



Exploring the Benefits and Future of Small-Scale, Laboratory-Focused Interagency Radiological Response Field Exercises

Rio Grande Chapter Health Physics Society Technical Meeting
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Presenter:
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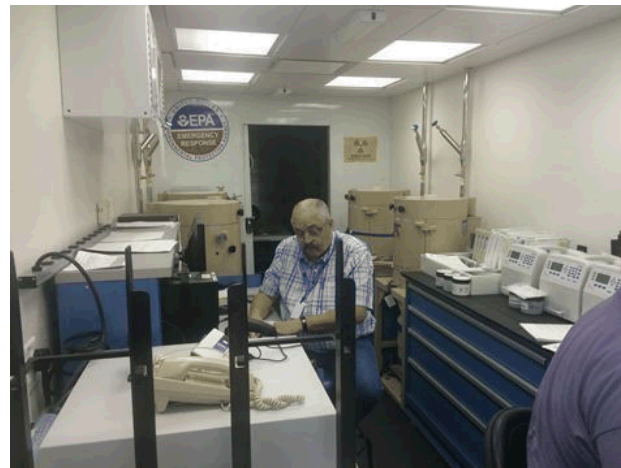
Sandia National Laboratories
Federal Radiological Monitoring & Assessment Center—Lab Analysis Division
SAND Report Number SAND2017-XXXX



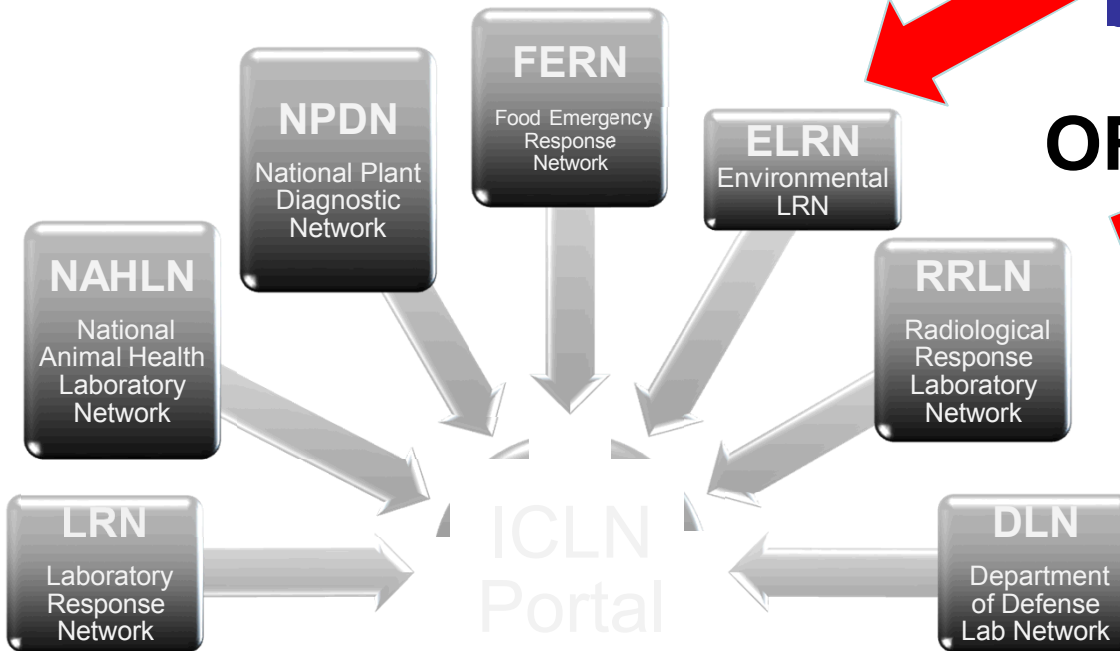
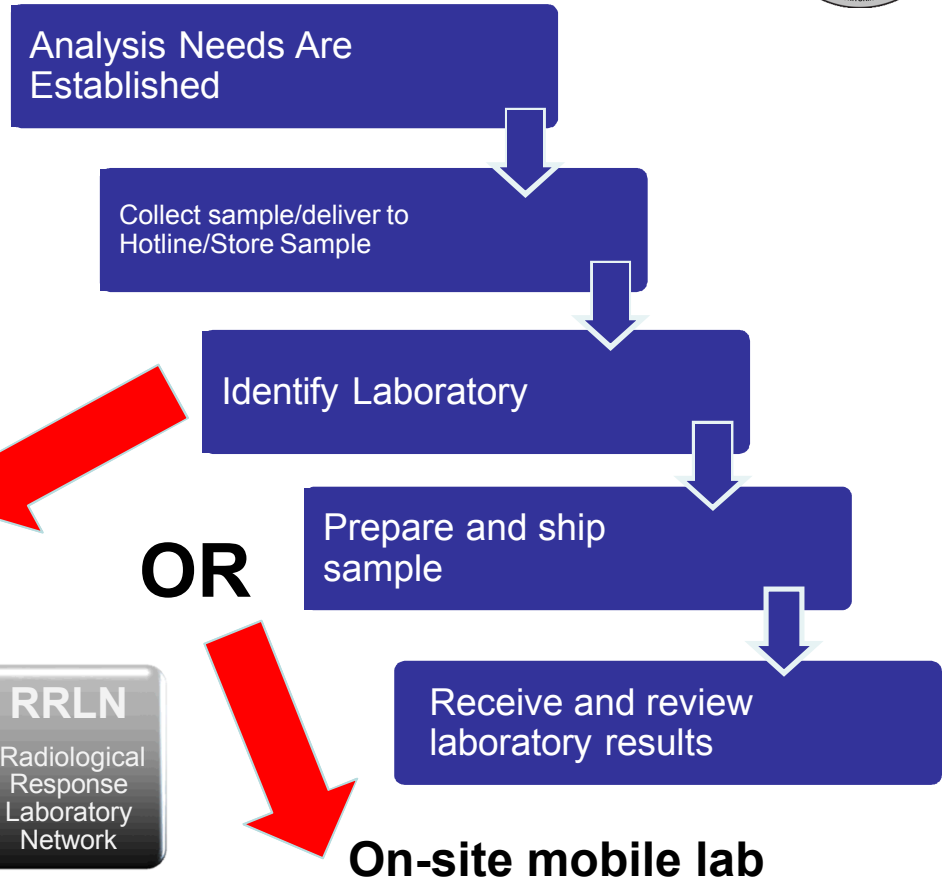


Presentation Outline

- Laboratory assets available for radiological response
- Laboratory challenges in large scale field exercises
- Recent examples of small-scale, lab-focused exercises
 - FRMAC/EPA mobile lab inter-comparison drill—Las Vegas, NV (2014)
 - FRMAC/EPA/RAP field drill—Savannah River Site (2014)
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 - FRMAC/EPA field drill—Albuquerque Fairgrounds (2016)
- Lessons learned and opportunities for the future



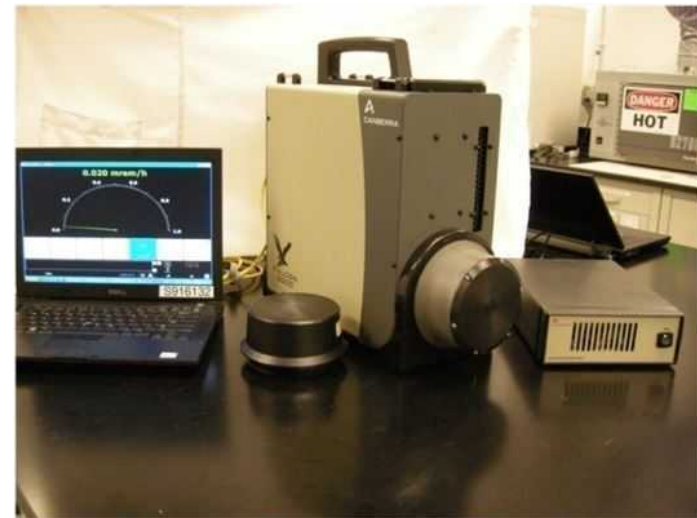
Laboratory Analysis Division Responsibilities



Federal Deployable Laboratory Assets



- FRMAC Lab Analysis Division resources
- DOE Fly Away Laboratory
- EPA Mobile Environmental Radiation Laboratory (MERL)
- EPA Sample Preparation Laboratory



Field Exercise Challenges for Laboratories



Not enough
time in
exercises

Lab processes
often
notionalized

No
radioactivity in
samples

Mobile lab
interoperability

How to
incorporate
off-site labs?



FEMA-NIRT Project Plan 2014



- Conduct joint lab-focused drills with 2 EPA MERLs and FRMAC Lab Analysis
 - Drill with MERL stationed at Las Vegas, NV
 - Drill with MERL stationed at Montgomery, AL
- Cross-training/equipment familiarization with both EPA MERLs
- Sample inter-comparison with EPA MERL and DOE Fly-Away Lab (FAL)
- Identify areas of potential collaboration on sample preparation capabilities
- Improve conduct of operations between MERLs and FAL



FRMAC/EPA Mobile Lab Inter-comparison Drill— Las Vegas, NV (2014)



- 2-day joint drill with FRMAC Fly-Away Lab (FAL) and EPA MERL stationed at Las Vegas, NV
- Lab inter-comparison study
 - 17 pre-staged, laboratory performance testing samples
 - Samples logged in at FRMAC Sample Control and distributed to labs
 - Samples re-packaged in EPA Sample Preparation Laboratory (SPL)
 - Samples analyzed, traded and re-analyzed
 - Data packages returned to FRMAC for results comparison



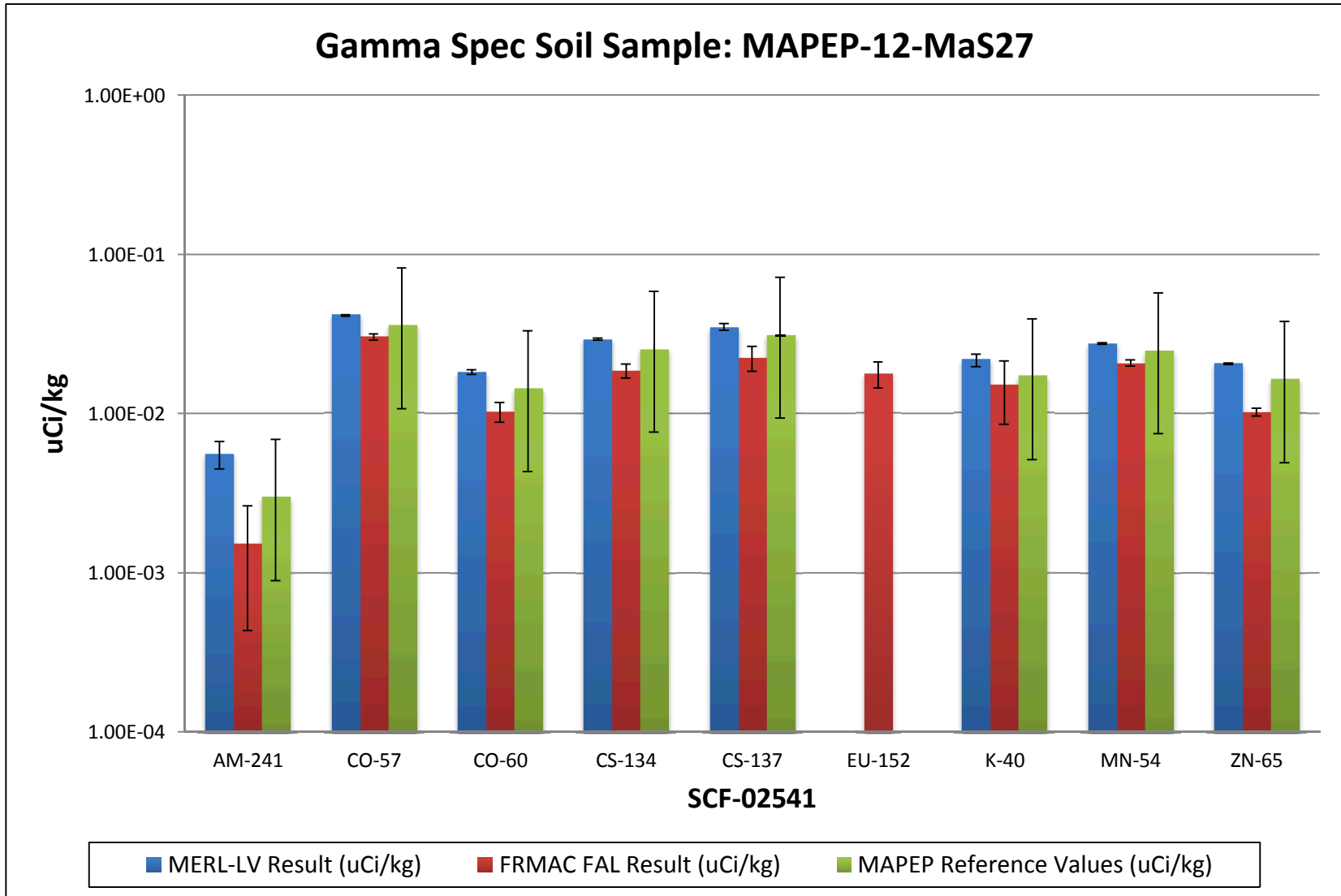
FRMAC/EPA Mobile Lab Inter-comparison Study Las Vegas, NV (2014)



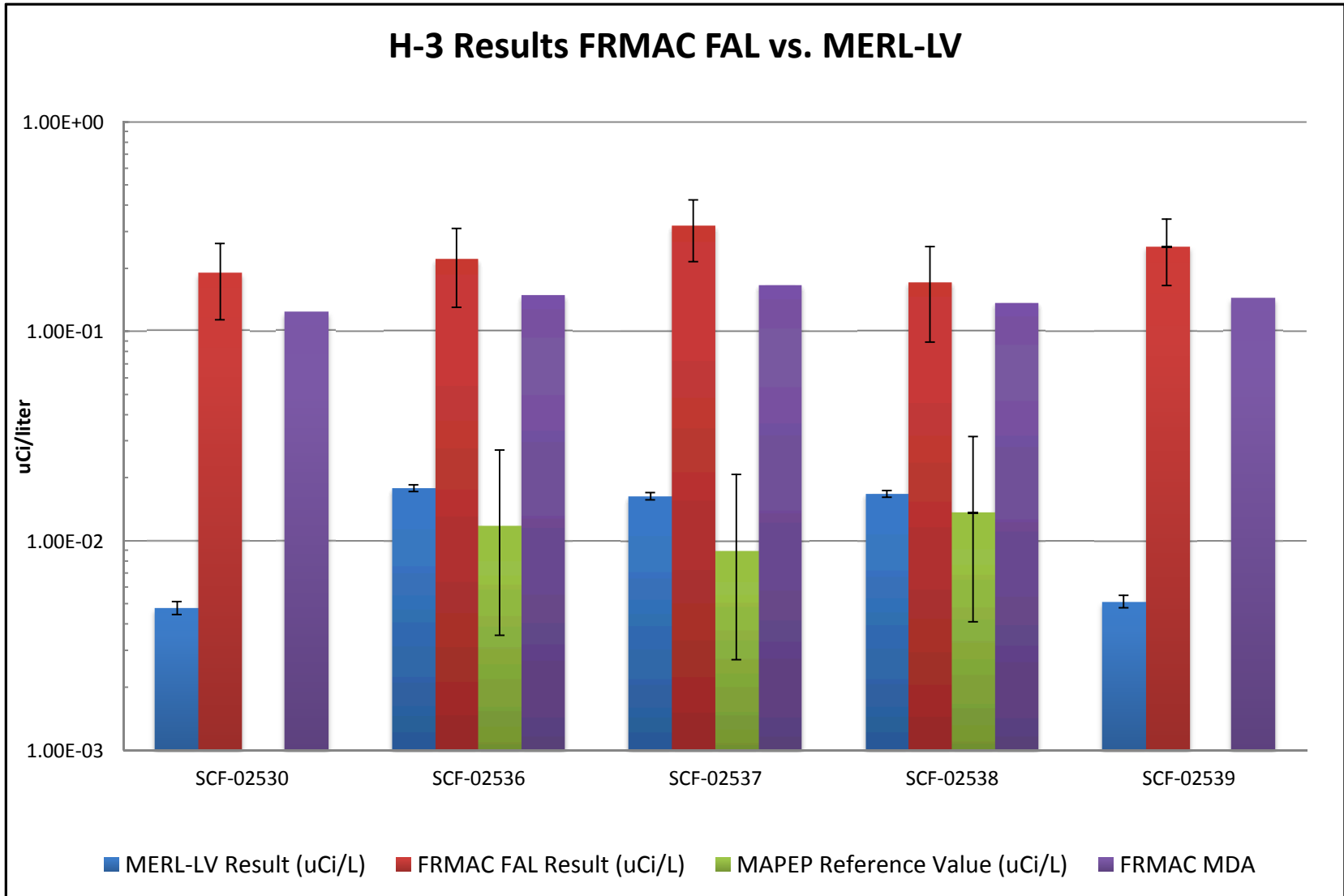
- MAPEP (DOE Multi-Analyte Performance Evaluation) Samples:
 - 5 Gross alpha/Gross Beta Air Filters
 - 1 mixed nuclide Air Filter for Gamma Spec
 - 5 mixed nuclide Soil Samples for Gamma Spec
 - 5 mixed nuclide Water Samples for Gamma Spec and Tritium



FRMAC/EPA Mobile Lab Inter-comparison Study



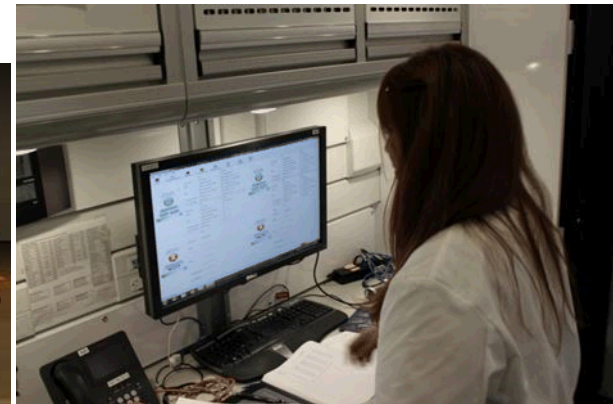
FRMAC/EPA Mobile Lab Inter-comparison Study



Lessons Learned: FRMAC/EPA Mobile Lab Inter-comparison Drill Las Vegas, NV (2014)



- Good inter-laboratory exchange regarding analytical methods and processes
- Strengths and weaknesses of lab-based vs. portable instruments identified
- Recognition of the different sample prep capabilities
- Identified areas with potential for improved interoperability
 - Sharing of lab supplies and sources to reduce costs
 - Opportunity for labs to jointly develop gamma spec geometries and libraries



FRMAC/EPA/RAP Field Drill— Savannah River Site (2014)



- Objectives
 - Exercise focused on interaction between field teams and laboratory operations
 - FRMAC equipment familiarization with EPA MERL stationed in Montgomery, AL
 - EPA MERL training and qualification process for lab operators
 - Identify areas of potential collaboration on sample preparation capabilities
 - Analyze spiked soil samples in exercise environment
- Participants included FRMAC Lab Analysis/Health & Safety, EPA MERL (AL), RAP-3, SC Department of Health and Environmental Control



Lessons Learned: FRMAC/EPA/RAP Field Drill— Savannah River Site (2014)



- 1 day of setup required to get EPA MERL and sample prep lab operational
- Pre-staging samples worked well
- “Back-end” processes were exercised (i.e. QA results, uploaded results into RAMS)
- 41 process improvements and 11 noteworthy practices identified (FEMA summary report)
- Opportunities for future interoperability recognized, including:
 - Resource sharing between EPA and FRMAC (lab supplies, office equipment, etc.)
 - Need to identify accountability in regards to waste disposal



FRMAC/EPA/RAP Field Drill— Savannah River Site (2015)



FRMAC Objectives:

- Involve both on-site mobile and off-site laboratories
- Incorporate more spiked PT samples
- Train new lab analysis personnel
- Ship samples to an off-site laboratory
- Test FRMAC Web Portal functionality



FRMAC/EPA/RAP Field Drill— Savannah River Site (2015)



EPA Objectives:

- Receive, screen, process samples and report results from MERL and National Analytical Radiation Environmental Lab (NAREL)
- Implement new EPA Lab Information Management System
- Liaison with South Carolina State mobile lab staff



FRMAC/EPA/RAP Field Drill— Savannah River Site (2015)



- Participants: FRMAC Lab Analysis/Health and Safety, EPA MERL, SC DHEC (Field Teams and Mobile Lab staff), 43rd Civil Service Team
- Pre-staged samples and data
 - Pre-staged, spiked samples ready for immediate delivery to on-site mobile laboratory (EPA MERL)
 - Pre-staged, spiked samples at EPA NAREL laboratory (Montgomery, AL)
 - Pre-staged data packages available for immediate QA/QC review
- Field teams collected soil, water, vegetation, air samples
- Samples processed through FRMAC hotline and delivered/shipped to:
 - On-site EPA Mobile Laboratory
 - Off-site EPA NAREL laboratory (Montgomery, AL)
- Electronic and hardcopy results received from:
 - EPA Mobile Laboratory
 - EPA NAREL via the Lab Analysis Web Portal
- QA/QC Data verification performed and uploaded into RAMS



Lessons Learned: FRMAC/EPA/RAP Field Drill— Savannah River Site (2015)



- FRMAC QA/QC data review processes practiced in real time
- Off-site labs can be integrated into exercise play with real samples
- FRMAC shipping process and tools need to be refined/developed
- Additional training needed for trouble shooting FRMAC Web Portal
- Communications between groups are strengthened through regular practice



FRMAC/EPA Field Drill Albuquerque Fairgrounds (2016)



- EPA MERL and SPL; Sandia FRMAC Lab Analysis group
- Breakout training
 - Contamination control
 - Sample control process flow
- Pre-staged performance testing samples provided by FRMAC Lab Analysis
 - MAPEP soil, vegetation and water samples
- EPA NAREL fixed lab participation
 - FRMAC analysis submitted request
 - Results reported through WebPortal (recently analyzed MAPEP P/T samples)



Summary of Lessons Learned from Lab-Focused Interagency Drills



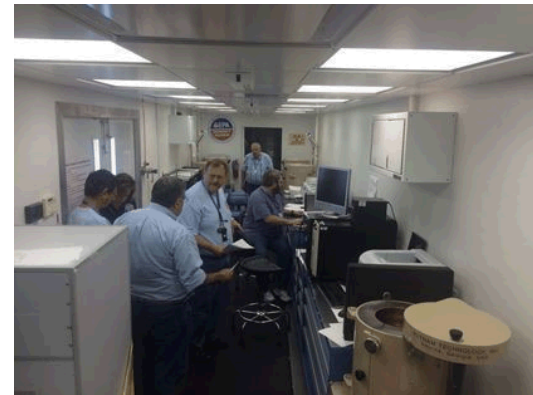
- Drills/exercises do not need to be elaborate to be beneficial
- Pre-staging samples and results allow labs to exercise full process
- Off-site labs can be incorporated into exercises in real time
- Performance testing samples allow for “real” radioactivity to be analyzed
- Process problems cannot be identified in a controlled environment





Opportunities for the Future

- Additional FRMAC/EPA lab-focused drills
 - Lab-focused drill at Remote Sensing Lab (RSL-LV) (June 2017)
- Opportunities for cross training between FRMAC and EPA
 - Waste segregation and contamination control training for mobile labs
 - EPA leadership shadowing lab manager role in FRMAC operations
- Incorporate State laboratories into drills (fixed and mobile)
 - Can be scalable based on budgets
- Involve local field teams for sample collection
- Share lab processes among States and feds to encourage consistency



Questions ?

