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Radiological Operations Support Specialist (ROSS) Pilot Course Summary and Recommendations

M. Alai, A. Askin, B. Buddemeier, L. Wogan, P. Doshi, L. Tai

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Disclaimer

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Executive Summary

In support of the Department of Homeland Security / Science and Technology Directorate's (DHS/S&T) creation of a new position called the Radiological Operations Support Specialist (ROSS), Lawrence Livermore National Laboratory (LLNL) in Sub-task 1.1 and 1.2 has assisted in the development of the ROSS skills, knowledge, and abilities (SKAs); identified potentially relevant training; cross-mapped the training to the SKAs; and identified gaps in the training related to the SKAs, as well as their respective level of training knowledge - current versus desired. In the follow on task, Sub-task 1.3, a 5 day ROSS Pilot Training course was developed to fill the priority gaps identified in Sub-Task 1.2. Additionally, in Sub-Task 1.5, LLNL has performed a gap analysis of electronic tools, handbooks, and job-aides currently available to the ROSS and developed recommendations for additional and next generation tools to ensure the operational effectiveness of the ROSS position.

This document summarizes the feedback received from the instructors and pilot course observers on what worked in the course and what could be improved as well as an assessment of the Pre- and Post- Test administered to the students. The feedback falls into three categories

1. Readily fixed content in the pilot course materials such as typos, updating of content with slides and instructor notes provided during the course, and other issues that can be quickly addressed post-course.
2. "Big Ideas" are feedback that evolved out of the course that will require significant time and effort to implement. These include the development of new resources for the ROSS to use in both future delivery of the course and as resources during an actual response and/or exercise.
3. Overall course recommendations which include feedback on the overall course structure and changes to content requiring significant time and effort to execute.

The ROSS Pilot course was well received and provides a solid foundation for continued development of the training for the ROSS position.

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1 ROSS Tasks Overview

1.1 Overview

During radiological and nuclear emergencies, routine decisions and operations for Federal, State, local and tribal response agencies become increasingly complex. These actions require radiation experts to safeguard the public and responders. Through the creation of a new position called the Radiological Operations Support Specialist (ROSS), the Departments of Homeland Security (DHS) and Department of Energy (DOE) want to train, equip, and certify radiation experts to integrate within the Incident Command System (ICS) during responses to radiological and nuclear incidents. These ROSS positions will directly support the Incident Commander (IC), agency decision makers, and elected officials.

The ROSS will be a Technical Specialist under the National Incident Management Systems (NIMS). The Department of Homeland Security's Science and Technology Directorate (DHS S&T) and the National Nuclear Security Administration's (NNSA) Office of Emergency Response are working with Federal Emergency Management Agency (FEMA) to establish the ROSS position by tasking LLNL to determine the appropriate ROSS skills, knowledge, and abilities (SKA), the associated job task analysis of the responsibilities desired for the ROSS to perform, a pilot ROSS training course, and identify the tools and resources available to a ROSS and the associated gaps. This undertaking drives the relevant and appropriate training and tools necessary for the ROSS position to succeed.

The Department of Homeland Security, Science and Technology Directorate (DHS S&T) has tasked Lawrence Livermore National Laboratory (LLNL) under IA HSHQPN-14-X-00216 Task 1 "Radiological Operation Support Specialist (ROSS) Position Training Requirements". In Sub-task 1.1 and 1.2, LLNL supported the development of ROSS SKAs, identified potentially relevant training, cross-mapped the training to the SKAs, and the identified gaps in the training related to the SKAs, as well as their respective level of training knowledge currently versus desired. In Sub-task 1.3, LLNL has developed a 5 day ROSS pilot training course, in Sub-task 1.4 supported DHS S&T, FEMA, and DOE National Nuclear Security Administration (NNSA) in developing certification standards for the ROSS position, and in Sub-task 1.5 assessed the gaps in tools and job aids available to the ROSS.

This report focuses on Sub-task 1.3, the ROSS Pilot Training Course and describes the framework, development, structure, feedback from the execution of the Pilot Course, future recommendations, and an assessment of the Pre- and Post- Test based on aggregate student performance.

2 ROSS Pilot Course Development

2.1 Framework

Sub-task 1.1 and 1.2, LLNL supported the development of ROSS SKAs, identified potentially relevant training, cross-mapped the training to the SKAs, and the identified gaps in the training related to the SKAs, as well as their respective level of training knowledge currently versus desired. The primary conclusion of this effort that drove the training development effort was that the largest number of SKA gaps requiring gap filling training was in the Radiological Response Knowledge and Tools and the ICS/ NIMS categories of the developed SKAs.

In order to assure the development of the pilot course covered the necessary topics to fill the SKA gaps, a framework was used to identify requirements, goals, and objectives that were directly trackable back to the SKAs. This provided structure for developing the "Training Blocks" (aka Blocks) in a modular structure that directly correlates with the requirements, goals, objectives, and SKAs. Very specific definitions are used to describe the framework.

The definitions and flow of the structure is shown in Figure 1. The requirements relate to the overall course structure and the direction and specific content that will be covered. The goals are broad educational objectives that are general intentions, intangible, abstract, and difficult to measure. The objectives are related to the response expected from the participant and are narrow, precise, tangible, concrete, and measurable. The objectives map directly to the SKAs and directly back to the goals.

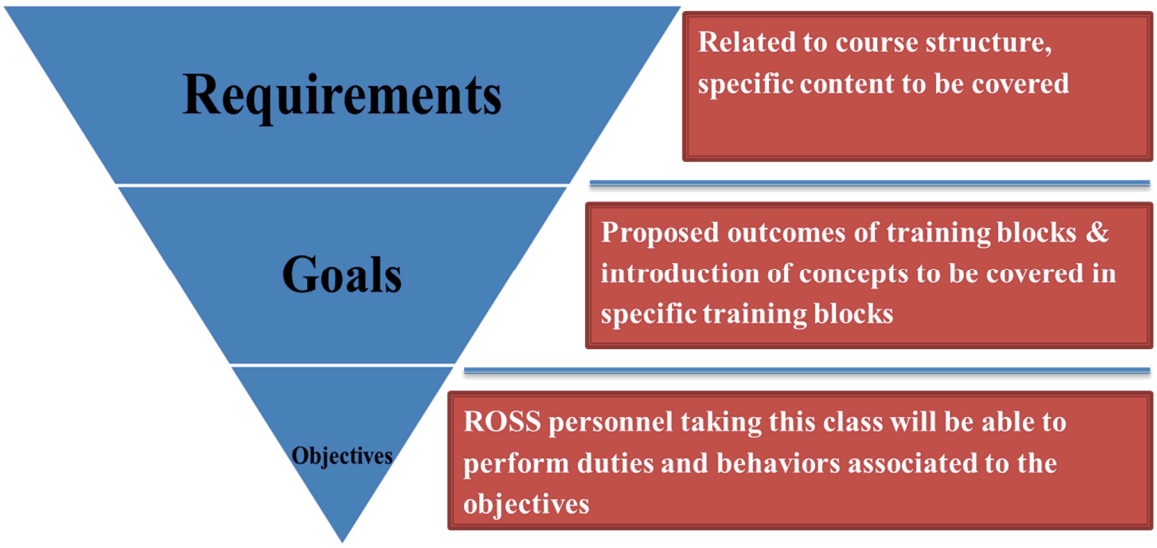


Figure 1. Framework used to develop ROSS Pilot Course and specific definitions used.

The list of basic requirements identified for the training is shown in Table 1. There were six course goals identified and are shown in Table 2. Additionally, twelve course objectives were identified and are shown in Table 3.

Table 1. Requirements for ROSS Pilot Training Course development

Requirements
Modular construct
Center for Domestic Preparedness (CDP) course format
Interactive sessions and student engagement
Use available training from other agencies
LLNL develop gap filling training
Pilot Course
Computer access during training
Designed for 15 to 20 students
Student participation performance assessment

Table 2. Six goals defined for ROSS Pilot Training Course development

Goals	
Goal 1	Ensure the ROSS can support a variety of State and local agencies
Goal 2	Increase understanding of the unique concerns and aspects of various radiological emergencies
Goal 3	Familiarize ROSS with the tools and support resources for community preparedness and consequence management
Goal 4	Provide ROSS with experiential learning opportunities to improve key skills for decision support and communication
Goal 5	Allow ROSS to support a variety of key roles within Incident Command System (ICS)/National Incident Management System (NIMS)/National Response Framework (NRF) and work with state and local agencies
Goal 6	Familiarize ROSS with the process for identifying appropriate public and responder protective measures

Table 3. Twelve objectives established for the ROSS Pilot Training course

Objectives	
Objective 1	Describe the different types of radiological threats, events, and their unique characteristics
Objective 2	Understand how federal response framework, doctrine and organizational guidelines apply to a radiological response
Objective 3	Describe how to integrate ROSS and execute work within Incident Command System (ICS) structure
Objective 4	Understand, identify, and access resources for capabilities, data products, and technical information

Objective 5	Understand how to distinguish, assess, interpret and apply products
Objective 6	Understand State and local response authorities, organizations, and jurisdictional issues important for radiological response
Objective 7	Understand different radiological instruments, their application, and data quality/applicability
Objective 8	Have awareness of nuclear/radiological tools, with novice proficiency of some tools.
Objective 9	Understand how to plan monitoring activities and use radiological field data
Objective 10	Understand rad emergency response references, technical standards and guidance and how they apply to the incident (e.g. Protective Action Guides (PAG)/Protective Action Recommendations (PAR)
Objective 11	Demonstrate effective communication of technical information to a range of technical and non-technical audiences
Objective 12	Understand job requirements, responsibilities, and the certification process for ROSS

These requirements, goals and objectives were used to establish the specific training Blocks that were to be developed for the pilot course. These Blocks are shown in Table 4.

Table 4. Training Blocks developed for ROSS Pilot Training course.

Blocks	
Block 1	Introduction
Block 2	ROSS Cadre Management
Block 3	Response Integration
Block 4	Guidelines, Standards, and References
Block 5	Incident Characteristics
Block 6	Foundation in Communicating Radiological Issues
Block 7	Resources
Block 8	Where the ROSS Rubber meets the Road: Applying Guidance
Block 9	Where the ROSS Rubber meets the Road: Tools
Block 10	Course Wrap Up

2.2 Course Content

LLNL developed course content from LLNL developed materials; William Irwin, Vermont Department of Health; Billy Haley, Emergency Management Services International, Inc (EMSI).; Bill Beal, Remote Sensing Laboratory - Andrews (NSTec), and open source resources that are identified in each Block's references section of the Instructor Guide and Student Manual.

2.3 Pilot Course Delivery

LLNL delivered the ROSS Pilot Course from September 19, 2016 to September 23, 2016 at the Homewood Suites in Linthicum, Maryland as sponsored by the Conference of Radiation Control Program Directors (CRCPD). The course had 16 students and multiple observers from

Department of Homeland Security – Science and Technology Directorate National Urban Security Technology Laboratory (DHS S&T NUSTL), Department of Energy (DOE) (including the Center for Radiological Nuclear Training (CTOS)), FEMA, EMSI, and LLNL. The observers have provided comments and observations from their perspectives. Appendix A contains the received comments.

The observations and comments can be broken out into two main categories

1. Specific course content corrections and changes
2. "Big Ideas", which are observations and recommendations for large scale changes and additions to the course approach and development of new resources.
3. Overall course recommendations for future changes and improvements

2.3.1 Course Content Corrections and Changes

The specific course content corrections and changes consist of typos, clarification of content with additional section break slides, incorporation of instructor notes provided post- course, updates to Instructor Guides and Student Manuals. These have been incorporated into the instructional presentation slides, Instructor Guides, Student Manuals, and corresponding Block homework and exercises. These materials are available through DHS S&T NUSTL. There were additional comments, observations, and recommendations on the content within the slides from the instructors and observers. Unfortunately, the level of effort to incorporate all of those changes is beyond the remaining time available under IA HSHQPN-14-X-00216. These observations, comments, and recommendations received from the instructors and observers are contained in the Appendix A of this document.

2.3.2 "Big Ideas"

The "Big Ideas" category consists of items that would not only help the ROSS course but also potentially serve as additional resources for the Operational ROSS role. The initial set of "Big Ideas" identified immediately post-course delivery are outlined below.

1. Develop a ROSS Exercise and/or series of exercises – develop specific scenario/scenarios with exercise products similar to a national exercise.
    a. Use to simulate when and how a ROSS would access incident data, interpret data products and how to explain and discuss a data product within their assigned area in the ICS. The exercises could be used to demonstrate the sequence of events during a radiological response and could also be used to play out specific roles:
        i. Example scenario: Incident Command (IC) Safety Officer interface exercise working with incident data on a worker safety issue/product for the Incident Action Plan (IAP)
    b. Release After Action Reports post course to students
2. ROSS Best Practices – students consistently requested a resource to assure they were making consistent assessments/recommendations as their colleague ROSSs. Ideas consisted of information on standardized ROSS decision making/best practices to ensure consistency across the ROSS. This could include the types of evacuation situations and the decisions that have to be made. While it is recognized that each response situation

varies and response actions will also vary, a generalized "best practices" should be evaluated.

3. ROSS post course activities and skill building
    a. Provide mechanism for ROSS to share information and experiences with each other
    b. Provide mechanism for ROSS skill building – possibly through quarterly meetings
4. ROSS specific tool/resources development
    a. ROSS Emergency Operations Center Job-Aide (i.e. Immediate Response and Planning P)
    b. Compile the Federal resource material from Block 8 Module 1 into a format that is easy to use, can be developed into a learn-ahead pre-requisite and used during operations.
    c. Handbook on Consequence Management (CM) for Preventive Radiological & Nuclear Detection (PRND) – provide more information on Equipment/Response Instrumentation
    d. Develop SC 3-1 (Scientific Committee 3-1) Guidance for Emergency Responder Dosimetry into a ROSS operational handbook
    e. Create 2-sided laminated card that tells ROSS what tools/handbooks/job-aides support them in their tasks performed in the Emergency Operations Center (EOC)/Incident Command Post (ICP).
5. Extend use of RadResponder, RDD Studio, 100 minute guidance – the LLNL developed tool called RDD Studio was used in the Brooklyn Radiological Dispersal Device (RDD) scenario used in the pilot course. RDD Studio is an interactive gaming environment. This tool could be expanded to provide multi-player modes to directly control avatars and/or have a student (playing the role of Monitoring Planning Manager) direct field teams to take measurements at predesignated way-points (and allow avatars to carry out the mission). It would not be difficult to add the ability for RDD Studio to send geo-positioned data directly to RadResponder so the students can see measurements and track field team locations in real time.

    An example of how the event could unfold is as follows:

    a. Students divide up into several functional EOC level teams:
        i. Field Monitoring
        ii. Public Protective Actions
        iii. Modeling/CMweb Interface
        iv. RadResponder / Data Quality
        v. Public Messaging
        vi. Site Security / Control
        vii. Emergency Medical Services (EMS)
        viii. etc. (ICS functional areas could be added)
    b. The RDD event would start, and the functional groups would have to share data and information to support decision making.

c. As in a real event, there would be a limited number of responders available, initially. RDD studio can track responder and public exposure to see the results on monitoring and rescue priorities / decisions made by the students. The more detailed models at LLNL, such as NARAC, could be used for the contamination footprint. NARAC models and "ground truth" will never quite match up but will demonstrate how models can inform where to go look for contamination and extrapolate contamination downwind.
d. After the initial discovery, example activities could be (different teams working on different problems):
    i. Set up RadResponder event (teams and instruments will already be preloaded), but students will need to select location and event details
    ii. Obtain NARAC smoke plot – initial plume map without radiological source to help determine potential locations of downwind impacts
    iii. Determine initial Hot Zone and Shelter-in-Place (S-i-P) area
    iv. Establish medical triage and decontamination methods and locations
    v. Develop public message (use stock message, but need to add affected area description, update as needed)
    vi. Visualize 1km transect and 10 point plan (either in RadResponder or CMweb)
    vii. Develop monitoring plan and execute in RDD Studio
    viii. Import NARAC contours into RadResponder (update as needed)
    ix. Monitor results as they come in (in real time), feed them back into the NARAC model to get updated predictions and products
    x. Adjust RadResponder Control Zones (update wind direction if needed)
    xi. Establish reception centers for evacuees
    xii. Collapse control zones as appropriate
    xiii. Develop S-i-P evacuation plan
    xiv. And, of course, perform regular ICS planning activities and briefings.

6. Turn the ROSS Resource Guidebook into a searchable tool.
7. Create a "get-smart sheet" about things to know/review en-route to deployment.
8. Make ROSS Toolkit into a printed field guide.

2.3.3 Overall Course Recommendations

This section highlights the feedback received that covers the overall course content and structure as opposed to the specific detailed edits to Block content addressed in Section 2.3.1 and the broader ideas outlined in Section 2.3.2.

1. Too much content.
    a. Plan more time for questions/interactions with students. While the course content was well received and considered useful to the ROSS, the pace needed to cover the content restricted the ability to answer student questions and engage in interactive discussions needed to help the students understand the material.
    b. An additional perspective is that the material was covered at an "awareness" level. By reducing content, a deeper level of coverage and understanding could be taught.

   c. ICS- ICS and Liaison training should be a prerequisite rather than taught (Block 3). Training should focus on the ROSS position interface roles within the ICS rather than teaching ICS.

2. Baseline student technical knowledge – it was observed that some of the students' technical knowledge may not have been up to the level expected as demonstrated by the misunderstanding of the use of Potassium Iodide (KI) by some of the students.
3. Pre-course preparation –
   a. Require students to demonstrate account set-up and use of the following resources prior to course attendance to maximize instruction time:
   b. CMweb
   c. RadResponder
   d. Socrative
   e. HotSpot
   f. Develop multiple pre-course "do at home" exercises using CMweb, RadResponder, and HotSpot to familiarize students with tools prior to course (SEE Post-course SECTION).
   g. Require a laptop.
4. Course introduction and setup– helping the students get their bearings
   a. Set up room with 4 -5 ROSS per table. It is useful to have a mix of ROSS types, in particular, every table would benefit from a ROSS Type 1 or a Table Coach (see next topic).
   b. Explain the restrictions on the use of the different ROSS materials and models outside of the ROSS role. Also explain any sensitivity (Official Use Only, etc.) associated with the provided materials.
   c. Introduce the students to the information in the student binder so that they know what is available to them and where to access information.
   d. Have students submit a biography (up to 150 words) and a head shot photo prior to the course. These can be used by the instructors to identify potential ROSS levels, seating arrangements, and possibly help focus instruction. They can also be used by course observers to recognize the students while observing.
   e. Assign someone to capture student questions and track that they are answered.
5. Assistance – provide assistance to both the ROSS students at their tables and to track the student performance.
   a. Table coaches experienced in ROSS content and roles.
   b. Experienced performance trackers to track students' performance and participation.
6. Daily preparation/management
   a. Provide a welcome slide at start of each day instructing the students on what to do to prepare for the day's instruction (log into CMweb, upload homework, etc.).
   b. Rearrange schedule such that modules do not span overnight.
7. Cadre Management

a. More information needs to be provided to the students to help them understand what the commitment and expectations are for the ROSS position. This information is critical to making sure they can decided if this is something they are prepared to work towards.
b. Provide clear detailed information on the different ROSS levels including SKAs and expected operational roles.
c. Establish and explain continuing education plan.
d. Consider using the ICS position task book model.
e. Consider moving this to end of the training.

8. Modeling tools instruction
    a. Allow more time for hands on practice of specific tools such as HotSpot.
    b. Allow more time for training on all model products (technical and briefing), uncertainty in models, and the use of measurements to refine model predictions prior to using the products in classroom exercises – move this section to earlier in the course.
    c. Include more background information on NARAC/CMweb product development, model predictions, data products, and timeline for when products become available. This could be incorporated into a ROSS exercise (SEE SECTION…)
    d. Include explanation that emergency action zones should be extended beyond model contours to account for uncertainty and to use logical geographic boundaries
9. Communications – focus communication exercises on the actual role the ROSS will play rather than practicing for roles they will not fill (briefing general public).
10. Exercises
    a. The use of exercises should be maximized to provide interactive learning – this was proven to be a great way to get students engaged, learn procedures, engage with each other, ask questions, etc.
    b. Improve exercise introduction and feedback sessions. Clarify the scenario and who the ROSS are briefing/informing – more context is needed.
    c. See Section 2.3.2 for further recommendations on exercises.
11. Skills practice – add more opportunities for students to practice skills they will use in the field (e.g. interpreting products); consider the differences in skills to be practiced for the different ROSS Types.
12. Instructor materials – include overarching instructor/course guide that specifies:
    a. Technology the students should be prepared to use
    b. Room setup
    c. Facilitating slides that should be updated with course-specifics
    d. Course materials list (binder with job aids, handouts, exercise cards, etc.)
    e. Add more detail to the instructor guides to enable new instructors to be successful in course delivery
13. Use of CMweb - The ability to deliver files (presentation slides, student manual, ROSS Toolkit), homework, exercise injects, and share runs during the course is very useful and gets the students familiar with CMweb. Additionally, the CMweb could be used for

exercise simulation where the exercise materials would be shared in the same sequence as an actual exercise or response event.

   a. Teach CMweb basics early in course or require as a prerequisite with a brief refresher at course.
   b. Use CMweb for file delivery prior to and during course.
   c. Use for the RFI exercise in Block 8 and/or additional exercises.

14. Maximize use of report out type exercises – student's ability to report out improved as the course progressed. This method of instruction is useful to keep students engaged, promote interactive learning, develop student camaraderie, and improve speaking/presentation skills. Real-time feedback is very valuable and video recording could be provided as homework for student to review. Video could be shared via CMweb and shared to only the individual student.
15. Incident Action Plan (IAP) use

   a. It was suggested that each day's schedule should be given to students in an IAP. This will familiarize ROSS students with ICS forms that describe objectives, schedule, and tools/logistics required to complete missions.

16. Post- course activities

   a. Develop multiple post-course "do at home" exercises using CMweb, RadResponder, HotSpot, etc.

2.4 Summary

The ROSS Pilot Course delivered from September 19, 2016 through September 23, 2016 was well received by the students; however, there are many areas identified by the students, instructors, and observers on areas for improvement. The basic corrections to course content including typos, minor reorganization of content with Blocks, updating of information and addition of more instructor notes where provided by the instructors was completed. Additional suggestions requiring more significant time and effort that involve the overall course structure and execution are outlined in this document and Appendix A. "Big Ideas" on larger concepts and development on resources is also outlined in the document and Appendix A. This document should be considered a starting point for future modifications and improvements to help understand what worked well and what could be improved.

3 Pre- and Post- Course Test Assessment

The ROSS Pilot Course included a written Pre- and Post-Test to assess the starting point of the students as well as the educational value of the course. The Pre-Test and Post-Test had 39 identical questions, all of which were multiple choice or true/false. The Pre-Test was administered as a closed-book exam on the first day of the course, before the instructional content Blocks. The Post-Test was administered as an open-book exam on the final day of the course, after all instructional content Blocks.

Pre-Test scores ranged from 8 to 26 out of 39, with an average score of 20. Post-Test scores improved to a range from 27 to 35, with an average score of 31. All students had an improvement in their score from Pre- to Post-Test, with improvements ranging from 4 to 20 additional questions correct. This improvement in test scores is a positive indication of the educational value of the course for this set of students.

This first use of the exam also provides an opportunity to assess the exam questions and identify gaps in the course material. Over half of the students had incorrect answers to questions 8, 26, and 31 on the Post-Test. Eight students, nearly half of the class, had incorrect answers to questions 6, 30, and 34. These relatively high numbers of incorrect answers suggest a need to assess the questions and related course content.

Question 8 reads "In the lexicon developed specifically for the ROSS, ROSS Resources are:" where the correct answer is "Self-Aware, interactive capabilities." While there is a slide in the course material that specifically defines the ROSS lexicon, this information may not be critical to a ROSS's ability to perform his or her duties. This question should be substituted for a question that is more focused on practical application of critical skills/knowledge/abilities of the ROSS.

Question 26 reads "The highest allowable EPA CERCLA preliminary remediation goal is:" where the correct answer is "12 mrem per year." While a ROSS may not know this value off hand, the ROSS should be able to locate this reference and find the correct value. The large number of students who missed this question may indicate a need to incorporate more opportunities for the ROSS to practice using the references and tools to find such information during the course.

Question 31 reads "The PROTOTYPE Rapid Hazard Prediction tool will provide the following product for a nuclear detonation:" where the correct answer is "A "wagon wheel" grid with variable ring ranges noting areas for public and responder action." The large number of students who missed this question may indicate a need to clarify the discussion of this prototype tool and what it does and does not provide in the course material. The answers to this question may also be further clarified with regard to the difference between "fixed ring ranges" and "variable ring ranges."

Question 6 reads "A ROSS needs to be able to access a variety of references and tools and also use them to guide their decisions. A Primary reference includes:" where the correct answer is "Federal regulations." Understanding the definition of "Primary Reference" may not be essential to a ROSS's ability to perform his or her duties; however, understanding what is or is not appropriate to cite and what takes precedence when making recommendations is important. This question should be reworded to assess the ROSS's practical ability to select from different guidance sources.

Question 30 reads "After Fukushima:" where the correct answer is "Each of the 3 running reactors had more than 25% fuel damage." This question does not focus on the learning objective of the Fukushima discussion or the essential skills, knowledge, and abilities of the ROSS. This question should be revised to focus on the evacuation versus shelter-in-place considerations that reflect the essential learning components of the respective module.

Question 34 reads "When calculating exposure rates from radiation sources:" where the correct answer is "The simple $1/r^2$ calculation can overestimate dose rate due to the mass attenuation of

air." This question reflects essential knowledge and understanding of the ROSS. Course content should be revised to make this point clear.

4 Acronyms

CDP	Center for Domestic Preparedness
CM	Consequence Management
CRCPD	Conference of Radiation Control Program Directors
CTOS	Center for Radiological Nuclear Training
DHS	Departments of Homeland Security
DHS/S&T	Department of Homeland Security / Science and Technology Directorate
DOE	Department of Energy
EOC	Emergency Operations Center
IAP	Incident Action Plan
IC	Incident Command
ICP	Incident Command Post
ICS	Incident Command System
KI	Potassium Iodide
LLNL	Lawrence Livermore National Laboratory
NIMS	National Incident Management Systems
NNSA	National Nuclear Security Administration
NRF	National Response Framework
NUSTL	National Urban Security Technology Laboratory
PAG	Protective Action Guides
PAR	Protective Action Recommendations
PRND	Preventive Radiological & Nuclear Detection
RDD	Radiological Dispersal Device
ROSS	Radiological Operations Support Specialist
SC	Scientific Committee
S-i-P	Shelter in Place
SKA	skills, knowledge, and abilities

Appendix A. Feedback from ROSS Pilot Course

Lawrence Livermore National Laboratory (LLNL)

Block	Module	Comment	Minor/Major
General		Plan in more time for questions/interaction with students. Remove material where necessary to allow time.	Major
General		List where all of the instructor/facilitator-type slides are in the course material (the ones that should be updated for each course with specifics, e.g., # of breakout groups)	Minor
General		Standardize ROSS decision making/best practices to ensure consistency across ROSS, to include the types of evacuation situations and the decisions that have to be made.	Major
General		Provide a mechanism for ROSS to share information with one another; Provide quarterly meetings for additional information and skill building	Major
General		Provide daily prep slides for when students arrive that tell them what to log into and where to put their homework, as appropriate	Minor
General		Have students log into/download all necessary software in advance, possibly with tasks/exercises to ensure completion; Make a laptop a course requirement for all students	Major
General		Demonstrate key skills through course material delivery, e.g. Bottom Line Up Front, Avoiding "It Depends", etc.	Major
General		Develop criteria for student assessment, what it takes to "pass" each day; Include experienced student evaluators	Major
General		Create a ROSS get-smart sheet about things to know/review en-route to deployment	Major
General		Include link to Federal Acronyms and Terms Book	Major
General		Turn the Resources Guidebook into a searchable tool	Major
General		Include overarching instructor/course guide that specifies: • Technology the students should be prepared to use • Room setup • Facilitating slides that should be updated with course-specifics • Course materials list (binders with job aids, handouts, exercise cards, etc.)	Major

		• Etc.	
General		Add table coaches that are experienced in ROSS content	Major
General		Add more opportunities for students to practice skills they will use in the field (e.g., interpreting products); consider other skills as well if interpreting products is not a Type 3 expectation	Major
General		Add detail to the instructor guides to enable new instructors to be successful in course delivery	Major
General		CMweb is ideal delivery mechanism for course materials, USB is not necessary	Minor
General		Rearrange schedule such that modules do not span overnight	Major
General		Use the electronic Task Log to record and document student participation (as used in the pilot)	Minor
1	1	Either have students log into Socrative during a break or give this setup more time. Socrative was not used very much throughout the course. I'd suggest using it more or eliminating it.	Minor
1	1	Introduce students to binder contents	Minor
1-2		Clearly explain to students the role of the ROSS in terms of what they will be doing, not just the SKAs. What decisions might they help inform, what they would actually do, what do they need to know to do this, what the expectations are of a 1,2,3. Explain the expectations of the students coming into the class (knowledgeable about RN, not necessarily familiar with RN attacks, etc.).	Major
2	~27	ROSS Survey Questions: Reword "if you were a ROSS" as this was confusing for students.	Minor
2	31-35	Not covered in depth, consider removing/moving to backup	Minor
2	2	Explain what NIMS typing is	Minor
2	2	Explain what the continuing education plan is and how this course fits in	Major
2	2	Move Cadre Management to the end of the course	Major
3	1	Update logo in Job Aids	Major
3	1	Make clear when Socrative is being used and when it is not	Minor
3	1 Slide 18	Define SitRep somewhere	Minor
3	1 Slide 24	Add instructor note: Refer students to Vibrant Response section of the binder and walk through the IAP	Minor
3	Slide 53	Correct USAR acronym to Urban Search and Rescue	Minor
3	3	Shorten elevator speech time to 1.5/2 minutes per person	Minor
3	3	Policy group template should be updated (need content, not in job aid)	Major
3	3	Reconsider the materials for the students as they have no information about these types of events at this point in time	Major

3	4 Slide 118	"affect" not "effect"	Minor
3	4 Slide 121	Define "Dillion's Rule" and "Home Rule"	Minor
3	HW	Consider providing this HW in advance so students can get their briefings cleared as necessary	Minor
3	HW	Add time limit for presentation to HW assignment	Minor
3	HW	If this will really be used in a catalogue, consider using a standardized template	Major
3	HW	Change logo on template	Minor
4	1	Clarify that the Toolkit does not work in Internet Explorer in the instructor guide	Minor
4	1	Add version number and release date to Toolkit	Minor
4	1	Add line/matrix reference numbers to Toolkit matrices for quick reference	Minor
4	1	Also make Toolkit into printed field guide	Major
4	1	Consider replacing most of the content with an Easter egg hunt	Major
4	2 Slide 49	"Dose rate" instead of "Dore rate"	Minor
4	2	Fix rogue page numbers (e.g., slide 61)	Minor
5	1 Slide 7	Make text over figure readable	Minor
5	Various	Fix rogue page numbers	Minor
5	1 Slides 40+	Pare down to what students need, consider whether experiment background is essential for ROSS	Major
5	1 Slide 54	Source for the figures?	Minor
5	2 Slide 100	Explain globally or domestically?	Minor
5	2 Slide 112	Define variables and introduce equations prior to the test question. Cite where they can find this information in the future. Put letters on the answer bullets for polling.	Minor
5	2	General comment: consider the focus of this module and whether it should really be what caused the incidents or how the response worked/should work	Major
5	2	Edit title formats and bullet punctuation throughout	Minor
5	2	Reference where the Tactics numbers are coming from and introduce the set before using the individual Tactics numbers	Major
5	2 Slide 159	Correct decontamination spelling	Minor

5	2 Slide 200	Add letters to polling bullets	Minor
5	2 Slide 204	“grows” not “grow”	Minor
5	2 Slide 206	“scalable” not “scaleable”	Minor
5	Overall	RDD could be expanded and information on orphan sources and NPPs reduced	Major
5	Overall	Define block structure, introduce more explicit comparison of the events (e.g., quad chart); Explain how to apply knowledge from one type of event to another (e.g., NPP to terrorism)	Major
5	4 Slide 258	“Planning Guidance uses 2 Actionable Fallout Zones”- identify which guide this refers to	Minor
5	Overall	Include isotope distribution to the different scenarios, also radiation types (alpha, beta, gamma)	Major
5	4 Slides 280-294	Slides mostly skipped in addition to the exercise. Consider deleting or moving to backup	Major
6	Exercise 1	Revise timing, provide less time to brainstorm questions	Minor
6	1 Slide 37	Move forward in the module for use in exercise	Minor
6	1 Slide 40	Move pie chart down to not overlap title	Minor
6	1 Slide 45	Make title more clear	Minor
6	Exercise 2	Clarify the exercise scenario/provide more of a scenario introduction	Major
6	Exercise s	Improve exercise introduction and feedback sessions; clarify who they are informing and the scenario	Major
6	Overall	Incorporate communication about rad sensitivities (pregnant women, children)	Major
6	Overall	Incorporate the role of social media	Major
7	1 Slide 33	Define SHARC	Minor
7	1	Fix timeline bar format on all slides, remove all animation	Minor
7	1 Slide 37	Make red text black	Minor
7	Overall	Turn into a pre-course online course or an Easter egg hunt	Major
7	Overall	Include a way to follow along in the Resource Guidebook	Major
7	Overall	Include introductory information on how assets are requested	Major

		and deployed (i.e., ROSS does not request these assets directly)	
7	Timelines	Remove deployment information, just include when they show up	Major
8	3	Format slides and titles	Minor
8	3	Fast Hazard Prediction Tool discussion slides skipped, consider removing or moving to backup	Major
8	Exercise	Label exercise materials with Inject Numbers or other identifier to make clear when they should be handed out	Minor
8	Exercise	Number briefing cards with briefing order to facilitate ordered brief out	Minor
8	Exercise	Plan for significantly more time for this exercise	Major
8	Overall	Include general rules of thumb type information (e.g., where to setup staging areas, important considerations when advising on access routes or staging)	Major
8	5	Format titles and slides	Minor
9	4	Update slides to reflect TurboFRMAC 2017 and link to getting Sandia access to TurboFRMAC	Major
9	5	Insert transition slide that acknowledges RadResponder using own material	Minor
9	5	Make RadResponder session more engaging, possibly more hands on	Major
10	1	Shorten elevator speech time to 1.5 minutes	Minor
9/10	Overall	Build on previous day's momentum with an additional activity/capstone	Major

Pre-Course:

- Clarify which websites are needed for the class and have students demonstrate access to each by assigning pre-course homework:
  - CMweb: Upload up to 150 word bio
  - RadResponder: Upload recent head shot
  - Turbo FRMAC: Not sure what to do here but good to confirm what version being used
- Possible self-study material in advance of the course:
  - Current Block 2 Module 1 slides: 15 – 17, 19, 21, 23 –27.
  - Recommend changing "lowest capability" on Type 3 ROSS slides to "lowest responsibility"
  - Add additional content overviewing ROSS position
- Advise students pilot course is intensive, fast-paced course with expected participation in exercises fueled by access to web-based products
- Advise students participation photos and videos, along with a class photo will be taken
- Instructor and observer binders to include a student table map with head shots
- Utilize CMweb instead of thumb drive to deliver electronic student materials
  - May require on-call CMweb resource, matching time of course (e.g. if 8a-5p ET, will need to be available 5a-2p PT).

- Increase number of exercises to increase use of products and increase student engagement
- Include "agenda" type slides within each module to highlight what will be discussed
- Revise Block 5 to include a quad chart or other mechanism to better compare NPP, IND, and RDD with magnitude of each, ideally using the same location to model each incident
- Ensure resource is assigned to capture student questions and to ensure questions are addressed
- Begin each day reminding students what was discussed the day before. If appropriate, highlight student questions and responses

Day 1:

- Begin by reviewing content of student binder with the expectation the students will need to know all of the materials in the binder
- Remind students they will need to access multiple websites and test access to each site before class begins

Modify Block 1:

- Include definition of different ROSS Types 1-3 (as reminder of self-study material), clarify class participants range from ROSS Types 1 – 3, and student tables are intentionally organized with at least one ROSS Type 1 at each table to help facilitate
- Rotate ROSS Type 1 to different tables Thursday morning for Thursday and Friday

Day 1:

Block 1: Bill Irwin

Start 8:02 end:

Brooke reminded students this entire presentation in their binders, important because it has training goals and objectives

Bill:

- Each block will highlight key objectives
- FEMA will capture certifications,
- Goal to build atlas of ROSS

Brooke:

- Introduced Socrative.com for first test
- Changed Socratic.com testing room from RadRanger to FEMA ROSS
- Asked students to login and take quizzes. Some complication with everyone accessing and logging into this site and taking the pre-set quizzes
- Introductions starting 8:27
    - Focus to be brief and bold and move on
    - Bill started as an example
        - Most important take aways
        - Then introduced Brooke
        - Then introduced Jim
        - Then started with students (8:31)
            - Dave: FEMA Evaluator
                - Important take away: with only 80% information, can't let missing 20% impact your decision making
- Introductions ended: 8:47
- Pre-eval exam 8:50

Needed copies of schedule added to the Instructor Guides
Needed copies of exam printed for block 1 test and block 10 test
Needed copies of answer keys

Block 2 (Brooke)

- Use of socrative.com again for quizzes. Orly and Ben tracking responses for all 16 students
- ROSS needs to establish relationships with the community well before the emergency

Importance for how a ROSS dresses- planned on team photo at break
Requested student feedback on Job Task Analysis-
Back up slides not used
Break at 10:05

- 10:20 back from break and group photo
- Jim presented CADRE management
- Jim used his own slides- different from slides provided to students but printed and inserted into Student binders under Task Log Entry forms
- Jim said FEMA plans on similar positions for Chem (COSS) and Bio (BOSS) as well, internationally
- Finished 10:38 but taking questions
- LinkedIn ROSS community
- Finished 10:40
- Ben asked for students to complete the feedback forms for Blocks 1 and 2

Block 3: Bill and Jim
Start: 10:45

- Stressed to not rely on Occupational Radiation Standards. No dose limits for what doing with ROSS
- Bill "Founding level of something big" reinforced by current events
- Need swap out draft job aid images because old logo (B3 slide 11)
- Quiz on slide 12 expect students to pull out job aids with blue cover to answer quiz
    - Maybe for future use Socrative.com to track responses
- Goal of slides 12 & 13: to help illustrate ideas of that things will be asked of ROSS at incident
    - Class room discussion (start 11:00a)
    - Key for ROSS to be bold, blunt, and be gone (e.g. to clarify impact of lethal dose during incident)
    - Slide 16 first planning p video. Did not test sound first. Time lost to coordinate tech. Not easy to hear
- Slide 18 reference SitRep (situation report)
- Needed to add Block 3 assignments and templates to Student thumb drives
    - Maureen added to CMweb as zip file
    - Also need B3 and B7 homework
    - Maureen wanted to add example IAP to CMweb as well
- Insufficient time to show all videos

Hot Wash Day 1 (Ben):

- Student confusion between 1 and 5 which score was higher so needed to clarify
- Instructor should holdup binder and say you responsible for knowing what in here
- More of an overview of ROSS was requested
- Digging through Binder and looking a lot so need to show images of what student is looking for
- Instructor Guide not contain same content as what students have, but should
- Need to mimic what it's like to be ROSS by having students access multiple web sites, access and password recollection.
- Best to facilitate access in advance
- At beginning of day, show what web access is needed
- Opening slide day 1- all sites needed to access
- Ben said important for students to know what's in their binders
- Possibly wear name tags
- Short exercises help to increase engagement and learning
- Move Cadre management until end of the week
- Block 1: schedule 1 hour went 70 min, 5 min for feedback forms
- Introductions 18 min
- Block 2, 1 hour and went 55 min
- Short break 25 min
- Module 2: 30 min schedule but did in 20 min. Moving to end may be better for context
- Show people what info is related to each ROSS
- Need more informative way to highlight new modules within blocks
- Feedback forms more of a challenge than hoped
- Block 3:
    - Mod 1: Difficult to have split over lunch (12:20), with time lost for food and speaker fix
    - Only 25 min break for lunch, but likely Mod 1 went over 20 min
    - Mod 2: went as planned
        - No briefing only 1-2 min so should cut time
        - Need 10 min to create, with 90 second brief out, could let them do again
    - Mod 3: 32 min over:
        - Brief outs took up to 6 min, Should limit time limit for brief outs
        - Time taken to access files, down load, and upload
        - Demonstrate access to CMweb by download intro template, edit and re-upload
        - Same with Socratic.com
        - Brief outs caused to be 37 min behind schedule
        - Adjust template to make more effective
    - Mod 4: 10 min shorter than scheduled
    - Key to show can use resources to find materials

Day 2:

Ben (feedback)

- Good:
    - ICS really good to present the first day

    - Liked introductions
    -
- Bad
    - Fast paced
    - Too many acronyms
    - IT issues
- Morning intro Bill (5 min)
- Homework debrief by students (8:20)
    - Only time for 9 out briefs (seemed to be strategy for choosing but not clear what it was)
- Per Brooke: Given limited time, Key to always provide important points up front
- Old ROSS Logo on homework template used in pilot class
- B4 M2 went over 2 min (11:17)
- Reviewed Course Objectives prior to requesting completion of the feedback forms

B5 M1 (Brooke) 11:22

- Considered slide 6 redundant
- Slide 7 specific activity is perhaps most important to consider
- Movie on slide 13 mentioned but not shown
- Slide 16 should remove FOUO comment
- Rogue page # on slides 25, 42
- Planned break for lunch at 11:45- Lunch delivery at 11:56 so broke then.
- Started again 1p
- Module 1 summary slide 1:50p
- Need to add reminder slide log in to Socrative.com will be needed in upcoming blocks
- Module 2: Bill (2:15)
- Bill not use instructor notes (slide 106)
- Slide 129, 6 slides left @ 3p. Ended 3:04
- Slide 137 rouge punctuation and change "Home" to lower case
- Slide 141: good to clarify what colors mean, Why some areas outlined in blue what read dots mean
- Slide 145 title fix, Need to change from all CAPS
- Slide 160 decontamination misspelled
- Slide 161: title all caps need to fix, Mission 2, no mention of mission 1. Tactics 3-5 what are tactics 1 and 2? Need remind this is from First 100 minutes Guidance Document
- Requested animation modeled on B5 M3 in Slide 175 to be part of the Tool Kit
- Slide 195 ALL Caps in title needs to be fixed
- Slide 200: rouge punctuation and font issues
- Quiz slides (e.g. slide 201) need to replace bullets with letters to match socrative.com quiz format
- Title font color Blue (should be black) Slide 204-207,
- Slide 205: change bullets for indent, change "victims grow large" to "victims grow" and "Scaleable" in title misspelled (should be "Scalable")
- Fix all font on Slide 217
- Slide 210: Table good to highlight left column are Missions, Right column are Tactics

- Slide 215 need to review Socrative.com results – Orly and Ben presented
- Went long – Finished 4:25

Module 4: 4:26

- Slide 226 remove punctuation in bullet
- Slide 230: fix bullets (change second bullet)
- Slide 247" Fix Fallout title
- Slide 285 fix title font Stopped slide 254 at 4:45p (50 slides remaining)

Hot Wash Day 2:

- Morning hot wash well received by instructors and observers
- Socrative.com times out quickly so challenging to review results
- Goal to log in to CMweb to upload homework 2 and RadResponder
- Heads up about visitors
- Homework went long, wanted two rad responder folks in. Bill very happy with effort and the product they turned in
- Bill wants tool to grade students based on:
    1. Interaction with material
    2. Presence
- Jeff, Matt, and Angela could be future Instructors representing State perspective (replacing Bill)
- Block 4 & 5:
    - Feedback scores only between 3-5
    - Block 4:
        - Toolkit great
        - Suggested overview of each piece not necessary
        - Requested exercise instead to test use of tool to go find info
        - Could give quarterly homework to use Tool Kit to answer
            - e.g large RDD detonate and what references would you use
            - Left off one reference (Brooke and Maureen know)
            - Some of bibliography links not live or correct
        - Training should be at ROSS level for single decision so Tool Kit conflicts with that concept
- Block 5 video about first responders doses would be wildly valuable to share
- Block 5:
    - Incident Characteristics videos received very well for cumulative dose info
    - Could be entire 40 hour course
    - RDD could be further expanded because most likely
    - Too much info on orphan sources
    - More info on power plants
    - Three accidents at TMI, Fukushima and Chernobyl
    - Bill recommended removing Mexican source
    - Start slides with comparisons at beginning between NPP, IND, RDD to say this what we compare and magnitude of each
    - Lot of ppt but students happy with info but small exercise would have been helpful (1 per hour)

Day 3:

- Ben: (7:58a)
    - Bad
    1. Yes a lot of ppt. more Exercises
    2. No time for questions
    3. More helpful to compare incidents together in scale, size and scope
    - Good:
        1. Tool Kit was great
        2. Graphics and video information

Billy suggested Quad chart comparisons for events and using same location across incidents

Ben asked what is the 1 thing students should do to improve the course: "all contribute." And, what is the 1 thing Instructors should do to improve the course: "make sure everyone participates"

B5 Mod 4 (8:15a)

- Slide 263
    - 3 feet of dirt has 1000 protection factor (add to instructor notes?)
- Skipped most slides 280-294 but showed one video
- Ended 9:04

B6 Mod 1 (9:04)

- Slide 11 rouge punctuation
- Communities or individuals taking in displaced persons to prevent a stigma from developing about evacuees (odd phrasing)
- Communication exercise:
    - 9 words per message
    - 3 messages
    - Successful statements for students to communicate clearly
- Slide 23:
    - No assignment of groups to evaluate but did seek feedback from students on what worked and what didn't
- Slide 26: Add Instructor note: empathy is critical for messaging
- Slide 42 10:46
- B6 M2: Start 10:55 with briefings ready by 11:20a
- Briefings ended: 12:20 (20 min over)
    - Focus on presentation style, not as much on content
- B6 M3 (start 12:55- 15 min late)
    - Bill presenting
    - Future efforts to spend more time on communication, especially with decision makers because (per Bill) "that is what a ROSS does"
    - Don't refer to victims, instead refer as "patients" or "people"
    - Ended 1:14p with VIP guest introductions
        - Adam Hunter, director S&T R&D lab where Ben and Orly work

        - Steven Hancock ("Herbie") first responder office at S&T
        - Keith Holtermann Sr. Science Advisor at S&T to FEMA
        - Bill Beal: Remote Sensing Lab at Andrews Air Force Base
        - Sean Crawford: Acting Director at FEMA, assume responsibility of ROSS Program to use RadResponder to associate with teams
        - VIP Intros ended 1:19
- B7 M1 (1:20p start)
    - Bill and Jim
    - Some students present Homework 2 assignments at relevant point in the Block. Ensure those that not present at Homework 1 will present today for homework 2
    - Refer to Response Resource Guidebook- final edits made Friday 16 Sep
    - Student Homework 2 presentations
        - Stephen Cima
        - Kim Kearfott
        - Roland Benke
        - Norman Miller
    - Ended 3p Deleted last 8 slides (51-58) AFTER adding student Homework 2 slides – Ended on time (2:57).
    - Then Billy added additional resources
        - Dan Blumenthal – First ROSS for NCR exercise
        - Ken Yale – ROSS Vibrant 15 Southern Crosses
- B8 M1 (Brooke) 3:05 start
    - Class Discussion 1 (slide 31) start
    - Class Discussion 2 (slide 32) start 3:46
    - Class Discussion 3 (slide 33) start 3:49
    - Exercise started (slide 46) start 4p

Day 4:

Too many acronyms during resources
Update acronyms in instructor guide and student manual
Update font on titles to be consistent with template

Day 5

Hot Wash Day 4: Timing issues

- Block 8 Mod 3 started on time but went 10 over despite cutting some slides
- Block 8 Mod 4 (RFI exercise) 10:00-10:15 with break going 10 min over,
- Next RFI exercise 10:45-12:15
- Full exercise ~4 hrs with lunch
- Instructor guide did not break out time for prep- suggestion (Ben) count down slide for prep. Need a lot of ROSS for a big event/exercise
- CMweb advanced prep (as pre-requisite) way to save some time
- Based on feedback, B8 was their favorite block. Made them realize they need to be deployed in pairs.

- Nice to have: additional materials for full day exercise would be a nice to have, could initiate a new project. FRMAC products are posters. NARAC products as briefing
- Early in block before dive into briefings, guidance for practical solutions: how to ask for thing and where to get. Great slide to add is discussion on recommendations. Briefing products are not recommendations but ROSS makes recommendations. Not making decisions for decision makers ROSS *helping* them to make decisions.
- Brooke: Slide on R vs. r related to recommendations. (Mod 1 for ethics)
- Ben: Modeling product + ROSS = someone at a podium making decisions
- Deployment of products via CMweb successful
- Block 9: general tools Bill and Brooke ok with a do on your own, time insufficient to really dive in deeper.
- What wish read before you arrived at class, what want to do/need to maintain these skills after course finished?
- R&D done (as of next week) and working with FEMA to address operational deployment
- What set up would make this course more effective

Block 9:

- Brooke showed CMweb demo – no slides - for creating an interactive map using CMweb and Google Earth
- Turbo FRMAC 2017 being released. As long as JAVA 7 or 8 will run locally on machine. Need account on Sandia website. Nirp.sandia.gov
- Block 9 Mod 5 Presented separate set of slides about RadResponder (no issue if we don't get a copy of those slides for final data delivery to S&T).
- RadResponder mobile app (11:00)
    - Able to show iPhone screen on presentation screen

Full hour for lunch

Block 10:

- Elevator speeches (started at 1p) . Given to group. Shortened to 90 seconds
- Per Bill, saying: "I can go anywhere and anywhere you need me to go, I can go." Important to showcase flexibility
- Post-Evaluation test given 1:31 (30 min test)
- Test. Not requirement for passing class.
    - Will let students know how they performed after

  Review of 6 goals (~2:20p)
    - Class felt met

    - Prefer a little more time to dig into the tools
    - RadResponder and CMweb accounts not as easy to get
    - Growing pains with expanding and growing new programs
    - Insufficient interactive discussion because of time limitations
    - Ability to for students to share more
    - More time to answer questions
    - TTX that involved each student in different role
    - Exercises were fun and entertaining

- Practice makes perfect but not make it permanent
- Follow on activities will be helpful
- More prerequisites also better
- After 8 hour and 40 hour plus prerequisites much better prepared
- Change wording from "Allow" to "enable" or "prepare"
- Helpful to have ICS lead to talk about what they need
- Diff perspectives from students helpful to identify what needs exist
- Some students aware of where they fit well in emergency management
- Class felt met
- Review of 12 objectives can do in course and in future
- Met
- More than before but not complete. Self-study expected. Resource Guidebook will help
- Met- clear from out briefing/2nd elevator speech
- Met
- A little. Follow up course with more help in this area would help
- (2:35p) Big R and little r helped
- Not deep dive on instrumentation- not met
- Novice proficiency met
- Understanding met
- Met?
- Group effort helped as students learned from feedback of others
- Failed- Certification process still being defined

What worked?

- Would recommend this or improved version (all would)
- RFI exercise showcased plethora of information
- Need more people that can respond to non-NPP events
- Exposure to larger response structure extremely helpful

What didn't work?

- Can't be just 1 40-hour course. Needs to be series of different skill-based courses ROSS expected to have
- Time before course to play with computer-based tools
- Individual IT access issues to be managed before or after class
- Norman recommended additional 16-hour course as pre-requisite
- As more training expected, how much time can be taken from other staff ? What is expected given ROSS filled by people with other full time responsibilities?
- More frequent reminders/exercises/refresher training in a group setting so students can learn from each other

What absolutely missing?

- Psychological effects
- Regional-specific messaging
- Example of ROSS actions from events (video examples)
    - Good to see what worked and what didn't

- Better preventative measures, bigger tie in to preventative efforts and preparing for disasters
- States without DNDO have issues

Hot Wash Day 5:

- Block 9: Mod 3 (allotted 1 hr for part 2 and went only 40 min. Less interactive than intended just demo mode)
- 8 min discussion about distribution of sensitivity materials. Good to add to day 1 and remind on day 5
- 7 min long Mod 4. Bill Beale said Turbo FRMAC slides outdated. Ben asked Maureen to clarify who should update certain materials (e.g. Sandia to be responsible to ensure product materials updated correctly)
- Mod 5. Less interactive than hoped. Only 2 people raised their hands they felt comfortable with RadResponder
- Lunch
- Block 10 ended on time
- Built up a lot of momentum to have people in their chair all day
- 10 min per hour to be interactive and way to call back to info from prior days. Materials provided in advance for self-study very useful for this course
- Pre-staging advantageous
- Distribute contact info in advance
- Very pleased to have outside experts to brief on products
- Logistical issues:
  - Room set up: Audio visual
    - External speakers
    - Speakers notes difficult to read on back wall
    - Parking log not real busy but useful
    - Timer/colored lights may be helpful to keep on track/time
  - Table groups effective but good to switch up
    - Bigger room with different shape because they were a little cramped
    - Line of site limited on edges
    - Presenters obscured students at some points
    - Groups of four good per table
    - Key to bring laptop
    - Re-orienting on slides a challenge when content changes
    - Remove older content form thumb drives, ideal to lose thumb drive and use CMweb instead
    - CDP template for student manual less effective
    - Student binder worked well, but too full
    - Beneficial to walk students through the student binder as part of Block 1
    - Should we maintain Socrative.com for student quizzes? Challenging with internet connectivity issues
    - Instructor guide
      - Not used as much as expected
      - Significantly more content needed
      - Student map with pictures and names helped

- Need to formalize student evaluation with specific attributes to be assessed
- Process requires pre and post evaluation of students
- CTOS model of self-assessment
- Instructor guides would have benefited from having schedule/block 1 in advance (for schedule)
- Daily schedule
- Need order in lunch
- Best to complete modules at end of day. More latitude where need to stop. Key to add focus of major ideas at end of each day as a reminder and preview of tomorrow
- Re-orient back to daily agenda
- Feedback
    - Pre-exam
    - Student feedback by students and instructors
    - Feedback forms
    - Task logs
        - Need revisit meets our needs
    - Final exam
    - More can orient to key parts of binders and key topics we need to include and interpret a key model using a product added to exam
    - Breakout sessions to group 1, 2, and 3 to brief out more effectively based on ROSS level? Less likely
    - Train to type 3 and others distinguish themselves moving forward
    - Beneficial to have mix of 1, 2, and 3 at each table
    - Survey by students to give to instructors
    - Observers needed
        - Admin and IT to support, and at least 2 instructors (per Bill)
        - Need student evaluation
        - Survey monkey/electronic feedback may work better in the future
        - Table coach by experienced ROSS would help or Type 1 ROSS helps with that process.
        - Assistant instructor at each table
        - Short bulleted list or more take aways
    - Brooke and Bill great instructors
    - Some of the questions that were not answered need to be addressed
    - Goal to tie job aids with toolkit (Billy)
    - How to make more exercises without losing content?
        - Easter Egg hunt using tools
        - >1300 slides over 40-hour course = ~ 35 slides an hour. Very fast. Need to transfer some content to web based, self-study pre-work
        - How much advance time?
        - FEMA load course with lots of pre-requisites


From: Buddemeier, Brooke2 Sent: Tue 9/27/2016 11:42 AM
To: Stevenson, Benjamin; Richard Breeden; Wogan, Lewis T.; Amir, Orly; Jane Koska; Alai, Maureen; Askin, Amanda Christine; Van Etten, Donald; Irwin, William (William.Irwin@vermont.gov); Rogers, James D; Billy Haley (billy.haley@emsics.com) (billy.haley@emsics.com); bealWC@NV.DOE.gov; Nasstrom, John S.; jeffrey.semancik@ct.gov; Blumenthal, Daniel
Cc:
Subject: RE: ROSS "Big Idea" Bullets

Some Big Ideas…

Expanded Use of CMweb During Class.

I was clear that Maureen's ability to deliver files, homework, exercise injects, and share runs during class through CMweb was both effective for getting them the info they needed AND getting them familiar with using CMweb. As this will be an important tool for the ROSS, I would suggest we expand on this in the following way:

1) Teach CMweb Basics in Block 1
2) Continue to use it for file delivery throughout class
3) For the RFI Exercise, do a real-time (or canned weather run) and "share the run" so the student have "product delivery" as they would during a real event. There will be some manageable data progression and "phasing" issues, and we should try to get some FRMAC products in the mix as well, but overall I think this would allow for students to practice using the tools and delivery mechanisms they would see in the field.

Expanded Use Of RadResponder, RDD Studio, and 100 minute guidance.

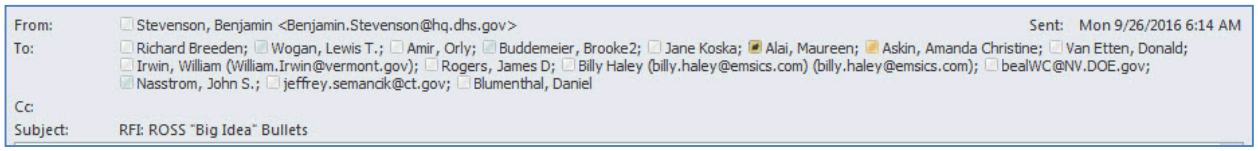
Many of you noticed the animation that I used for the Brooklyn RDD. This is a LLNL created tool called RDD Studio that is actually in interactive gaming environment. This tool can be expanded to provide multi-player modes to directly control avatars and/or have a student (playing the monitoring planning manager) direct field teams take measurements at predesignated way points (and allow AI Agents to carry out the mission). It would not be difficult to add the ability for RDD Studio to send geo-positioned data directly to RadResponder so the students can see measurements, and track field team locations in real time. The event might unfold as follows:

1) Students divide up into several functional EOC level teams; field monitoring, public protective actions, modeling/CM Web interface, RadResponder / Data Quality, Public Messaging, site security / control, EMS, etc.. (we could also add ICS functional areas)
2) The RDD event would start and the functional groups would have to share data and information to support decision making.
3) As in a real event, there would be a limited number of responders available initially. RDD studio can track responder and public exposure to see the results on monitoring and rescue priorities / decisions made by the students. We can also use the more detailed models at LLNL for the contamination footprint so NARAC models and "ground truth" will never quite match up but will demonstrate how models can inform where to go look for contamination and extrapolate contamination downwind.
4) After the initial discovery, Example activities might be (different teams working on different problems):
    a. Set up RadResponder event (we will already have teams and instruments preloaded), but they will need to select location and event details.
    b. Obtain NARAC Smoke plot
    c. Determine initial Hot Zone and S-i-P area
    d. Establish medical triage and decon method and locations

e. Craft public message (use stock message, but need to add effected area description, update as needed)
f. Visualize 1km transect and 10pt plan (either in RADResponder or CMweb)
g. Develop monitoring plan and execute in RDD Studio
h. Import NARAC contours into RadResponder (update as needed)
i. Monitor results as they come in (in real time), feed them back into the NARAC modeling to get updated predictions and products
j. Adjust RadResponder Control Zones (update wind direction if needed)
k. Establish reception centers for evacuees
l. Collapse control zones as appropriate
m. Develop S-i-P evacuation plan
n. And, of course, perform regular ICS planning activities and briefings.

There are plenty of activities to keep people busy.

National Urban Security Technology Laboratory (NUSTL) Department of Homeland Security – Science and Technology Directorate


From: Stevenson, Benjamin <Benjamin.Stevenson@hq.dhs.gov> Sent: Mon 9/26/2016 6:14 AM
To: Richard Breeden; Wogan, Lewis T.; Amir, Orly; Buddemeier, Brooke2; Jane Koska; Alai, Maureen; Askin, Amanda Christine; Van Etten, Donald; Irwin, William (William.Irwin@vermont.gov); Rogers, James D; Billy Haley (billy.haley@emsics.com) (billy.haley@emsics.com); bealWC@NV.DOE.gov; Nasstrom, John S.; jeffrey.semancik@ct.gov; Blumenthal, Daniel
Cc:
Subject: RFI: ROSS "Big Idea" Bullets

Thanks to everyone who supported the ROSS Pilot last week in Maryland. I am following up, as promised, to ensure that we capture your main takeaways from the week of training. I am calling this request the "Big Idea" request because, after sitting in the room for a full week, you are the type of visionaries who can help identify gaps or explore new space for future ROSS classes.

Unfortunately, our last feedback session Friday got cut a little short because of travel and exhaustion, but I don't want to lose the good ideas that may have been generated. If you have a little bit of time today/tomorrow, please write out a couple of bullets that describe the "Big Ideas" that you think could improve the ROSS course now that you have sat through the 40 hours and experienced it. If you don't want to respond to the whole group, please send the Big Ideas to Maureen (alai1@llnl.gov) and myself (Benjamin.stevenson@hq.dhs.gov) to ensure they are captured in the final reports and transition documents.

BIG IDEA BULLETS:

- (Jeff Semancik – CT) Each day's schedule for the ROSS Class should be given to Students in an IAP. This will familiarize ROSS students with ICS forms that describe objectives, schedules, and tools/logistics required to complete missions. While the course talked about the planning process and ICS, it didn't actually force the students to interact with any of the forms/structures they would see in an ICP or EOC.

- Develop multiple "do at home" exercises for ROSS tools (CM Web, RadResponder, HotSpot, etc.). The first of these would be a tool introduction module that would allow ROSS students to familiarize themselves with Tools before arriving at training. Additional "do at home exercises" would allow certified ROSS to maintain skills after the course.
- As either a read-ahead or read-after training document, we should release the exercise After Action Reports that relate to ROSS to all students.

If you don't have suggestions/ideas, no need to submit anything, but I thought I would ask while the course was fresh in your mind. If you do have suggestions/ideas, getting them in by tomorrow COB (Tuesday 27Sep16) would be very helpful.

It was wonderful to work with all of you, and I look forward to supporting the ROSS as we transition this project.

v/r
BEN

DAY 1

ROSS Block 1
Scheduled Time: 8:00a – 9a
Actual: 8:02a – 9:10a (including 5 minutes for the feedback forms)

- Introductions: started at 8:28a – 8:47a
  - One takeaway: First responders hate numbers and they don't like radiological units.
  - Another takeaway: If the people who are in charge don't trust you or know you, they aren't going to use you.
- Pre- course Evaluation: started at 8:49 a – 9:05 a
  - There was an impromptu break as students finished the evaluation
  - Feedback form takes time to fill out (need to build that into the schedule)

ROSS Block 2 – Module 1: Background, SKAs, Proficiencies and Requisites
Scheduled Time: 9:00a – 10a
Actual Time: 9:10a – 10:05a

- Questions/Comments on the ROSS:
  - Where does FRMAC fit into the ICS organization chart?
    - Is the ROSS briefing the FRMAC? Is the FRMAC briefing the ROSS?
    - How do roles and responsibilities transfer from initial ROSS response to FRMAC integration?
  - Is the ROSS a single person or a team of people?
    - For the typing, it's a person

    - How does the ROSS relate to the Radiation Volunteer Corps that exists in many states?
    - It's OK for the ROSS doesn't know everything – their job is to be able to pull information from other people (and know where to find it)
- Takeaways for Training:
    - Clarify in training that the opinion polls are for you to answer now (not as if you were a ROSS)
    - Slide 36 typo (missing the word to after meant and help)

Break
Scheduled Time: 10:00a – 10:15 a
Actual Time: 10:05a – 10:20a

Block 2 ROSS Cadre Management, Module 2: FEMA Cadre Management
Scheduled Time: 10:15 a – 10:45 a
Actual Time: 10:20 a – 10:40 a

- Questions
    - Impact of the election on moving ROSS forward
    - Continuing education/trainings to keep up certification
- Takeaways for Training:
    - Add to the presentation what it means when NIMS-typing is complete (question prompted from Brooke)

Block 3: ROSS Integration – Module 1: Radiological Assessment Needs in ICP/EOC
Scheduled Time: 10:45 a – 11:45a
Actual Time: 10:45 a – 12:20 p (included some breaks for AV and for lunch setup before restarting again)

- Job Aid: need some different pictures (S&T takeaway)
- Takeaway for Training:
    - Need to give people more time to orient themselves to the documentation in the Notebook.
    - Discussion on who you report to quick quiz: "it depends"; need to decide who to go to.
        - Need to say "I'm needed here" even if they don't want you there.
        - Mobilization: since you aren't self-deploying, you should have a POC that you are reporting too.
    - Quick break at 11:09 to fix speakers restarted at 11:15

Lunch Scheduled 11:45-12:45
Lunch (actual break) – 12:20 pm – 12:45 pm
Block 3: ROSS Integration – Module 1: Radiological Assessment Needs in ICP/EOC (continued)
Scheduled Time: 12:45 pm – 1:45 pm
Actual Time: 12:45 pm – 1:45 pm

- Possibly add to the EOC integration: look at the CEMP, see what ESF is leading

- Atlas of state response characteristics
- Typo Slide 53: USAR is not the right acronym spell out
- Pre-event messaging.
- Leverage existing protocols that are in place in different jurisdictions (especially if nuclear power plant jurisdiction that has operations/protocols/etc in place) and amend if necessary.
- Even as a ROSS, there will be stuff that is out of your lane or outside your area of expertise – want to get folks that right information if you don't know it.
- Slide 76 – redundant of before.

Block 3: ROSS Integration – Module 2: Intro Activity (1st elevator speech)
Scheduled Time: 2:00 p – 2:45 p
Actual Time: 2:00p– 2:40p

- Elevator speech takeaways – 3 minutes is too long. 10 minute prep period is good for course.
- Briefings were all 1-2 minutes

Block 3: ROSS Integration – Module 3 ICS 201-IAP
Scheduled Time: 2:45 - 4:00 p
Actual Time: 2:40 p – 4:37 p
End of exercise: 3:58 p

- Specify a time for how long the briefs should go
- Exercise start was a little disorganized
- Group 1: untimed (Brief out McKinley)
- Group 4: 4:27 (Brief out Howe + some math from Miller)
- Group 2: 6 minutes (combined brief out)
- Group 5: untimed (Brief out Stuenkel)
    - Bill feedback - Fast and clear briefing.
- Group 3: 3:33 (Brief out Geier)
    - Feedback: Used street names in their briefing.
- Group 6: 2:01 (Brief out Salz)

Brief outs 4 pm – 4:37 pm
Block 3: ROSS Integration – Module 4: State Specific Issues
Scheduled Time: 4:00 pm – 4:30 pm
Actual Time: 4:37 pm – 5:00 pm

- Just because it's a home rule state, doesn't mean that they won't need resources at the state level
- Empire 09 example.
- Jurisdiction issues
- Even in your own state, you may not have the ability to influence decision makers (politics, etc)

HOT WASH

- Instructor Guide is not the same as the Student Guide (Pilot handicap)

- Make a pre-event assignment (like a bio) on CM web to ensure that people have access
- Fix template for IAP exercise (Bill Irwin)
- Separate out the courses, you could have many more Type 3s that could support the Type 1s

Day 2

Hotwash – Discuss feedback
Scheduled Time: 8 a – 8:15 a
Actual Time: 8 a – 8:15 a

Block 3: ROSS Integration, Mod 4: State Homework out brief
Scheduled Time: 8:15 a – 9:00 a
Actual Time: 8:15 a – 9:09 a *(over by 9 minutes)*

- Howe (New Hampshire) – 2:38
- Griffin (New York) – 4:49
- Gavlik (Texas) - 1:35
- O'Riorden (Massachusetts) – 2:54
- Geier (Florida) – 1:24
    - Concise, brief
- Salz (Ohio) – 2:29
    - A lot of text on slides, didn't realize that he was presenting, didn't discuss the decision making authorities until prompted by a question
- Stuenkel (Kentucky) – untimed
- Semancik (Connecticut) – 4:46
    - Good style, funny, comfortable giving presentations
    - Bill noted that Jeff's volume was good (didn't need a mic)
- Leek (Iowa) – 3:24
  b.

Things to think about for the instructional materials:

- other DOE materials
- Jeff S. created a PowerPoint on CT for incoming ROSS candidates to have on hand. This is a great thing for everyone to have. Lesson learned after being a ROSS in Pennsylvania in trying to figure out the governance structure and key agencies.
- Recommendation: standard template for "State" information so ROSS in each State can have on hand if an emergency happens in their State.
- FEMA has jurisdictional profiles for each state. Question: Are we reinventing the wheel?

Block 4: Standards, Guides and References – Module 1: Toolkit
Scheduled Time – 9 a – 10 a
Actual Time – 9:09 a – 10:03 a

- The Toolkit block provided a lot of discussion items, both on logistics (can we share the Toolkit) and content (how do we make recommendations, etc).

- However, I don't think this is the best place for this module.
- Slide 34 – remove period at the end of the handbook
- Threat brief (don't currently have that)

Break
Scheduled Time: 10 a – 10:15 a
Actual Time: 10:00 a – 10:31 a

- Break was 15 minutes longer than planned. The actual break was 10 minutes long and additional 5 minute discussion among the class before the next Module began.

Block 4 – Standards, Guidance and References - Module 2 Key References
Scheduled Time: 10:15 a – 11:15 a
Actual Time: 10:31 a – 11:18

- Slide 45, bullet on evacuation in PAGs. Fix per Mike Howe's recommendation
- Slide 51: fix formatting.
- I looked around the room at 11:05 and seems like a lot of people were doing different things. This would be a good time for an exercise potentially.

Gap in time was between 11:18-11:24 for the people to fill out feedback forms

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Block 5: Incident Characteristics, Module 1: Incident Characteristics
Scheduled time: 11:15 a – 11:45 a
Actual Time: 11:24 – 12:00 p
Block 5: Incident Characteristics Module 1: Incident Characteristics (continued)
Scheduled Time: 12:45 p – 2:00 p
Actual Time: 1:00 p – 2:02 p

Block 5 Incident Characteristics – Mod 2: NPP, Orphan Source
Scheduled Time: 2:15 – 3:00 p
Actual Time: 2:17 p – 3:04 p

Block 5 Incident Characteristics – Mod 3: RDD Scenario
Scheduled Time: 3:00 p – 4:15 p
Actual Time: 3:05 p - 4:25 (went 5 minutes over)

- Lifesaving rescue operations videos are really helpful. Let the ROSS use the models to show first responders.

Block 5 – Incident Characteristics – Module 4: IND Scenario
Scheduled Time: 4:15 p - 4:45 p
Actual Time: 4:28 p – 4:45
Homework 4:45 – 5:00 (scheduled and actual)

Day 3

Hot Wash - Discuss Feedback on Tuesday's Discussion
Scheduled Time: 8 a – 8:15 a
Actual Time: 8 a – 8:14 a

- Use Needs Improvement (instead of Negative)
- Summary comparison both before and after the four types (NPP, IND, RDD, orphan source)
- REP is very institutionalized, IND and RDD is new territory, so focus more on NPP principles can be taken and applied to IND and RDD
- Scenario location (used the same scenario for NPP and IND) helped in the comparison

Block 5: Incident Characteristics – Module 4: IND Scenario (part 2)
Scheduled Time: 8:15 a – 9:00 a
Actual Time: 8:15 a – 9:05 a (Over by 5 minutes)

- Very good discussion, a lot of questions. Students seem engaged.
- We know that this Module needs to be expanded; too much content not enough time.

Block 6: Communication – Module 1: Communication Techniques
Scheduled Time: 9:00 a – 10:00 a
Actual Time: 9:05 a – 10:00 (some groups did not stop for the break)

Block 6: Communication – Module 1: Communication Techniques (Continued)
Actual Time: 10:15 a – 10:45 a
Scheduled Time: 10:20 a – 10:48 a

Brief outs:

- Griffin (Table 4)
- McKinney (Table 1)
- Leek (Table 3)
- Cima (Table 2)

Feedback: All briefs out were great. Group interactions really helped push things that were not as critical. Critical to have more than one person develop the plan to get the three key messages down. Already out there to see something say something. All presentations did not include any techo-geek stuff. Iterative process to get them concise.

- Question: Is it the intent of the ROSS to have a whole litany of these things to have in their queue?
    - Great idea for the community of the ROSS.
- Remember that the media knows this technique, and they will try to get you to break during a press conference. Important to be aware of that.
- Stay within the Incident Command structure. Defer to the PIO on all things.

Block 6 Communications – Module 1: Communication Exercise
Scheduled Time: 10:45 a – 12
Actual Time: 10:48 –

- Exercise started at 11:28 –
    - Stuenkel – 1:40
        - Concise, calm, over time, good posture at the podium
        - Bill feedback: a little glued to the podium, technical contact was good, work on delivery.
    - Gavlik – 53 seconds
        - Made good eye contact, looked around the room, clear and concise
    - Kearfott – 42 seconds
        - Loud voice, comfortable at the podium
        - Used the word "safe"
    - Semancik - 1:40
        - Volume is good and clear
        - Introduction of who he is
        - Made good eye contact
        - Clear steps outlined
        - Main concern was emphasized at the end
    - Cima – 42 seconds
        - Pace of message was good
    - Leek – 56 seconds
        - Gave a website very clearly – like this point
        - Gave clear area of where to go and not go
    - Morales – 1:06
        - Liked that he included that he was briefing on behalf of the JIC
        - Used a PPT (not sure if was all that effective)
        - Bill: graphics would have been better so that people don't read on the screen (good content).
        - Ben: add the information that you should do.
    - Benke– 1:52
        - Like that he never said IND, always said Improvised Nuclear Device. Used nuclear explosion or the full words
        - Sounded scientific.
        - Speed up the pace.
    - O'Riorden – 1:19
        - Hard to read the text on the screen
        - Answered key questions
        - Don: liked the cartoon depictions
        - Very good body language (feedback from student)
    - McKinley – 57 seconds
        - Very clearly articulated that you should get inside, and stay inside and get cleaned
        - Said that government as best interest at heart
    - Miller – 1:59
        - Put key messages on slides

        - Apologized for the technical difficulties
        - Norman's feedback for himself - noted that it's good to practice if you are using technology
    - Geier – 45 seconds
        - Liked the opening, working as hard as we can (allowed us to be compassionate for him)
    - Howe – 59 seconds
        - Used slides a little too much
    - Salz – 1:20
        - Concise
    - Griffin – 49 seconds
        - Very clear emphasize on what they don't want people to do
    - Masih – 2:32
        - Clear and specific instructions
        - Liked that she explained WHY you should stay inside.
        - Changed voices

Block 6 – Continuation (starting at 12: 55 – 1:20)

- Cleaned up in in this section who decision makers are
- Forms for decision makers here are really good and maybe could be used in an exercise

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Block 7: Resources, Module 1: Fed and State Assets (Part 1)
Scheduled Time: 1:00 – 1:45 and 2 p – 3p
Actual Time: 1:20 – 2:00 (till break)
Actual time: 2:15 – 3:00

- Gave 10 minutes for people to download Block 8 from CMweb and fill out feedback forms.

c.

Block 8: Applying the Guidance – Module 1 PAG vs PAR
Scheduled Time: 3 pm – 4:30 p
Actual time: 3:09 p – 4:30 p

- Went over because of the exercise but good discussion

Block 8: Applying the Guidance – Module 2 ROSS Lessons Learned
Scheduled Time: 4:15 – 5 pm
Actual Time: 4:30 p -

Day 4

Hot Wash
Scheduled Time: 8:00 a – 8:15 a
Actual Time: 8:00 a – 8:15 a

d. Feedback on Block 7:

- Break down into groups and go through the resource guide and agency and acronyms.

- Nature of the business that these resources our at our disposal; even after 10 years overwhelmed with all of them
- Could a Tool be created in a Tabular form that can help a user access these federal agencies?
- One of the roles of the ROSS is to be the interpreter so we need to really understand these resources because the people we are supporting will be even more confused.
- 15 min segments on each of the types of resources for continuing education.
- Federal side can do a better job of removing acronyms when working with people who don't know them. Example: AMS vs Aerial Monitoring System
    e.
    f. Things they still want to know
- Cadre Management x2
- Continuing to learn to interact with ROSS from different backgrounds
- RadResponder review
    g.

Block 8: Applying Guidance – Module 3: Briefing Products
Scheduled Time: 8:15 a – 9:45 a
Actual Time: 8:15 a – 10:00 (15 minutes over with a lot of cut slides by FRMAC)

- The module to me seemed much more focused on modeling products than products based on data collected and measured.

NARAC presentation from 8:15 – 9:30
FRMAC presentation from 9:30 – 9:45
Rapid IND Hazard Tool from 9:45 – 10:00

Block 8: Applying Guidance – Module 4: Exercise (Phase 0)
Scheduled Time: 9:45 a – 10:00 a
Actual Time: 10 a – 10:13 a
Scheduled 15 minutes for the exercise but prepping it took basically the whole time (10:00 to 10:13)

Break
Scheduled Time: 10-10:15 a
Actual Time: 10:15 a – 10:26 a

Block 8 Applying Guidance – Module 4 Exercises
Scheduled Time: 10:15 a – 12:00 p
Actual Time: 10:26 a – 12:15 (till lunch arrived) –

- McKinley (Phase 0)
    - Good brief. Used the Rapid Assessment Tool. Good capture of the zoned approach.
- Miller (Phase 1 - DC) – 1:06
    - Not totally comfortable presenting without reading
    - A little drill sergeant/coach – go go go, but learning
    - Self-reflection: would be better prepping the briefing and not giving the briefing

    - Brooke: right message and accomplished the RFI
- Geier (Phase 1 – Virginia) – 59 seconds
    - Condensed message to "in short"
    - Made eye contact
    - Repeated message
    - Bill: very nice, good way of getting to the point
    - Brooke: good presence. Need to add more uncertainty to these early products. May want to add conservative boundaries onto the map. Say, its heading this way, to be impacted over the next 96 hours
- Leek (Phase 1 – Maryland) -
    - Bill: great job
- Benke - Staging Areas
    - Brooke: note that the briefing product is for a 30 kT
- Kearfott
    - Presentation prompted a lot of discussion
- Miller
    - Self-decon instructions (got them from the IND Communications)
    - Brooke: great job doing Dangerous Fallout
- Kearfott - monitoring and mass care locations
    - Brooke: need to set up areas outside the hot zone boundary, could use a different briefing product
- O'Riorden – responder priorities
    - Brooke: good use of the products and technical messages were spot on
    - Bill: wrote notes down, this could be passed off to the PIO

Block 8 – Module 4
(Continued from morning
Actual 1:00 –
Briefings continued: 1:15 – 2:30

- Leek (x2) - Maryland
    - Clear
- Morales - 2:51
    - Brooke feedback: you are using maps with different counters even though they are the same colors. Major challenge for every ROSS. Like that you were demonstrating transition
- Griffin
    - Bill: great use of three different data products
- Stuenkel –
    - Big R recommendation, bold, short.
- Howe
    - Clear instructions to PA Radiation Program Director
    - Coordination/discussion with radiological experts
    - Explained that he should use CRCs that he has for nuclear power plant

Typo on slide 269

- Masih
    - Brooke: tough one, not a set answer for this. Outside in is a good strategy.

    - Bill: good job, try to be specific. Road, landmarks that you can brief but also be captured in an Incident Action Plan.
    - Brooke: conversational tone. Instead make assumptions and state them.
- Geier x2 –
    - Bill: note use of prompt effects that is only in the severe damage zone.
- Benke
    - Stated up front three main points
    - Bill: nice briefing, I liked it. Liked that you talked to your audience. Hugged the data product.

Phase 4 started at 2:00 – 2:30

- Griffin -
    - Good work
- Morales -
- Cima
    - Bill: presented it well. Right to point.
    - Ben: good that he gave options.
- Howe
    - Bill: defined things well and used the maps well
- Masih
- Semancik -
    - Brooke: good last presented. Captured information, captured attend of the people in the room. Product not as important.
- Salz

Block 8 Applying Guidance – Module 5 Field Data Issues
Actual Time: 2:48 – 3:15
Block 9 Tools: General Tools
Actual Time: 3:20 - 4:11
Block 9 Tools: Hot Spot/CM Web Demo
Actual Time: 4:15 – 4:50
End of the exercise, people felt fatigued. Maybe switch the mornings and the afternoons.

- Deploying products via CM Web worked well.
- CMweb using on iPad is troublesome.

Day 5

Hot Wash
Scheduled Time: 8:00 a – 8:15 a
Actual Time: 8:00 a – 8:15 a
Before:

- Acronyms and labels (taking it forward, understand the dialect of the jurisdiction/place you are being deployed to).
- More time between knowing we were coming and coming (and making mandatory pre-requisites)

- Checklist of items to do before arriving here including signing in (accounts, etc)
    - Exercise on each of the Tools (before the course) then you don't need to spend the time doing it.
    - Tools self-taught
    - Need more time to take the pre-requisites (especially if you're not in this "world")
    - ~ 6-8 hours a week is about right
- Ahead of time knowledge on state resources (come with the data instead of homework)

Going Forward:

- Definitions and sources of items (like Hot Zone, etc)
- Emergency plans altering or restructuring course work (job specific related tasks)
- Play with HotSpot
- Going back to plans and reaching out to planners

Another suggestion: All-Hazard Incident Management Team (Type 3 course) – 6 day course

Block 9: Tools Module 3: Hot Spot/CM Web Demo (part 2)
Scheduled Time: 8:15 a – 9:15 a
Actual Time: 8:15 a – 8:55 a

Break
Scheduled Time: 9:15 a – 9:30 a
Actual Time: 8:55 a – 9:17 a
Time for discussion of distribution of materials – 9:17 a – 9:25 a

Block 9: Tools – Dose Assessment Modeling
Scheduled Time: 9:30 a – 10 a
Actual Time: 9:25 a – 10:02 a

Block 9: Tools: Module 5: Data Collection and Sharing
Scheduled Time: 10:00 a – 12 pm
Actual Time: 10:05 a – 12:00

- Felt a little slow (confusing for people)
- A lot of questions

Elevator Speeches

- Howe: 22 seconds
    - Feedback: short sweet to the point, outreach, gave a card, short, add an example of one or two things that you can help them with.
- Morales – 16 seconds
    - Feedback: add key words radiological and spell out Radiological Operations Support Specialist. Add examples of what you can do.
    - Add in if you are from a State program.
    - Make human connection
- McKinley, 26 seconds
    - Feedback: great, "nailed it"
- Masih, 35 seconds

    - Feedback:
- Miller, 28 seconds
    - Brought computer up to the podium.
    - Saying up front – anywhere you need me to go, I can go. Like keeping ROSS flexible.
    - Say "radiation protection SME" or something like that instead of CHP
- Cima, 43 seconds
    - Feedback: Bill, "right on the money"
    - Good mention of products and data analysis
- Griffin, 32 seconds
    - Feedback: good job
- Salz, 27 seconds
    - Remember they don't know what PARs are
- Kearfott 35 seconds
    - Qualifications didn't resonate with Brooke. When you become too smart.
    - Training in Emergency Management just to help you out.
- O' Riorden, 51 seconds
    - Bill: don't read from the cards, but you made eye contact a lot of the time.
- Benke 1:32
    - Clear but a little long
- Geier, 43 seconds
    - Pulled off handing a map
    - Conduit to the rest of the response was a good addition
- Semancik, 27 seconds
- Stuenkel, MISSING TIME
    - Included PPE for one of the first times
- Gavlik, 35 seconds
    - Very good
- Leek, 41
    - Perfect

Feedback:

- Switch up the groups
- More group discussion
- Not enough time to have Q&A
- The exercises were fun and entertaining and the day went quickly
- Wasn't comfortable at the 8-hr HPS course, but after taking the pre-requisites and sitting in on the course, I feel more comfortable.
- Revise Course goals to target a few positions – Safety, Operations, etc.
- Kickoff the program with a customer (fire chief, etc.) to let them know what a ROSS can do
- Good mix of people to get perspective
- Will be interesting to see how things get flushed out and see how we leverage people's strengths.

Course Objectives

- Blackboard for long distance learning
- Liked the big R and little R discussion (helped people feel better)
- Not enough time on radiological instrumentation
- Novice proficiency on a number of tools
- Class was willingly to participate; learned from everyone, people were option to feedback
- Did not meet certification of process.

Would you recommend and improved-ROSS course: everyone raised their hands

- RFI exercise proved the amount of information you can get from seemingly routine events
- Need to get people better informed on non-NPP events
- Ability to bring health physics into emergency response role
- Need radiological response people interfacing with emergency management
- KY: good relationship between all parties. Thought he was pretty well prepared, but helped to set a standard, a collection to become the national standard
- To talk to other professionals in the field: evacuate and CT scans vs. real life and death decisions. Immediate life safety decisions, which is a real possibility in this world.

What did NOT work?

- Can't just be one 40 hour course. Needs to be a series of competency-based courses on tools, etc. Self-study and group activity. Not just one course.
- Computer Tools: Would have appreciated having the tools ahead of time to be sure to identify what I did and did not know.
- Items that can't be rectified need to happen before and after class
- EMI 303 course
- Have more time to complete requisites
- Continuing Education, need to focus on this.
- For decision-makers who decide timing and staffing to determine who are necessary
- Quarterly ideas with webinars

ROSS Pilot Parking Lot, Major Points and Key Discussions
Day 1:

- Where does FRMAC fit into the ICS organization chart?
    - Is the ROSS briefing the FRMAC? Is the FRMAC briefing the ROSS?
    - How do roles and responsibilities transfer from initial ROSS response to FRMAC integration?
- Mobilization and Reporting (from ICS Job Aid discussion)
- Turn back dose and turn back rates
- Release of Information (models, information, other timely information) will likely be a challenge and everyone will need to work together to minimize impediments to releasing good information to the right people
    - Jurisdiction of the data (who owns it)
    - Convince people what information is trusted

  - Get to the best source of information/model as quickly as you can
- EMP – what does a ROSS need to know on this?

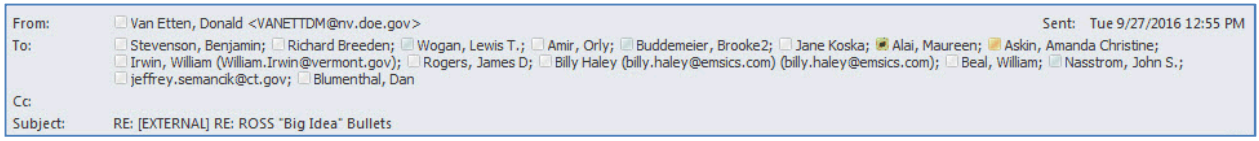
Day 2

- Determine what information FEMA, NRC and other entities have as state profile's and cross compare with ROSS-developed slides on state features on response.
- Distribution of ROSS materials (Toolkit, etc.)
- Simplification of recommendations included in the Toolkit:
  - Can there be a ROSS best practices or "ROSS defaults"?
  - How can we help ROSS simplify?
  - How can we come together to make sure that any two ROSS provide the same recommendation to a Fire Chief in a certain scenario?
- Wind and dispersion modeling

Day 4

- Recovery issues, including contaminated debris

Don VanEtten CTOS Center for Radiological Nuclear Training

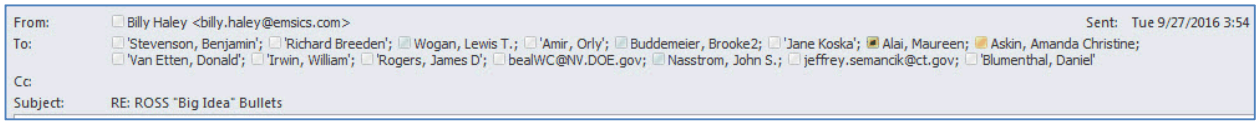

From: Van Etten, Donald <VANETTDM@nv.doe.gov> Sent: Tue 9/27/2016 12:55 PM
To: Stevenson, Benjamin; Richard Breeden; Wogan, Lewis T.; Amir, Orly; Buddemeier, Brooke2; Jane Koska; Alai, Maureen; Askin, Amanda Christine; Irwin, William (William.Irwin@vermont.gov); Rogers, James D; Billy Haley (billy.haley@emsics.com) (billy.haley@emsics.com); Beal, William; Nasstrom, John S.; jeffrey.semancik@ct.gov; Blumenthal, Dan
Cc:
Subject: RE: [EXTERNAL] RE: ROSS "Big Idea" Bullets

A few bullets:

- The course is very packed and to add anything, something has to go, to be a ROSS they must be experienced so the Prerequisites must insure the basics are understood (logins/passwords known) and be vetted.
  - CMWEB, RadResponder, Socrative, NARAC, Hotspot, be ready to use and navigate this and other software
  - ICS (a lot of Block 3 should be prereq), Liaison (LN training), focus on the ROSS position interface roles within the ICS vs teaching ICS
  - Access and prereq review of ROSS Toolbox (minimum learn to navigate tool box quickly)
- The report-out exercises are great, the quality improved over the short week, Communications is KEY
  - The real time feedback to students was good, video is also a good idea, all the report-out should be videoed and provided to the students to review as a homework (posted to a student only shared file on CMweb)
  - The comm text as I review it looks great, maybe short embedded videos of good and bad examples.
- CM Home Team and/or NARAC data exercise problem conducted over phone/internet. Where the ROSS must look into incident data and discuss a data product with assessment type scientists for an IC briefing.

- IC Safety Officer interface exercise working with incident data on a worker safety issue/product for the IAP.

Billy Haley | Director of Operations Emergency Management Services International, Inc.


From: Billy Haley <billy.haley@emsics.com> Sent: Tue 9/27/2016 3:54
To: 'Stevenson, Benjamin'; 'Richard Breeden'; Wogan, Lewis T.; 'Amir, Orly'; Buddemeier, Brooke2; 'Jane Koska'; Alai, Maureen; Askin, Amanda Christine; 'Van Etten, Donald'; 'Irwin, William'; 'Rogers, James D'; bealWC@NV.DOE.gov; Nasstrom, John S.; jeffrey.semancik@ct.gov; 'Blumenthal, Daniel'
Cc:
Subject: RE: ROSS "Big Idea" Bullets

All,

Again, great course last week. The thoroughness and attention to detail in the materials was second only to the instructors who demonstrated great passion for and knowledge of the subject area. It's hard to sit through a full-week of training but the instructors kept the group, including me, engaged and interested throughout the week.

While the pilot was a success, I feel there is still room for improvement in the ROSS course and overall ROSS program and curriculum. I'll try to focus on "big idea" bullets as Ben requested.

First, here are some of my concerns:

1) Too much content. Everything was great, but it was too much. I think we need to revisit what is absolutely critical for the ROSS and cull some of the material from the 40-hour course. Part of the name ROSS is "Operations" and "Specialist". In order to fit everything in 40 hours we skimmed the surface on much of the material when we should have taken a deeper dive to truly make them "Operations Specialists". At times, because of the pace we were trying to keep, I felt we were more at the "awareness" level than the "operations specialist" level. I'm not a big fan of web-based training and webinars, but I really think we need to reserve the 40 hours for topics that really require instructor led presentations and interaction, as well as activities and exercises where we try to "throw them in the deep end". The rest we can make part of a robust pre-requisite program of web-based training and webinars. (And we should give prospective ROSS 40-hour students several months advanced notice to complete these pre-reqs).
2) Baseline technical knowledge and competency: I expected a stronger baseline knowledge of the technical end of the business and was surprised at how much time we spent on things that I thought were basic or should have been pre-requisite knowledge. When we came up with this concept it was based on the assumption that our ROSS's would come to us with the technical competency, and we would just have to teach them emergency response (incident management and radiation emergency

response). I was disappointed to hear more than one student misunderstand the use of KI. Were our original assumptions on the baseline knowledge misguided or did we have an inexperienced student base this time?

3) Communications. We spent a lot of time on 27-word message and responding to questions from the press. I don't think communicating with the press and public is a primary function of the ROSS. Shift the focus to communicating with and briefing decision makers. I wasn't a fan of the "mock press" style of questioning. But maybe there's value in the 27-word message as a briefing tool. Bottom line, being able to communicate is extremely important, but the focus should be shifted to briefing responders and decision-makers, not the press and public. Since we only have 40 hours, we shouldn't try to train the ROSS to be PIO.

Incident Management Modules (Day One)

1) Incident management module. Now that I've seen how it is being incorporated into the course, I would like to adjust the materials and approach a little to better fit what we're trying to accomplish. I developed those presentations for entirely different audiences and settings, and I'm rethinking that. I'd also like to see the IG for that module and maybe add some relevant examples and stories.
2) Entire response network: The very first diagram we developed to describe the ROSS concept is now probably lost but I tried to recreate it last week. Basically we were trying to show that you could have ROSS's at different nodes in a response framework and they need to work together to facilitate the exchange of radiological response information (to solve the problem of decision-makers not understanding the radiological hazard). We didn't really emphasize this last week nor did we emphasize that ROSS's may need to coordinate with other ROSS's at different locations (part of a larger ROSS network). Maybe the focus of the ROSS program has changed (actually, I know it has as it has expanded in scope) but I think the foundational principle of communicating radiological response information is a core competency. I'd like to see us re-emphasize this and it would start in the incident management modules by highlighting potential ROSS-to-ROSS communications and coordination.

Other Considerations:

1) How does the ROSS role change a few days into the response when the radiological response infrastructure is in place? Originally we envisioned the ROSS as a local resource who could bridge the gap between the traditional first responders and the federal radiological response cavalry. Through recent exercises, we've have proven the value of the ROSS beyond those initial stages, but at what point is the entire radiological response infrastructure in place and the ROSS just folds into the response in their

natural role? Bottom line, at some point the people filling the ROSS position will probably settle into a specific function and the ROSS is replaced by a well-organized and equipped radiological response organization.

2) Exercises: I'd like to see more exercises in the course that "throw them in the deep end". As Bill said, the only way to learn how to do the ROSS position is to do it. We have to make the most of our 40 hours to do this. I have a few ideas swirling around in my head but one revolves around having ROSS's at different locations during the response (ICP, local EOC, state EOC) and making them perform their respective missions while coordinating information among the various nodes. Basically they'd be faced with injects specific to their own incident management node, have to make a recommendation, and have to coordinate with the other nodes. Overall, if possible, I'd like to see this course shift to 50/50 lecture/exercise. I'd also like to see the students in more situations where they have to assess the information available to them and make a recommendation on responder health and safety, operational strategies, public health decisions, resource management, etc.
3) I mentioned these two comments in the debrief and throughout the week, but I'll mention them again:
    a. We should consider the utility of "table coaches". Table coaches would be people we deem qualified to perform the ROSS function. It could be someone like Jeff Semancik (someone who might actually perform the role) or could be someone like Bill Beal (someone unlikely to perform as a ROSS but certainly could and knows what it takes). This might increase the one-on-one time with the students, allow us to conduct more table top activities, and allow us to debrief activities/exercises quicker by doing them at the group/table level. Furthermore, it might help us develop our cadre of type 1/2 ROSS by exposing them to more of the concepts as well as serve as a ROSS instructor development process.
    b. Tracks (I think Angela also mentioned this): If we're going to end up with people naturally qualified for various ROSS functions or levels (type 1/2/3), maybe we can break them up into "tracks" for part of the course to focus in on the topics we want to emphasize with them. With the cadre last week (Brooke, Bill, Don, myself, and some of the others that floated in and out) we probably could have done this.
4) Course IAP: On face value I love the idea but I've been thinking about it a lot and I don't think it is going to work. While we could make an "IAP" for each day of the training course, we would really be bastardizing the intent of the IAP. I think this was originally suggested so the students could spend more time with an IAP, familiarizing themselves with how to read an IAP, but to make an IAP for the course delivery would require us to

change the intent of many of the ICS forms that constitute an IAP. I'm afraid this would have a reverse effect of a negative learning value, by showing the students an IAP that isn't actually an IAP.

Cadre Management

1) Obviously a lot that can/needs to be done here and this will happen as we continue to grow the program. But I like the position task log concept and as I noted in the debrief, I think we should align this closer with the ICS position task book model. This is largely a formatting issue at this point, making the ROSS critical performance tasks fit into an ICS position task book format, but I think it is a good step considering the desire for this to be a NIMS typed position.

Those are my "big ideas". I'm happy to explore or discuss them further with anyone. I greatly appreciate the opportunity to be a part of the ROSS pilot and hope to stay involved in this important initiative as it keeps growing. And again, great work by everyone involved.
Thanks,
Billy

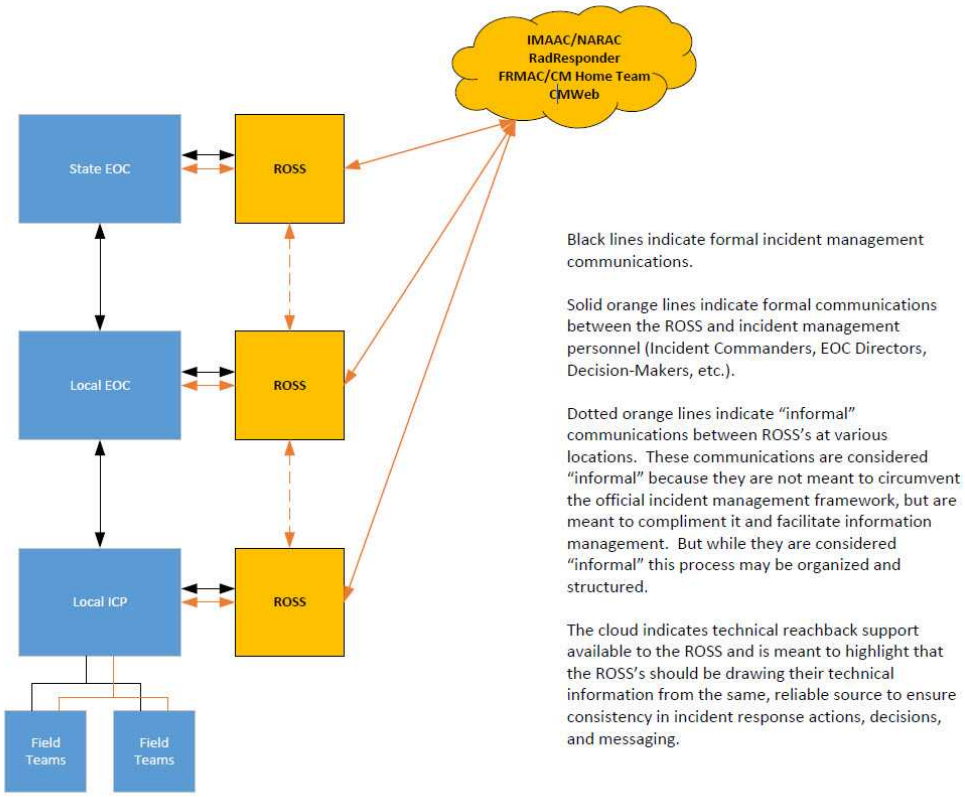


Figure 2. Referenced attachment from Billy Haley

Dan Blumenthal Department of Energy with response from Orly Amir NUSTL


From: Amir, Orly <orly.amir@hq.dhs.gov> Sent: Mon 9/26/2016 2:37 PM
To: Blumenthal, Daniel; Alai, Maureen; Wogan, Lewis T.; Askin, Amanda Christine
Cc: Irwin, William; Rogers, James D; Stevenson, Benjamin; brooke2@llnl.gov
Subject: RE: Items from ROSS Pilot

From: Blumenthal, Daniel [mailto:Daniel.Blumenthal@nnsa.doe.gov]
Sent: Monday, September 26, 2016 4:41 PM
To: Amir, Orly <orly.amir@hq.dhs.gov>; Alai, Maureen <alai1@llnl.gov>; Wogan, Lewis T. <wogan2@llnl.gov>; askin1@llnl.gov
Cc: Irwin, William <William.Irwin@vermont.gov>; Rogers, James D <James.Rogers3@fema.dhs.gov>; Stevenson, Benjamin <Benjamin.Stevenson@hq.dhs.gov>
Subject: RE: Items from ROSS Pilot

Day 1:

- Where does FRMAC fit into the ICS organization chart? (FRMAC plugs into planning section nominally with people attached to other sections as needed)
    - Is the ROSS briefing the FRMAC? Is the FRMAC briefing the ROSS? I guess this could go both ways. If the ICP or EOC needs to give the FRMAC some info, using the ROSS to do that could be a good idea. I had not thought about it. If the FRMAC needs to brief the state at EOC or an IC at an ICP, I envision the briefing is to leadership with a ROSS present. There could be lower level interactions where someone from FRMAC is briefing a ROSS.
    - How do roles and responsibilities transfer from initial ROSS response to FRMAC integration? I assume the question is what happens to the ROSS role once a FRMAC (or more generally Fed assets) arrive. At that stage, the EOC and ICP still need a rad SME. The ROSS will continue to provide that. The FRMAC will do its mission.
- Mobilization and Reporting (from ICS Job Aid discussion) Are you saying that we need to cover these aspects in the job aids? IF so, we will make sure to put that on the new IAA tasks for additional job aid work.
- Turn back dose and turn back rates (an important topic and one where we should define and spell out the ROSS role. The ROSS needs to know who has what authorities and know that the ROSS has no authority, but just advises.)
- Release of Information (models, information, other timely information) will likely be a challenge and everyone will need to work together to minimize impediments to releasing good information to the right people (information sharing was a big topic post-Fukushima and CRCPD has some good guidelines now that even made it into the new NRIA.)
    - Jurisdiction of the data (who owns it)
    - Convince people what information is trusted
    - Get to the best source of information/model as quickly as you can
- EMP – what does a ROSS need to know on this?

Day 2

- Determine what information FEMA, NRC and other entities have as state profile's and cross compare with ROSS-developed slides on state features on response.

- Distribution of ROSS materials (Toolkit, etc.)
- Simplification of recommendations included in the Toolkit:
    - Can there be a ROSS best practices or "ROSS defaults"?
    - How can we help ROSS simplify?
    - How can we come together to make sure that any two ROSS provide the same recommendation to a Fire Chief in a certain scenario? (TRAINING and job aids)
- Wind and dispersion modeling (what is the gap here? Is it about what the ROSS role is?)

Day 4

- Recovery issues, including contaminated debris