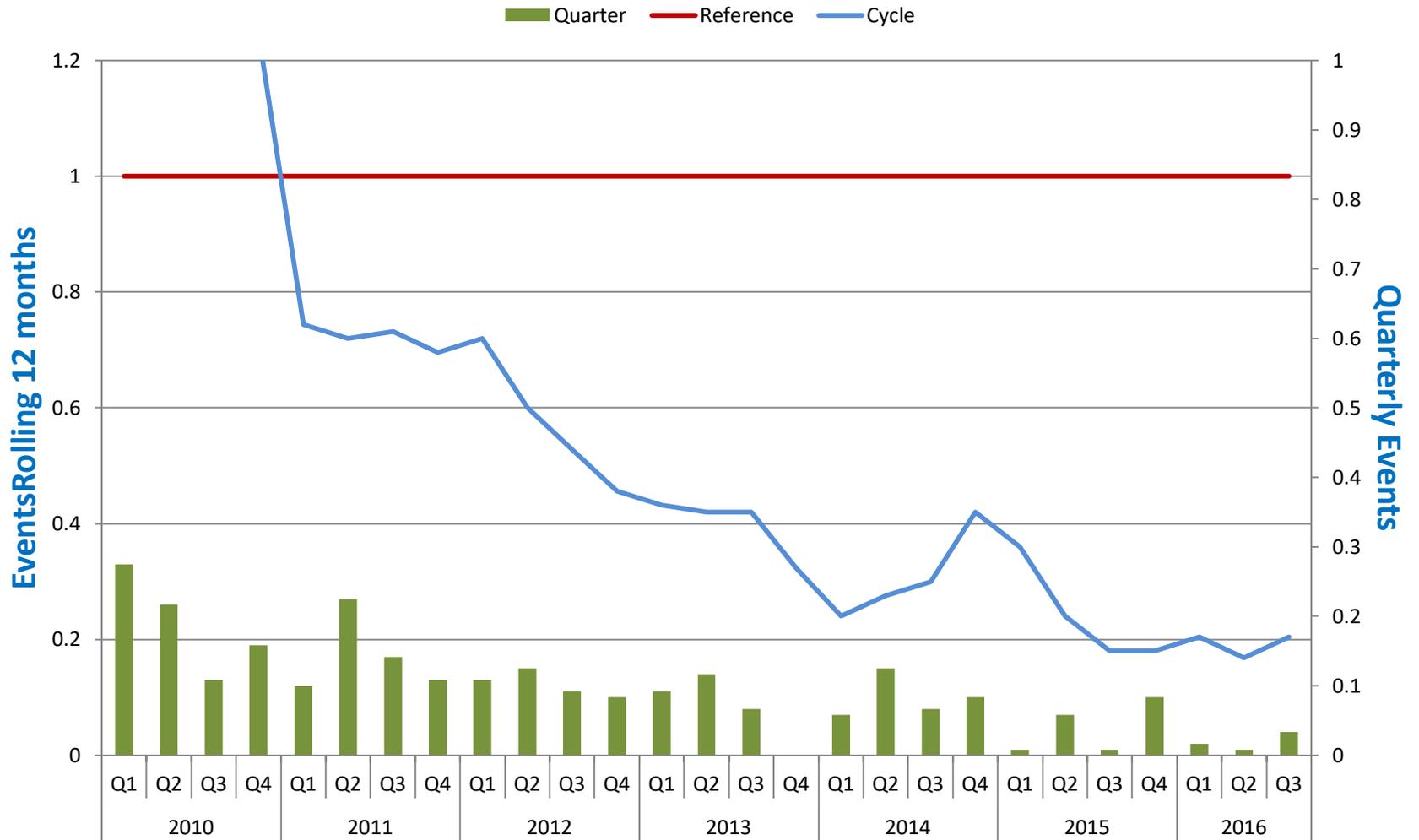
Industry Performance and Trends (PIC Data)

Unplanned Dose



Industry Performance and Trends (PIC Data)

RAM Events



Industry Performance and Trends (PIC Data)

PCEs

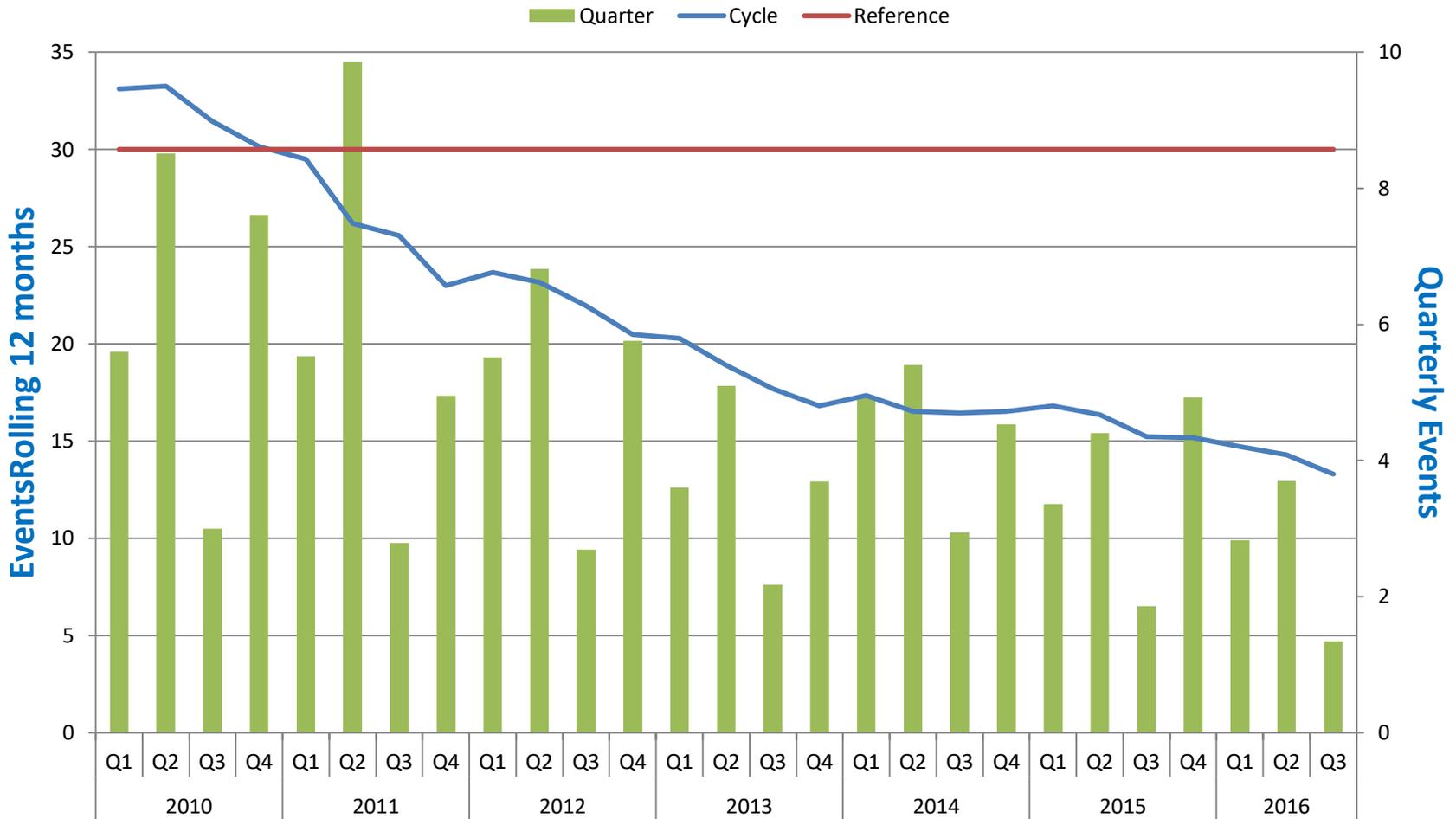
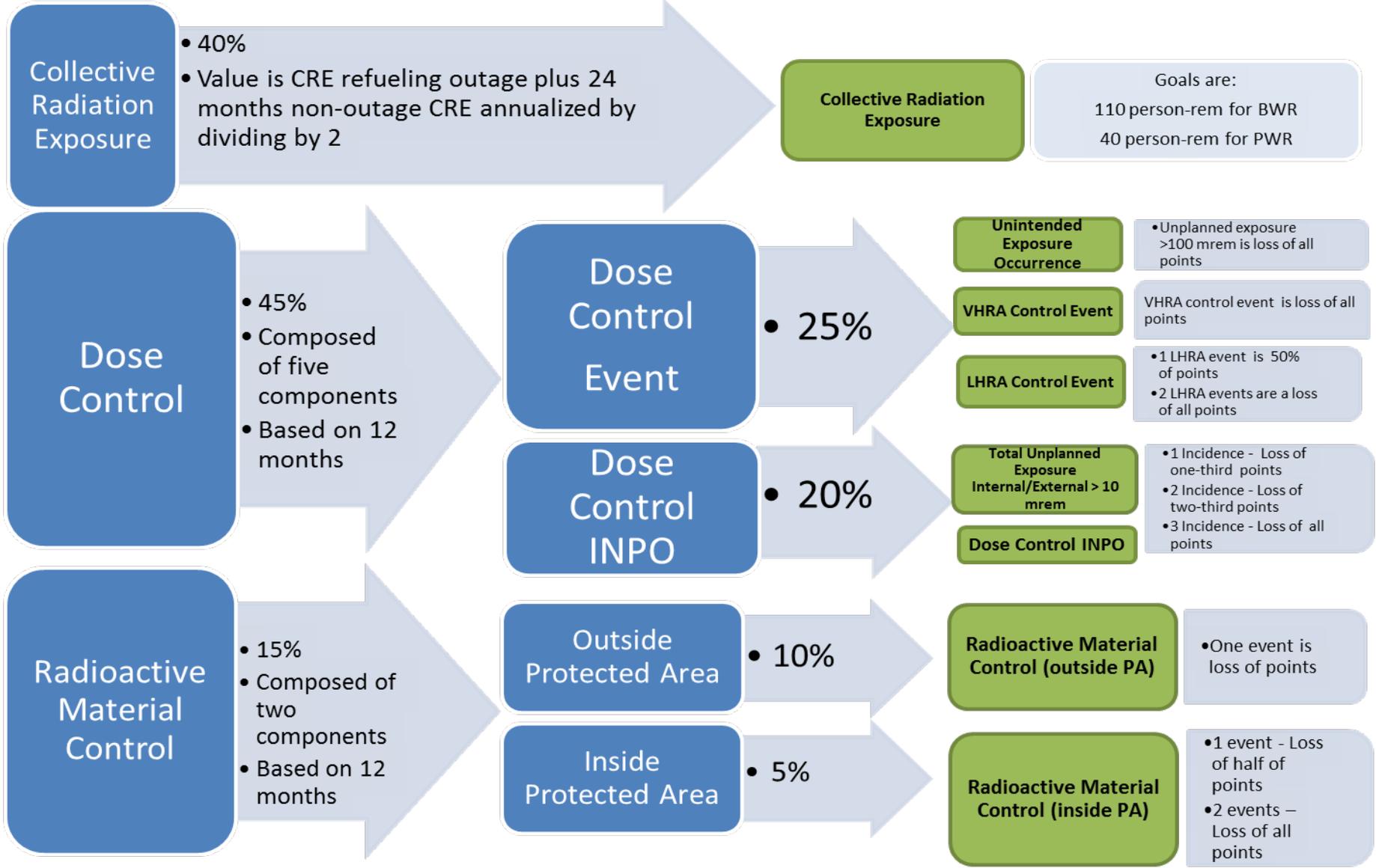
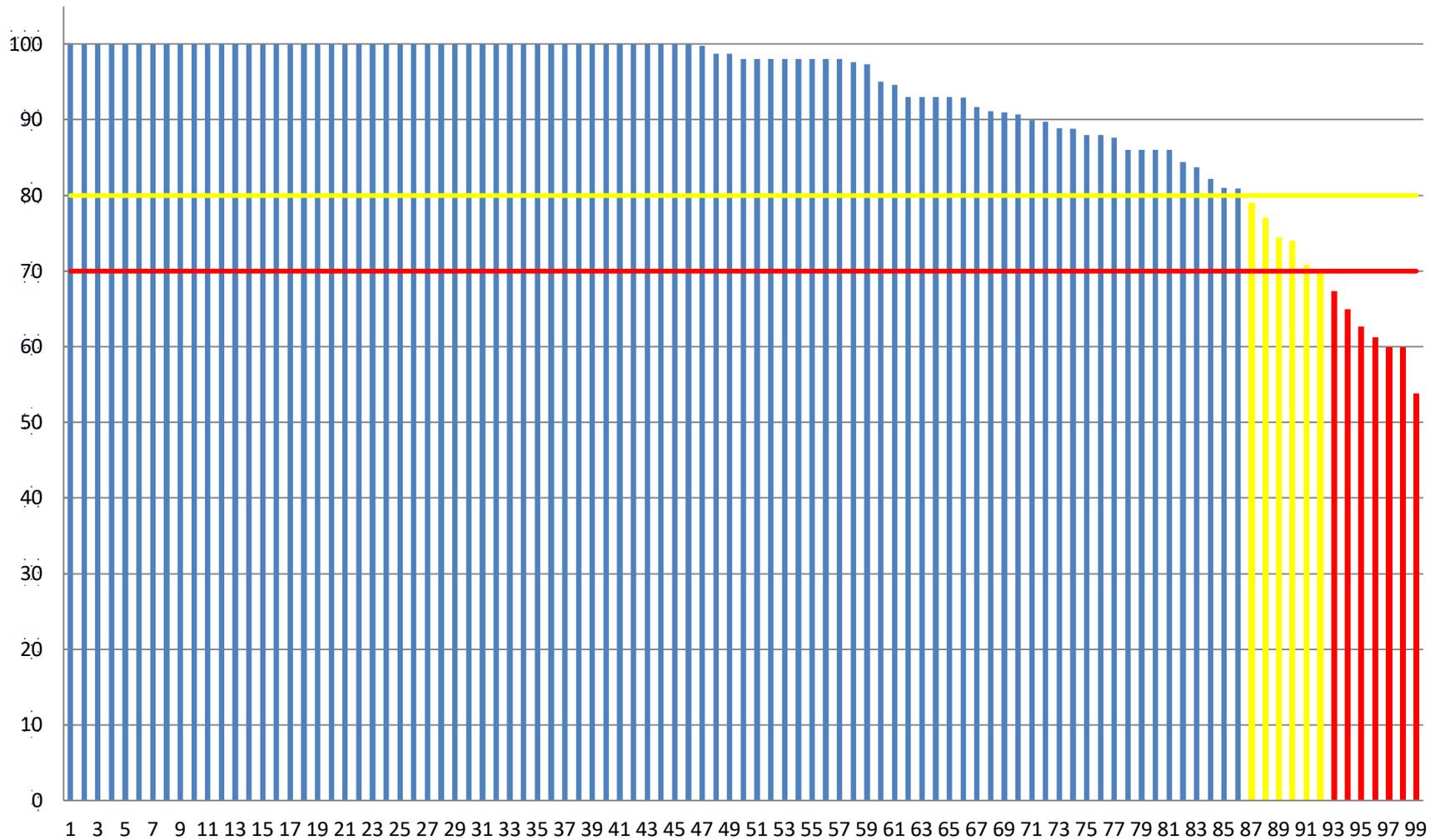


Illustration of Tier 2 Radiological Performance Indicator



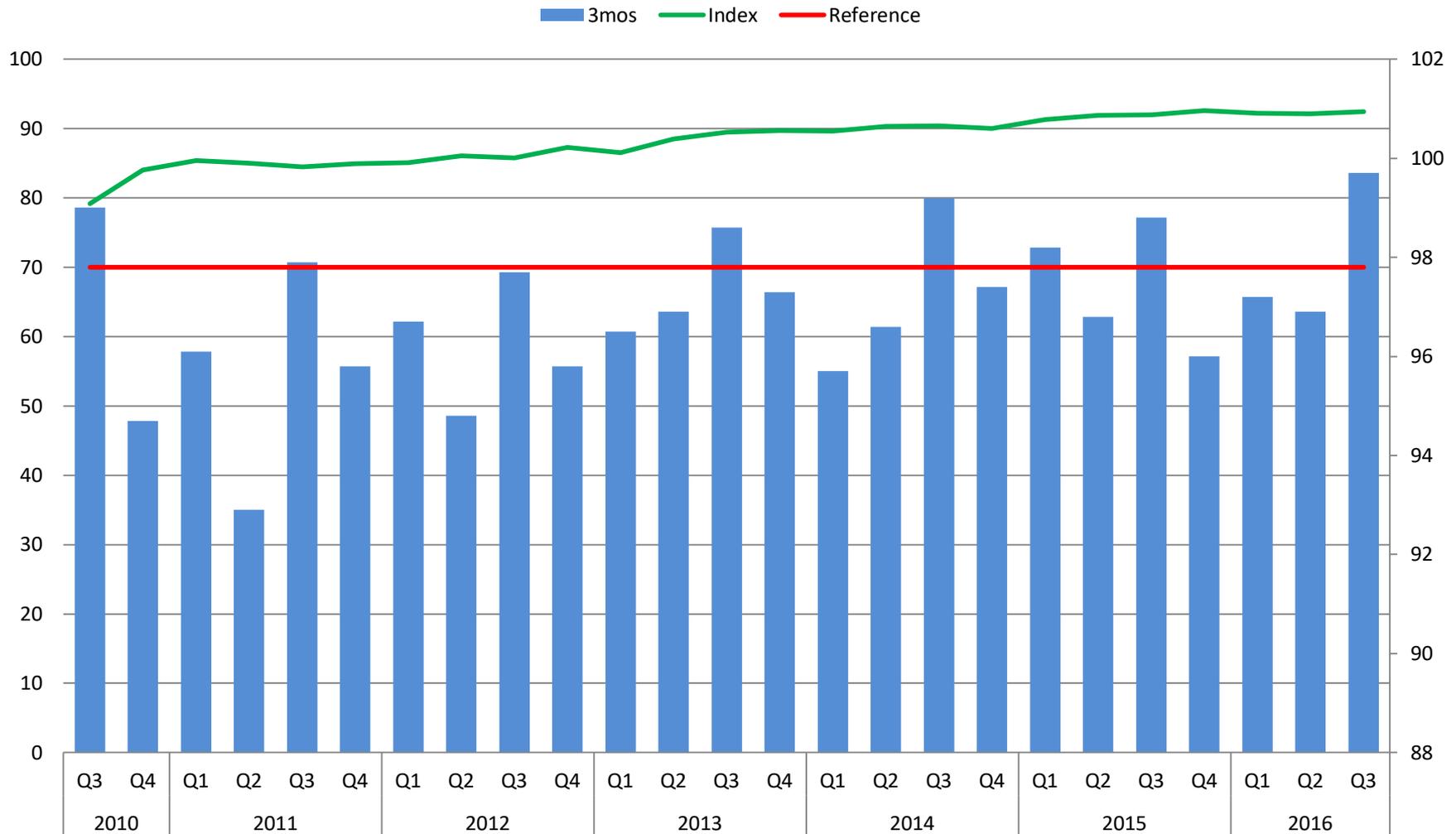
RP Performance Indicator

3rd Quarter 2016



RP Performance Indicator

Radiation Protection Performance Indicator



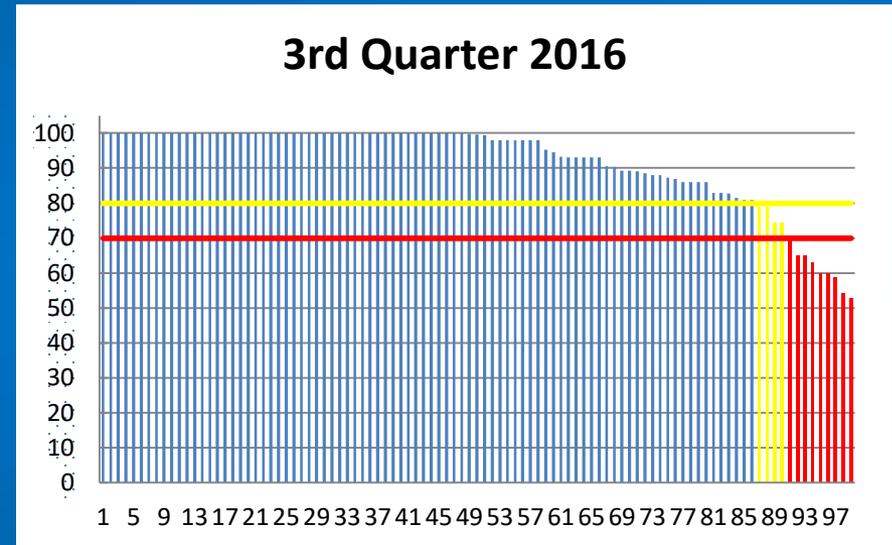
RP Performance Indicator Drivers

Performance Monitoring Drivers

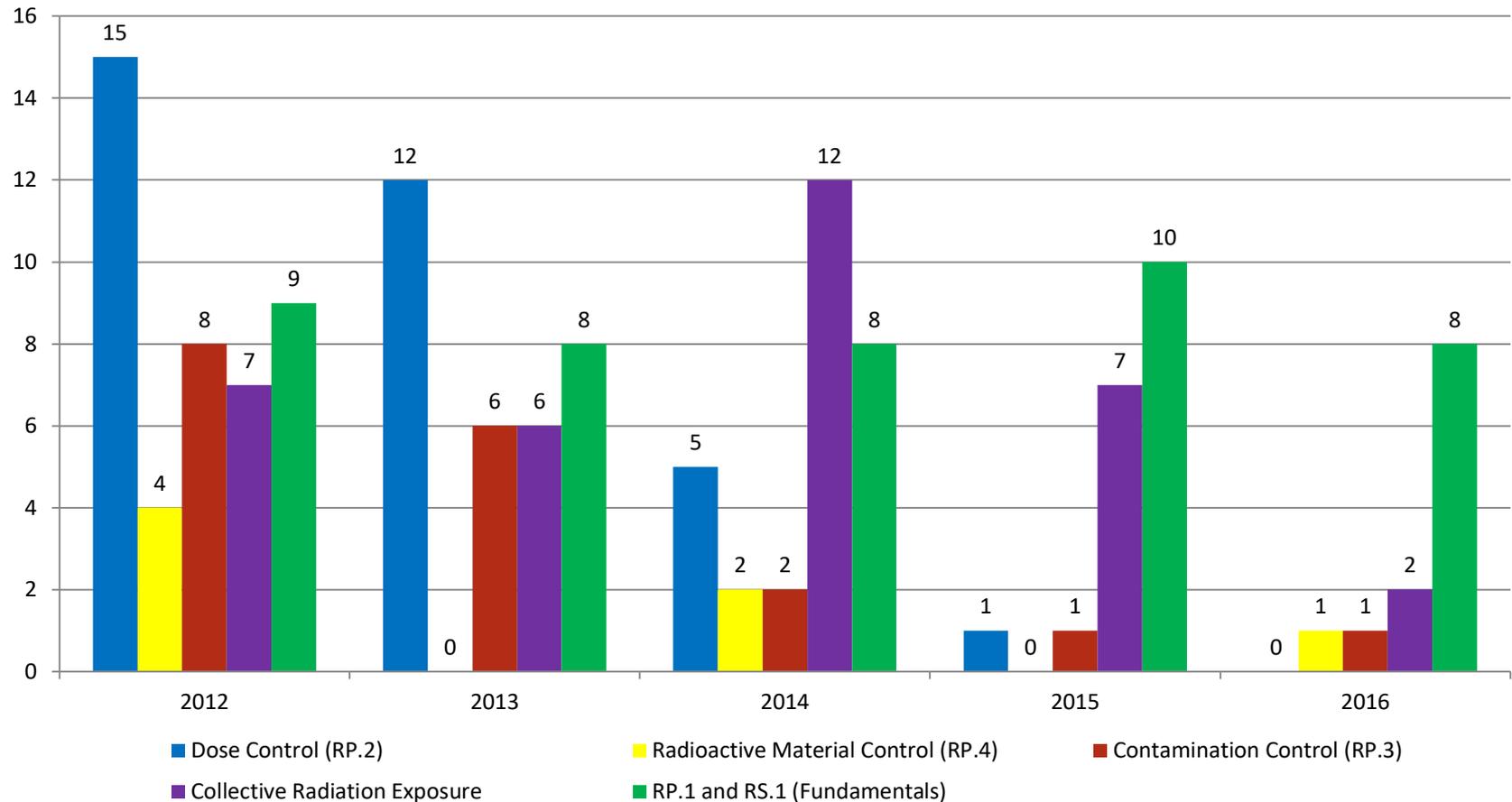
- Collective radiation exposure
- High radiation area events

Common Themes <80 Points

- CRE above goals
- High CRE with HRA Events
- Internal dose and RAM events



RP and RS AFIs Through 3rd Qtr 2016



2016 AFIs

Fundamentals (RP.1, RS.1, NP.1)

- Radiation workers not following procedures for HRA and RAM controls
- Radiation protection technicians not applying fundamentals for HRAs
- RP Supervisor's oversight of radiological work for changing radiological conditions
- Radiation protection not communicating radiological hazards
- Radiation protection technicians not following expectation for work plans
- Radiation protection technicians and supervisors not apply standards
- Qualified radiation workers not communicating radiological hazards
- Radiation workers not monitoring and communicating radiological hazards



2016 Fundamental AFIs Causes

Fundamentals (RP.1, RS.1)

- RP Supervisors and technicians do not correct deviations or rationalize deviations because of perceived low risk or low consequence
- Radiation workers deviate because of perceived low risk or low consequence.
- Contributing, supervisors, including radiation protection supervision, are not correcting or coaching to the standard.

Pending 05-008 Revision

Revision 3 of INPO 05-008

INPO Document Hierarchy

- **Tier 1:** The standard of excellence expected to be met.
 - PO&Cs; Principles for Excellence in Risk Management; Leadership and Team Effectiveness Attributes; Level 1 and 2 IERs
- **Tier 2:** Provides information to assist members pursuit of excellence. Intent is the document content is met, strict compliance is not required.
 - Consists of Guidelines; Process Descriptions; Operating Experience
- **Tier 3:** Reference. Does not need to come from INPO.
 - Good Practice; Manuals; Reports; Must Know OE



Why 05-008 Change

Tier 1 – PO&C RP.2-3: *Radiological procedures specify posting and control requirements for high radiation areas to prevent inadvertent entry. Access to these areas is controlled through administrative and physical barriers.*

Tier 2 - 05-008 guidance: Procedures establish posting, barriers and barricades for various high radiation conditions. Requirements for posting and controlling areas during changing plant conditions are also procedurally established. Procedures related to work in HRA/LHRA/VHRAs are used to clearly define radiation worker, RP technician and supervision responsibilities and accountabilities.

Tier 2 – Process Description for Postings:

≥ 80 &
< 800
mrem/hour

- A barrier is required for the boundary except while the area is accessed. A SOP is not considered as a barrier.
- Ensure posting of access points that require the removal of bolts and/or the use of lifting equipment. Add posting insert to “Contact RP Prior to Opening.”

Triangle shaped HRA Sign with the following:

- RP BRIEF REQUIRED FOR ENTRY



05-008 Change

- Currently resolving comments to document.
- *Revision 3* gets issued by end of January 2017
- 05-008 Details:
 - *Move previous revision content to new format*
 - *Work with RP CFAMs and RP DNP Task Force*
 - *Strategic issuance of documents throughout 2017*
 - *Aligned to PO&Cs*
 - *Capture standard practice and process*
 - *Reflect Excellence*

Continuous Monitoring

Designed for 2023 End state

- *All stations achieve industry goals staying within 1-2 bandwidth, occasional 3*
- *Repeated INPO 3 assessments are rare*
- *No assessments of 4 or 5*
- *No surprise decreased assessments*
- *No significant events*
- *Rare accreditation probation*



Continuous Monitoring

Measures

- **Organization: *Monitor, Elevate, Escalate, Recovery***
- **Functional Area Performance:**
 - *Excellence, Solid, Acceptable*
 - *Trajectory – Improving, Stable, Declining*

Monitoring

- **Data – KPIs, OE, Reports, Plant Visits, CFAM, Contact**



RP and Continuous Monitoring

Radiological Protection

- *Is not a functional area to drive out of 'Monitor'*
- *Program of concern drivers*
 - *Multiple radiological events*
 - *Events causes are tied to fundamentals, or past AFIs*
 - *Typically accompanied with high CRE, but not exclusive*
 - *No change or cyclic performance*
 - *Persistent low performance assessments*
 - *Multiple evaluations with similar AFIs*
 - *Assistance not effective*

RP and Continuous Monitoring

- **Eleven Programs in 'Decline'**
 - *Nine INPO members, two WANO members*
- **'Turning Decline' Engagement**
 - *Notification to RPM*
 - *Assistance (formal and informal)*
 - *Recovery plan accountability (formal)*
 - *Collaborative plan with RP manager and Plant Manager*
 - *Criteria for exiting*
 - *Milestones to check*

INPO

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Questions & Comments