

Office of the Technical Director
Fiscal Year 2016 Work Plan
Introduction

November 23, 2015

Introduction

- Work plan addresses the Board's primary nuclear safety oversight responsibilities:
 - Review and Evaluation of Standards (Department of Energy Directives)
 - Analysis of Design and Operational Data
 - Review of Facility Design and Construction
- Work plan is designed to ensure that the Board's strategic goals are met



Introduction (cont.)

- Work plan is designed to ensure that the Board's strategic goals are met
 - Review of the Department of Energy's progress resolving existing Board Issues, e.g., Open Board Recommendations
 - Oversight of high hazard nuclear operations at Department of Energy defense nuclear facilities—ensure ongoing operations can be conducted safely
 - Review of new design and construction projects—ensure that new defense nuclear facilities will meet applicable design standards
 - Review of DOE directives



Introduction (cont.)

- Assumptions used to formulate the Office of the Technical Director's FY 2016 Work Plan
 - Our understanding of the work the Department of Energy expects to perform during FY 2016
 - Work initiated in a previous fiscal year and continued into FY 2016
 - New work for FY 2016
 - Staff onboard in September 2015



Introduction (cont.)

- Proposed work activities are prioritized based on:
 - The potential health impact to the Public, Collocated Worker, and Facility Worker from an accidental release of radioactive material
 - The consequences and likelihood of postulated accidents
 - The adequacy of the safety-related controls (engineered or administrative) designed to prevent or mitigate postulated accidents
 - The readiness of operators to safely conduct nuclear operations
 - The complexity of the nuclear operations performed
 - The adequacy of the documented safety analysis, e.g., are all potential accidents properly identified and controlled



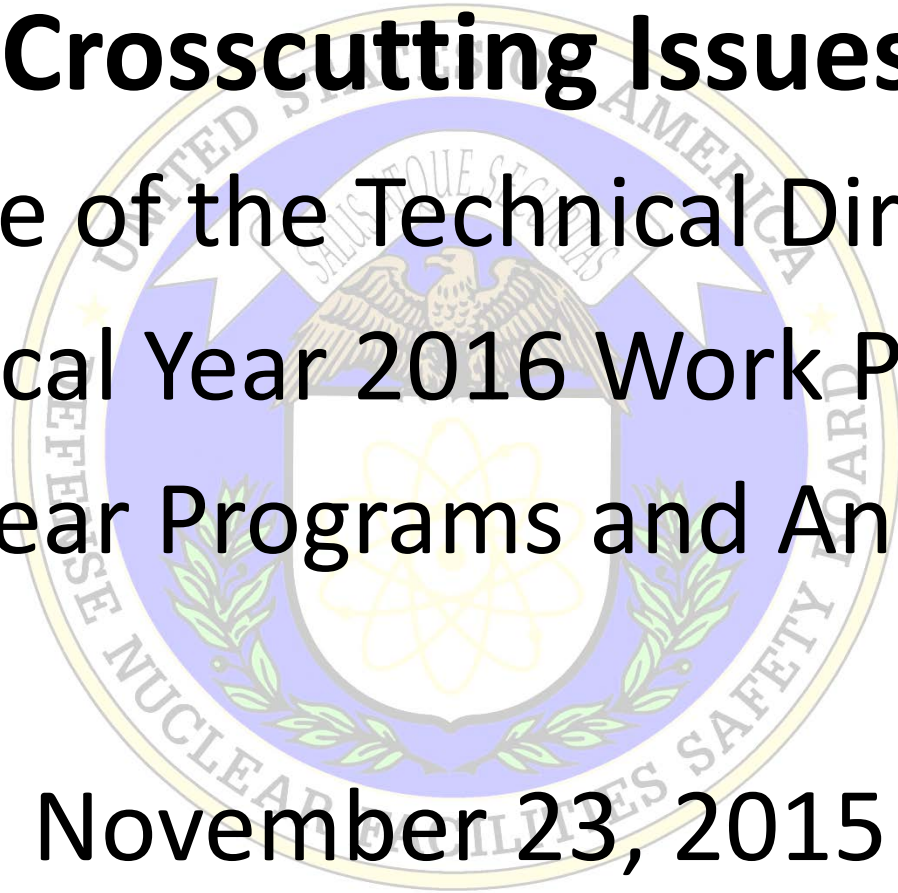
Crosscutting Issues

Office of the Technical Director

Fiscal Year 2016 Work Plan

Nuclear Programs and Analysis

November 23, 2015



Agenda

- Strategic Objectives & Performance Goals
- Priorities
- Manpower and Work Breakdown
- Open Board Recommendations
- Crosscutting Issues
- Uncertainties



Strategic Objectives

- Strengthen the development, implementation, and maintenance of DOE* regulations, requirements, and guidance
- Improve the establishment and implementation of safety programs



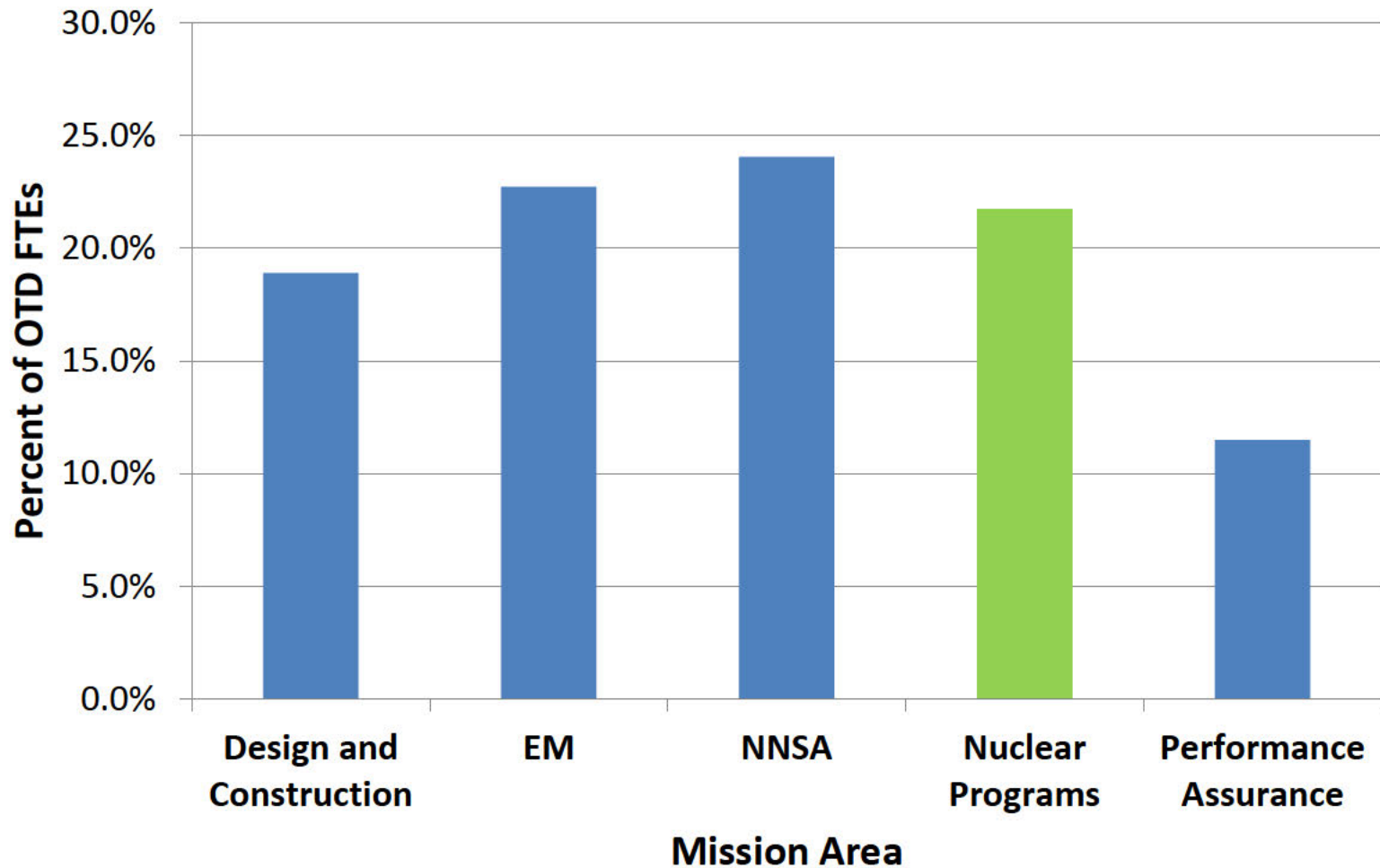
*A list of acronyms is provided on the final slide of this section.

Priorities

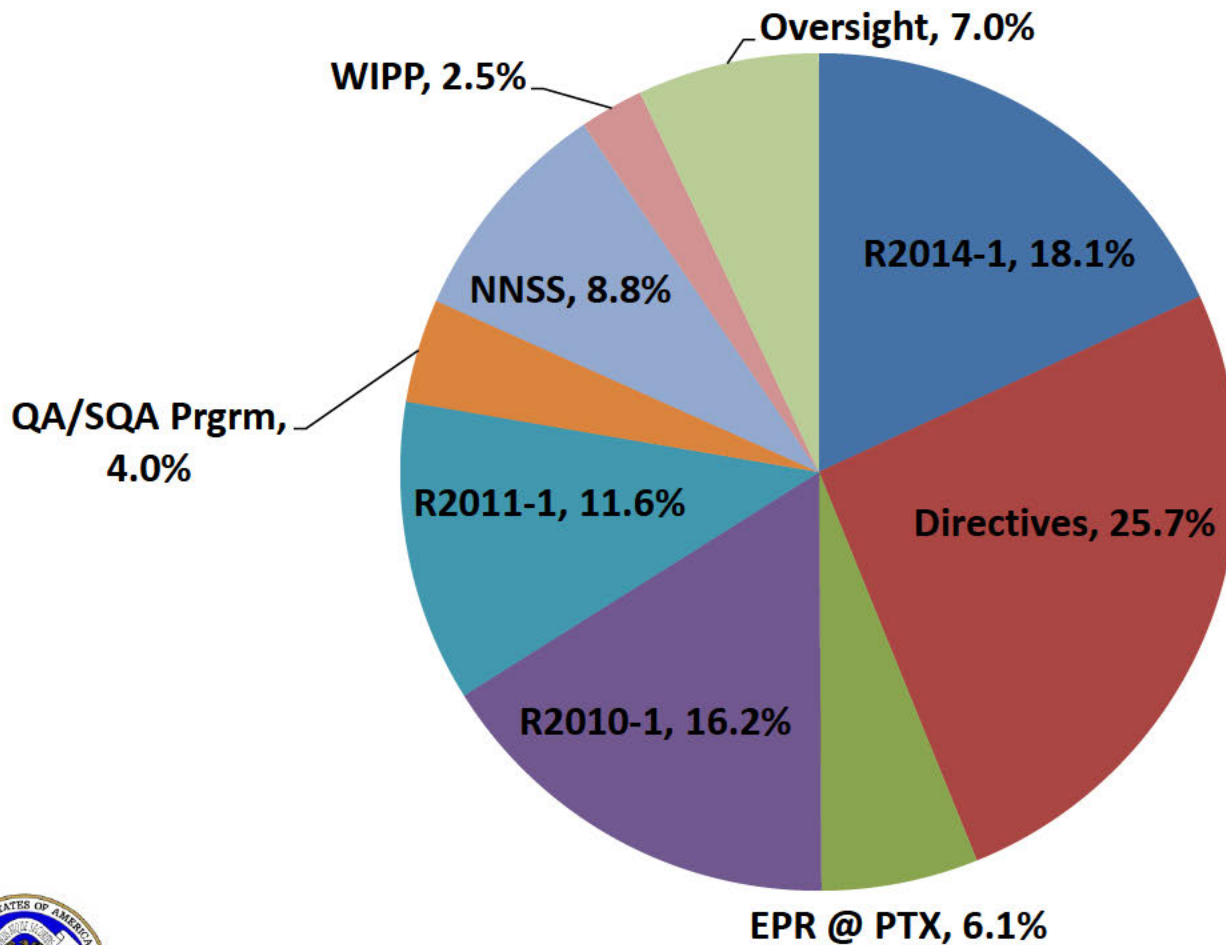
- Safety issues communicated to DOE
- Based on legislation (directives and standards)
- Risk to the public and the workers
- Role of the program in protecting the public and the workers
- Type and quantity of nuclear material-at-risk
- Complexity of operations and activities



FY 2016 NPA Manpower Usage



FY 2016 NPA Work Breakdown



OTD estimates that NPA will use about 20 percent of the total Technical Staff manpower to work on Crosscutting Issues.



Open Board Recommendations

- 2010-1, *Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers*
- 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*
- 2014-1, *Emergency Preparedness and Response*



Recommendation 2010-1

- DOE Actions remaining:
 - Revision of DOE Standard 1189-2008
 - Standard 3009-2014 gap analyses
- Staff Actions:
 - Review revision of DOE Standard 1189-2008
 - Review DOE's gap analyses of facility safety analyses



Recommendation 2011-1

- DOE accepted the Recommendation
- Completed WTP assessments and corrective actions
- Complex-wide extent-of-condition reviews and sustainment plans have been developed for other defense nuclear facilities



Recommendation 2014-1

- Implementation of EP&R requirements is inadequate to ensure the protection of the public
- Standardize and improve implementation of DOE criteria and review approach
- Update DOE's emergency management directive
- DOE partially accepted the Recommendation
- DOE issued Implementation Plan in April of 2015



Additional Crosscutting Issues

- Implementation of revised DOE Standard 3009-2014
- Quality Assurance and Software Quality Assurance*
- Emergency Preparedness & Response*
- Criticality Safety
- Implementation of Facility Safety Bases
- Revision of DOE Standard 1189-2008
- Reviews of DOE Directives*

* designates highest priority items



Standard 3009-2014 Implementation

- Use required for:
 - New facilities
 - Major modifications to existing facilities
 - Existing facilities with mitigated public doses above DOE's Evaluation Guideline of 25 rem TEDE
- Evaluate the balance of facilities against a select set of new requirements from DOE-STD-3009-2014



QA and SQA Initiatives

- Conduct QA/SQA-related reviews of DOE sites and projects
- Shadow/Observe DOE QA/SQA-related reviews
- Complete staff evaluations of nuclear QA/SQA DOE directives
- Participate and contribute to NQA-1 standard as committee members
- Evaluate the effectiveness the DOE QA/SQA forums and working groups



EP&R

- Site-specific implementation of DOE Order 151.1C
- Site-wide and facility-specific drills and exercises:
 - Pantex, WIPP, Y-12, SRS, SNL, Hanford, LLNL, and LANL
- Focus Areas:
 - Drill and exercise programs
 - Technical planning bases
 - Interface with off-site organizations
 - Corrective actions, self-assessments, DOE oversight



Criticality Safety Oversight

- Criticality safety evaluations
- Determine the needed safety controls
- Hierarchy of controls
- DOE Order 420.1C, Attachment 2, Chapter III
- NNSS, additional SRS reviews planned



Nuclear Facility Safety Bases

- Technical Safety Requirement controls
 - Ensure operating parameters maintained
 - Safety SSCs and ACs available and able to perform
- Reviews to evaluate implementation process
 - Including flow down into procedures
 - Including training provided on TSR controls
- LLNL, Pantex, LANL reviews planned



Revision of DOE Standard 1189-2008

- Response to Board Recommendation 2010-1
- Align 1189 with 3009
- Incorporate best practices and lessons learned
- 2010-1 IP: enter RevCom by 12/2015
- Provide an adequate framework



Reviews of DOE Directives

- Anticipate reviewing ~ 25 DOE and NNSA directives
- Policies, Orders, Manuals, Guides, Technical Standards, NNSA Supplemental Directives
- Pre-RevCom, Initial RevCom, Final RevCom

RevCom is the DOE Review and Comment Process



Reviews of DOE Directives

- DOE Order 435.1 Change 1, *Radioactive Waste Management*
- DOE Order 252.1, *Technical Standards Program*
- DOE Guide 414.1-4, *Safety Software Guide ...*
- Potential FY 2016 reviews of DOE Standards:
 - 1186-YR, *Specific Administrative Controls*
 - 3014-YR, *Accident Analysis for Aircraft Crash into Hazardous Facilities*
 - 1095-YR, *Department of Energy Laboratory Accreditation Program for Personnel Dosimetry*
 - 1020-YR, *Natural Phenomena Hazards Analysis and Design Criteria for Department of Energy Facilities*



Uncertainties

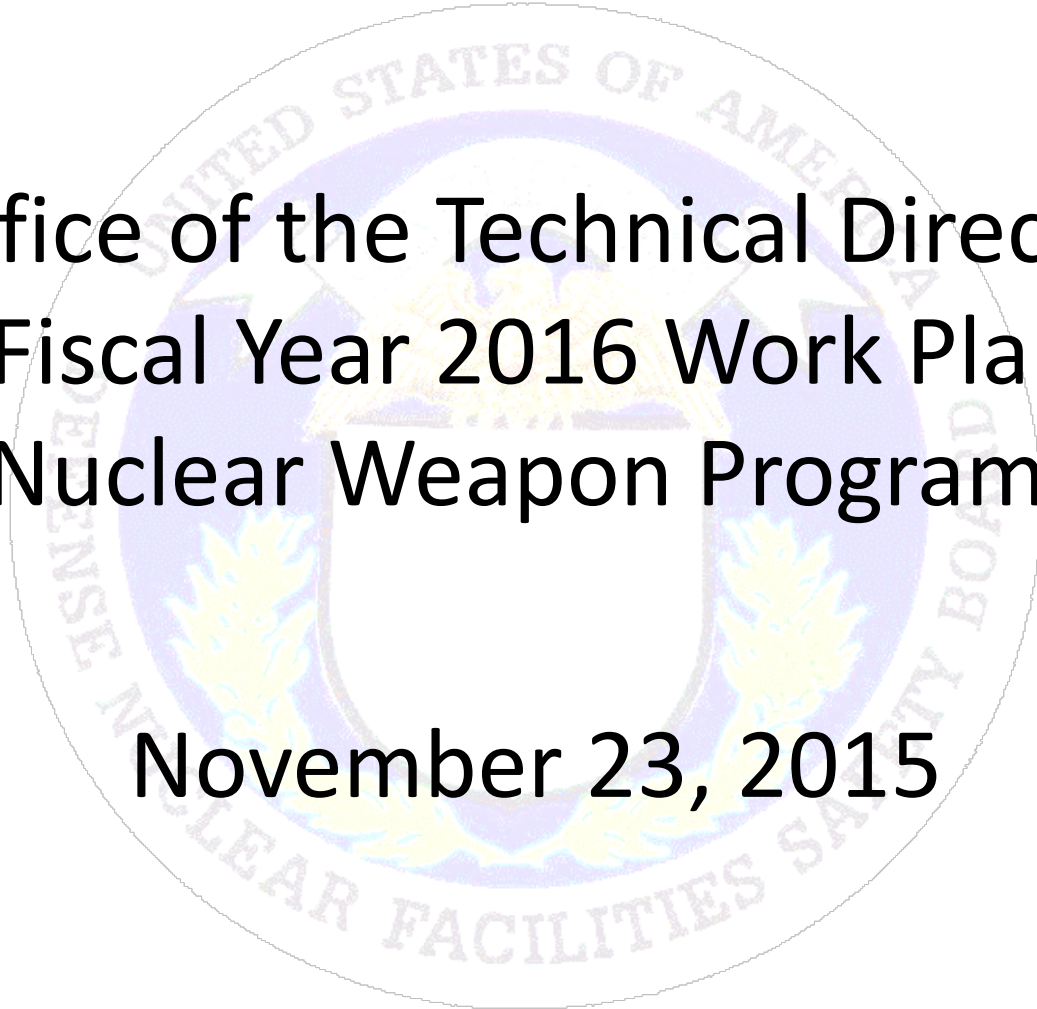
- Meeting staffing requirements for currently planned reviews
- Reviews of DOE directives
- Unexpected event or safety issue demanding immediate attention
- Specific technical expertise required



Acronyms

- AC: Administrative Controls
- DOE: Department of Energy
- EM: Environmental Management
- EP&R: Emergency Preparedness and Response
- FTE: Full Time Equivalent
- IP: Implementation Plan
- LANL: Los Alamos National Laboratory
- LLNL: Lawrence Livermore National Laboratory
- NNSA: National Nuclear Security Administration
- NNSS: Nevada National Security Site
- NPA: Nuclear Programs and Analysis
- NQA-1: Nuclear Quality Assurance-1 (Standard)
- OTD: Office of the Technical Director
- QA: Quality Assurance
- R201X-X: Board Recommendation 201X-X
- rem: Roentgen equivalent man
- RevCom: Review and Comment
- SNL: Sandia National Laboratories
- SQA: Software Quality Assurance
- SRS: Savannah River Site
- SSC: Structures, systems, and components
- TEDE: Total Effective Dose Equivalent
- TSR: Technical Safety Requirements
- WIPP: Waste Isolation Pilot Plant
- WTP: Waste Treatment and Immobilization Plant
- Y-12: Y-12 National Security Complex





Office of the Technical Director
Fiscal Year 2016 Work Plan
Nuclear Weapon Programs

November 23, 2015

Introduction and Overview

- Improve Safety of Operations to ensure adequate protection of public and worker health and safety at NNSA's* defense nuclear facilities:
 - NNSA facilities at LANL, Pantex, and Y-12 (maintaining a near continuous presence at these sites)
 - LLNL and SNL
 - NNS and SRS Tritium Facilities
 - The functional area NES
- The NWP Group performs independent and timely oversight to strengthen safety of operations involved in the maintenance of the nuclear weapons stockpile, and in weapons-related research, development, and testing



*A list of acronyms is provided on the final slide of this section.

Priorities

- Factors that affect priorities:
 - Risks to the public and the workers
 - Types and quantities of nuclear and hazardous material-at-risk
 - Process and setting of the operations involved
- Practical impact:
 - In general, based on quantities of material-at-risk and proximity to the public, LANL, Y-12, and Pantex are higher priority sites; the current state of operations at LANL makes it the highest of these three
 - NES is in a category all its own
 - Based on distance to the public (NNSS) or the presence of lesser quantities/types of material-at-risk (LLNL, SNL, Tritium), these sites are lower priorities.



Accounting for Programmatic Issues

- Emergency Preparedness & Response:
 - Remains an overriding Board priority
 - Major reviews at LANL & Pantex
 - Several opportunities to observe at LLNL, SNL, NNS
- Safety Bases:
 - The foundation upon which all NNSA activities are built
 - At least one assessment of a safety basis at each site, including major reviews at LANL (PF-4), Pantex (NES activities), Y-12 (selected older facilities), and Tritium (TEF)
 - Selected aspects will be reviewed at NNS (NCERC), LLNL & Pantex (implementation of TSRs), and SNL (ACRRF)



Additional Programmatic Issues

- Quality Assurance/Software Quality Assurance:
 - Major reviews at Pantex & NNS
 - Other opportunities to observe/assess at LANL, LLNL, & Pantex
- Nuclear Criticality Safety:
 - Continuing oversight at LANL (PF-4)
- Conduct of Operations/Conduct of Maintenance:
 - Heavy emphasis at LANL (PF-4)
 - Deeper looks at Pantex and Y-12, including NNSA oversight
 - At least quarterly visits to LLNL, NNS, and SNL
- Planning for FY 2017 Weapon Response development review
 - Specifically requested by the Board

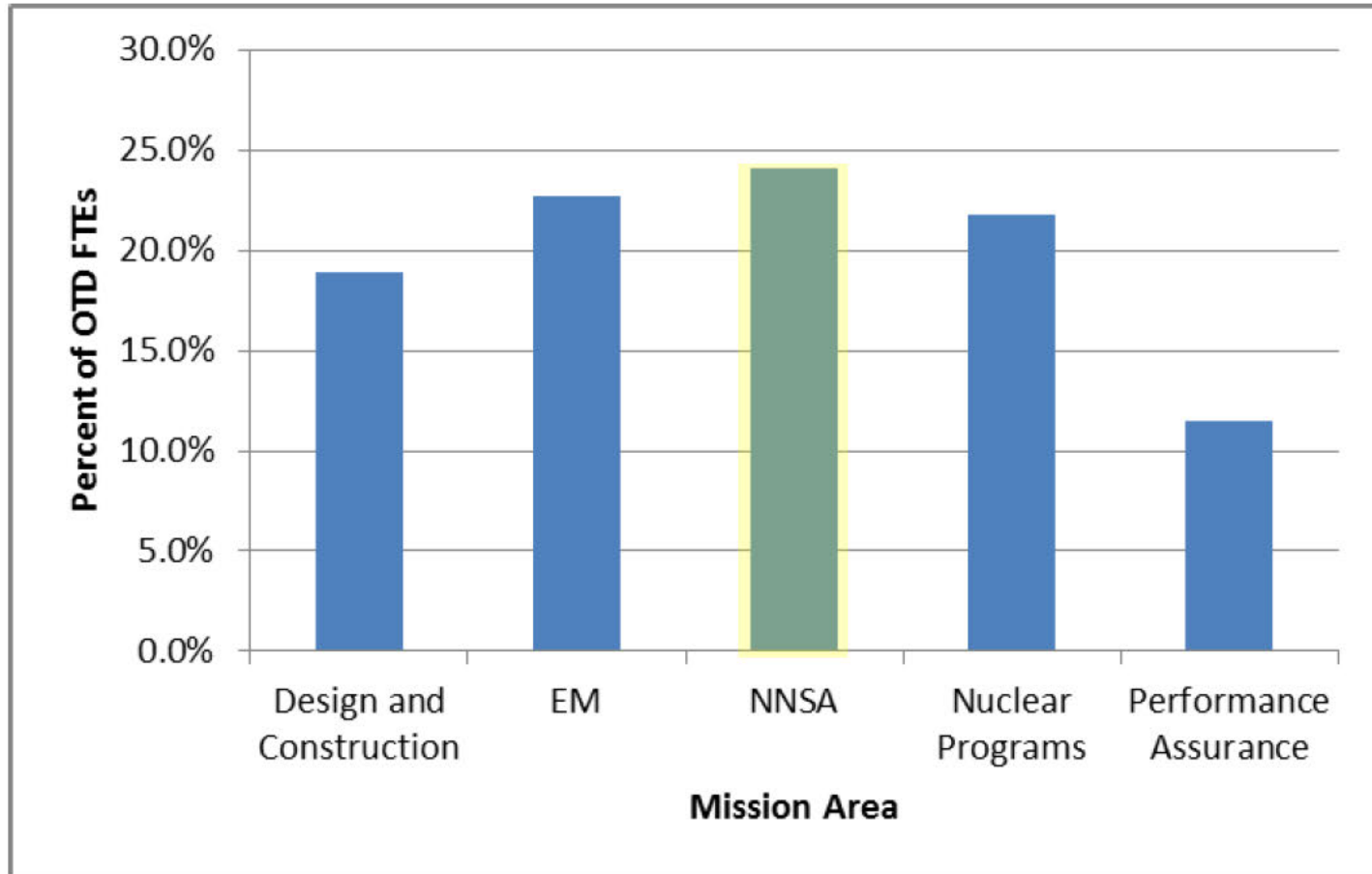


Some Lessons Learned from WIPP

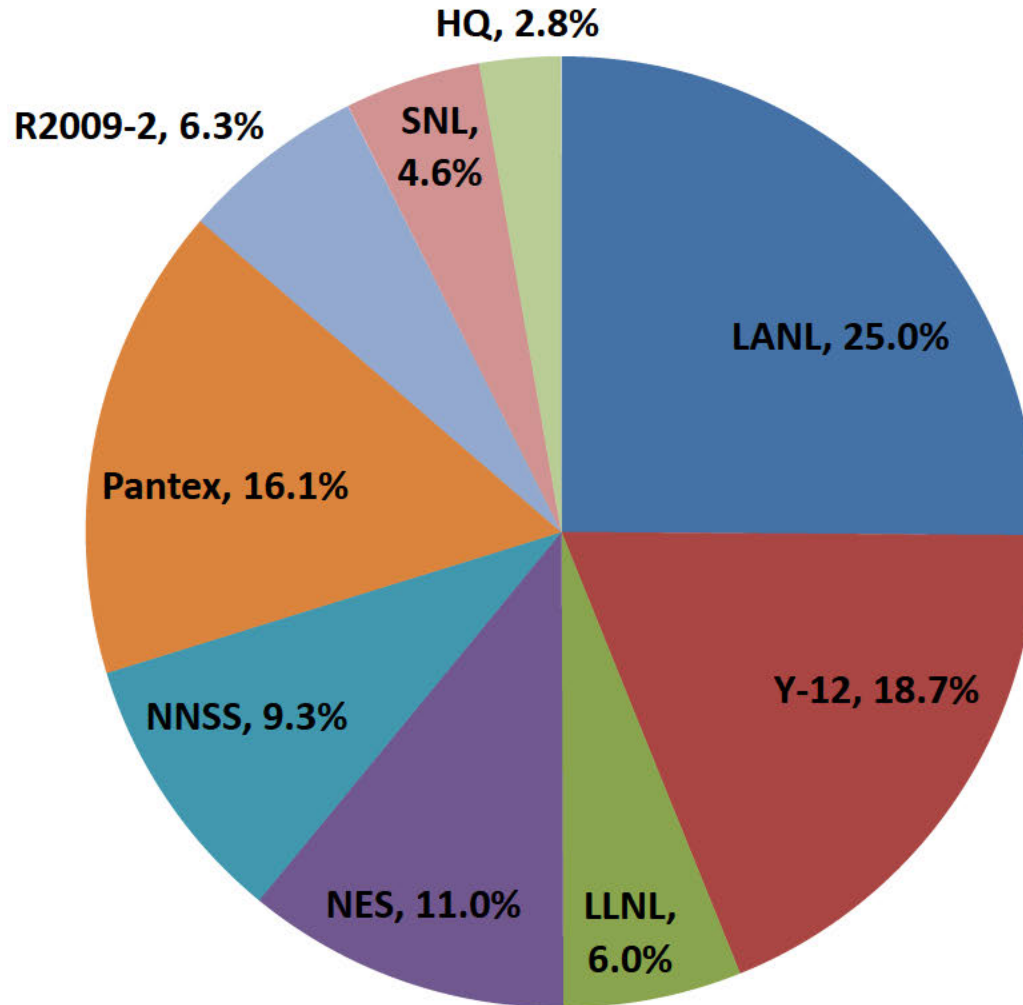
- As committed to in the Technical Staff's Corrective Action Plan:
 - Formalize planning for a minimum of one staff-team review per quarter at LLNL, NNSS, and SNL
 - Develop monthly site reports, post on internet
 - Gain/Maintain access to site issue reporting
 - Focus on operations



FY 2016 NWP Manpower Usage



FY 2016 NWP Work Breakdown



NWP Focus on LANL

- Emergency Preparedness & Response
- Continuing focus on the confluence of issues surrounding PF-4 and its Documented Safety Analysis:
 - Resuming operations following Nuclear Criticality Safety pause
 - Addressing Conduct of Operations issues
 - Resolving continuing seismic/structural concerns (including remaining aspects of R2009-2)
 - Pursuing reductions in Material-at-Risk
- Complicated by the constraints on Transuranic Waste Ops:
 - 4 open PISAs in Area G
 - Physical deficiencies in transportation, RANT, WCRRF
 - Improperly remediated nitrate salt-bearing waste



NFDI Focus on LANL

For all major construction projects:

(1) Need to design in safety (2) Need to identify safety issues early

- Plutonium Infrastructure:
 - Oversight of NNSA activities to transition operations out of the Chemistry and Metallurgy Research Facility
- Transuranic Waste Facility:
 - Follow-up reviews to resolve open Board issues from project letter
 - Review new Documented Safety Analyses as the project nears completion of construction activities
 - Transition to NWP Group for start-up
- Transuranic Liquid Waste:
 - Review of new Preliminary Safety Design Report



NWP Focus on Y-12

- Reviews of safety bases and vital safety systems:
 - Building 9204-2E Safety Analysis Report
 - Building 9215 Safety Analysis Report
 - Area 5 De-inventory
 - Fire Suppression Systems
 - Confinement Ventilation Systems
- Oversight Programs:
 - NPO Oversight [including Pantex]
 - Contractor Assurance System
- Disciplined Operations



NFDI Focus on Y-12

For all major construction projects:

(1) Need to design in safety (2) Need to identify safety issues early

- Uranium Processing Facility:
 - Preliminary design activities
 - Review new Preliminary Safety Design Report
- Direct Electrolytic Reduction/Electro-refining:
 - Response to recent project letter
 - Staff found that that this project consists of low hazard activities



NWP Focus on Pantex

- Emergency Preparedness & Response
- Continuing focus on the myriad issues surrounding the facility and weapon program safety bases:
 - Unreviewed Safety Question/New Information processes
 - Dispersion calculations
 - Special Tooling, including Falling Man scenarios
 - Implementation of Technical Safety Requirement controls
 - And the documentation that controls these processes
- Selected Safety Management Programs:
 - Several weapon program readiness assessments
 - NPO Oversight [including Y-12]
 - Quality Assurance/Software Quality Assurance
 - Conduct of Maintenance



NWP Focus on NES

- Heavy NNSA Schedule for NES Studies:
 - At least 3 major weapon family studies expected
 - Impending Special Tooling upgrade for another weapon family
 - Followed by appropriate readiness activities
- NES Change Evaluations:
 - Up to half a dozen opportunities to observe expected



NWP Focus on NNSS

- Device Assembly Facility:
 - Review of updated Documented Safety Analysis, including NCERC
 - Continue pursuing safety issues with the fire suppression system
 - Verify adequacy of ventilation system modifications
- Observe application of lessons learned from WIPP at U1a
- Safety Management Programs:
 - Quality Assurance/Software Quality Assurance
 - Several opportunities to observe external assessments
- More formal scheduling of staff oversight



NWP Focus on LLNL, SNL, & Tritium

- LLNL:
 - Emergency Exercise observations
 - Review of safety basis control implementation
 - Thorough scrub of Superblock ventilation systems
 - Closeout of PSHA concerns
 - More formal scheduling of staff oversight
- SNL:
 - Observe site-wide Emergency Exercise
 - Review ACRRF Documented Safety Analysis Upgrade Implementation
 - Selected reviews of research reactor safety bases & operations
 - More formal scheduling of staff oversight
- Tritium (at SRS):
 - Closeout of TEF Documented Safety Analysis review safety issues



Uncertainties

- NWP Group review plans will need to adapt to changes in NNSA programs and activities, such as:
 - Delays or pauses in operations, such as at LANL (observed PF-4 restart delays, current Area G operational pause) and Pantex (recent strike)
 - NNSA programs suspended or delayed due to NNSA resource issues
- Cascading impacts may result in Technical Staff resource conflicts
- Emergent events in the DOE defense nuclear complex (not necessarily within the NWP Group portfolio) may require redirection of Technical Staff resources



Acronyms

- ACRRF: Annular Core Research Reactor Facility
- EM: Office of Environmental Management
- FTE: Full Time Equivalent
- HQ: Headquarters
- LANL: Los Alamos National Laboratory
- LLNL: Lawrence Livermore National Laboratory
- NCERC: National Criticality Experiments Research Center
- NES: Nuclear Explosive Safety
- NFDI: Nuclear Facility Design and Infrastructure
- NNSA: National Nuclear Security Administration
- NNSS: Nevada National Security Site
- NPO: NNSA Production Office
- NWP: Nuclear Weapon Programs
- OTD: Office of the Technical Director
- Pantex: Pantex Plant
- PF-4: Plutonium Facility
- PSHA: Probabilistic Seismic Hazards Analysis
- RANT: Radioassay and Nondestructive Testing Facility
- R2009-2: Board Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility Seismic Safety*
- SNL: Sandia National Laboratories
- SRS: Savannah River Site
- TEF: Tritium Extraction Facility
- WCRRF: Waste Characterization, Reduction, and Repackaging Facility
- WIPP: Waste Isolation Pilot Plant
- Y-12: Y-12 National Security Complex





Office of the Technical Director
Fiscal Year 2016 Work Plan
Nuclear Material Stabilization
and Processing

November 23, 2015

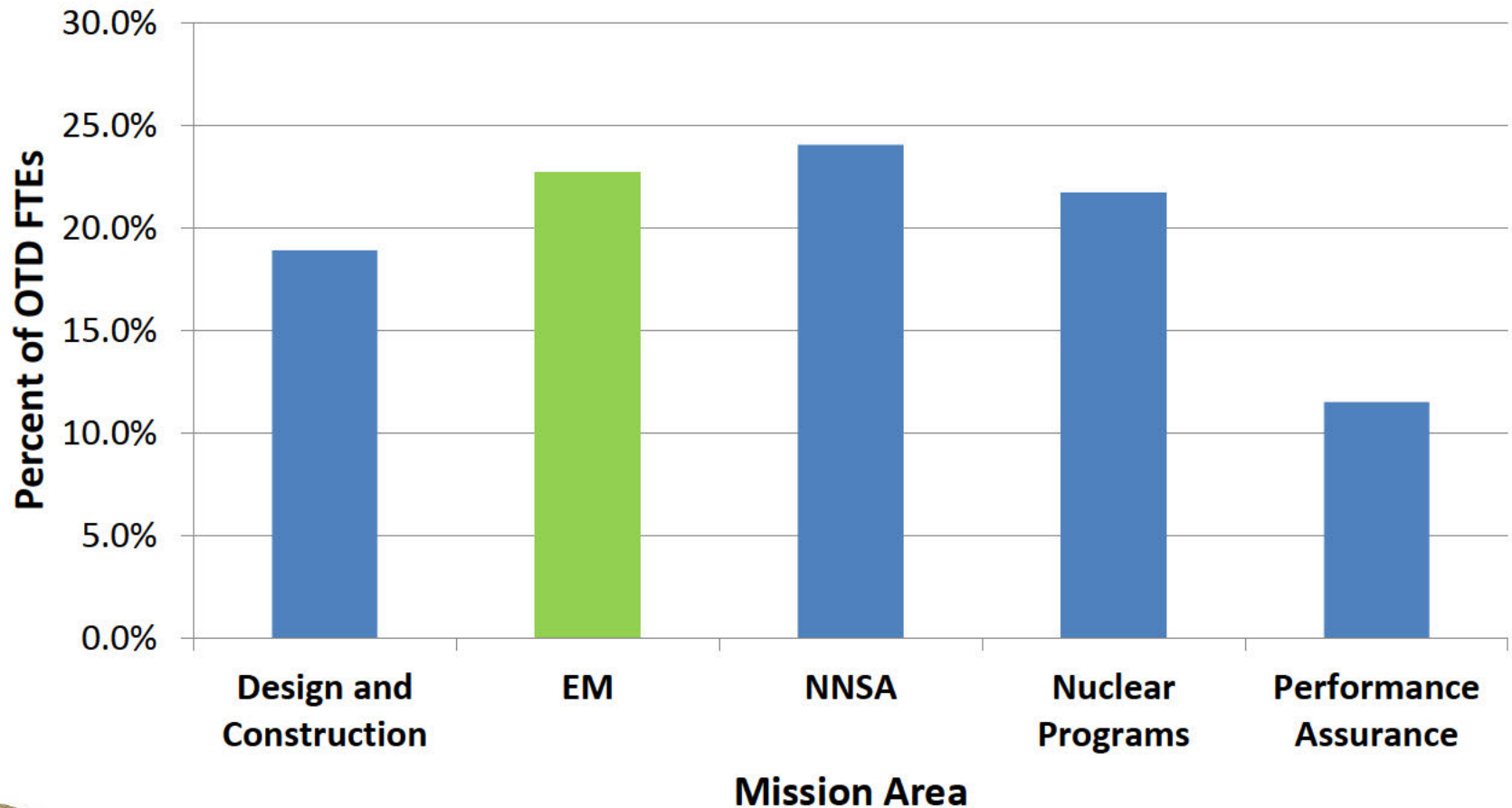
Introduction and Overview

- Improve Safety of Operations to ensure adequate protection of the public and worker health and safety at EM* facilities at:
 - Savannah River and Hanford sites (maintaining a near continuous presence at these sites)
 - Idaho and Oak Ridge National Laboratories
 - The Waste Isolation Pilot Plant at Carlsbad, New Mexico.
- The NMPS group performs independent and timely oversight to strengthen safety of operations in the cleanup of legacy nuclear waste and facilities



*A list of acronyms is provided on the final slide of this section.

NMPS Manpower Usage



What and Why?

- Safe restart of WIPP
 - Cumulative risk of backlog at sites
 - Get the safety basis right
 - Protect the site from the generator sites
- Adequacy of Safety Bases
 - Risk/dose consequence to the public and collocated workers
 - Complexity of operations
 - Time since last reviewed

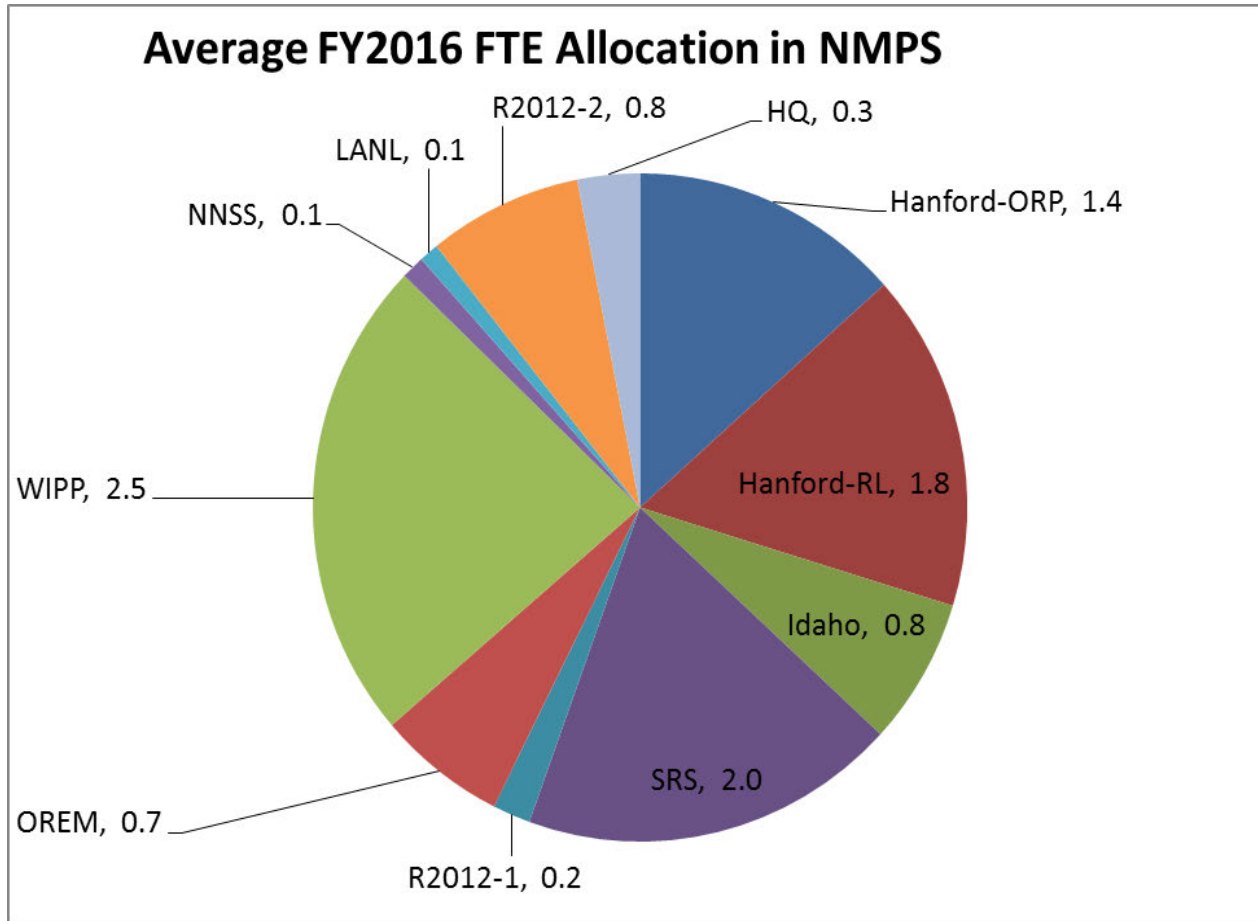


What and Why? (cont.)

- Safety Management Programs
 - How strong is the program?
 - How well is it run?
 - Biased toward WIPP this year
- Major construction projects
 - Need to design in safety
 - Early identification of safety issues



FY 2016 NMPS Work Breakdown



Highlights from FY 2015

- Learned a little about what we didn't know
 - Risk ranked DSAs at INL and Hanford
 - Used to inform this year's work plan
 - Identified 4 PISAs
 - Ended up as positive USQs
 - Tangible improvements in facility safety
 - And perhaps site safety



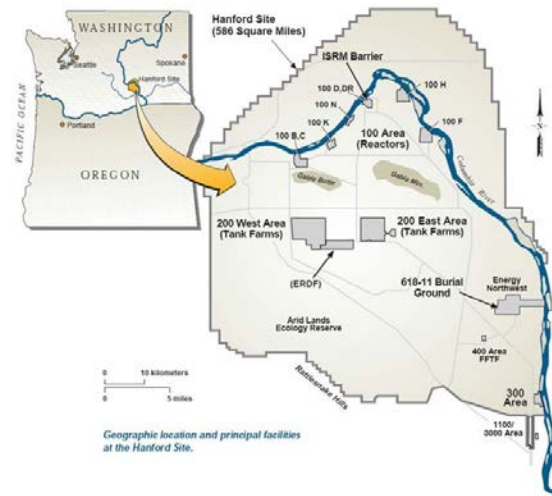
WIPP Focus Areas

- Consolidated Evaluation of the Safety of the Situation
- Documented Safety Analysis Revision 5
- Oversight of generator sites
- Safety Maintenance Programs
 - Fire Protection
 - Electrical Distribution
 - Maintenance and Work Planning
 - Equipment status
- Readiness activities
- NFDI coverage of new underground ventilation
 - Transition from conceptual to preliminary design



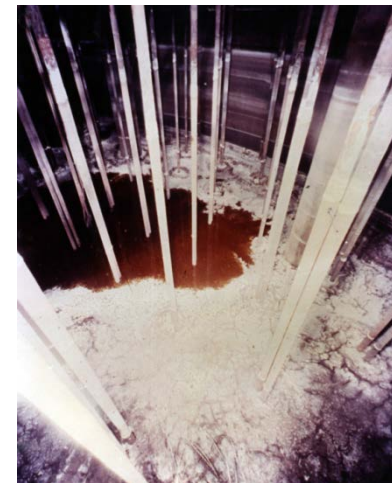
Hanford Focus Areas

- Slight shift from SRS to Hanford in this year's plan
 - Cognizant engineer stability
 - Rebalance
- Big emphasis on safe demolition of Pu Finishing Plant
 - Area G/WCRRF type concerns
 - Inherent risk in off-normal ops
 - Schedule pressure
- Tank Farms safety basis
- On-Site Transportation
- Purex (Tunnels) and Redox
- Waste Treatment Plant
 - Focus on LAWPS and direct feed to LAW
 - Outstanding Board concerns



Savannah River Site Focus Areas

- Complete FY 2015 initiated reviews
Intend to use same teams as Hanford
 - SRNL safety basis and H-Canyon/HB-Line criticality safety
- Tank Farms safety basis
- Transportation
 - Intend to use same teams as Hanford
- Salt Waste Processing Facility Construction
 - Transition from construction to operations
 - Documented Safety Analysis



Idaho Focus Areas

- Continued coverage of Integrated Waste Treatment Unit startup

- IWTU I&C review

- Safety basis for Radioactive

Waste Management Complex

- Potentially new information/USQ processes



Oak Ridge National Laboratory Focus Areas

- Transuranic Waste Processing Center
 - Conduct of operations
 - Following contractor change
 - Safety Basis
 - Preliminary design of Sludge Buildout Project

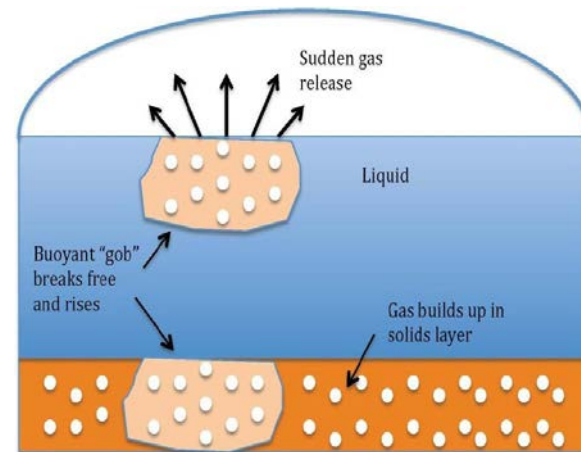


Additional Focus Areas

- Open Board Recommendations
 - 2012-1, *Savannah River Site Building 235-F Safety*
 - 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*



Plutonium Fuel Form (PuFF) Cell (Building 235-F)



Flammable Gas Generation – HLW Tank



Uncertainties

- NMPS Group review plans will need to adapt to changes in EM programs and activities
 - Delays or pauses in operations, such as at IWTU, WIPP, or PFP
 - EM programs suspended or delayed due to EM resource issues
 - Regulator actions due to missed deadlines at each site
- Cascading impacts may result in Technical Staff resource conflicts
- Emergent events in the DOE defense nuclear complex (not necessarily within the NMPS Group portfolio) may require redirection of Technical Staff resources



Acronyms

- DSA: Documented Safety Analysis
- EM: Office of Environmental Management
- FTE: Full Time Equivalent
- HQ: Headquarters
- I&C: Instrumentation and Control
- INL: Idaho National Laboratory
- IWTU: Integrated Waste Treatment Unit
- LANL: Los Alamos National Laboratory
- LAW: Low-Activity Waste
- LAWPS: Low-Activity Waste Pretreatment System
- NFDI: Nuclear Facility Design and Infrastructure
- NMPS: Nuclear Material Processing and Stabilization
- NNSA: National Nuclear Security Administration
- NNSS: Nevada National Security Site
- OREM: Oak Ridge Office of Environmental Management
- ORP: Office of River Protection
- OTD: Office of the Technical Director
- PFP: Plutonium Finishing Plant
- PISA: Potential Inadequacy in the Safety Analysis
- R2012-1: Board Recommendation 2012-1, *Savannah River Site Building 235-F Safety*
- R2012-2: Board Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*
- RL: Richland Operations Office
- SRNL: Savannah River National Laboratory
- SRS: Savannah River Site
- USQ: Unreviewed Safety Question
- WCRRF: Waste Characterization, Reduction, and Repackaging Facility
- WIPP: Waste Isolation Pilot Plant

