Training Needs Analysis-
Decision-Making Under Stress

Contents

Executive Summary

The nuclear industry's response to the Fukushima event exposed a need for training to address decision-making under stress. To fill that need, INPO's Emergency Response Training Development Working Group commissioned High Performing Systems, Inc., (HPS) to develop a four-hour instructor-led training course with a practical application. This course is INPO's intellectual property, but it must be led by HPS-certified facilitators, who may be HPS employees or industry personnel. The Working Group determined that the costs of having the vendor deliver the training, or certify others to deliver it, will be prohibitive to many industry training organizations. Therefore, a need still exists for an industry-common training product that is affordable to deliver to the industry, by either INPO instructors or INPO-certified industry instructors.

Background and Scope

Post-Fukushima regulatory actions and requirements, the consolidated rulemaking anticipated in 2017, and the nuclear utility industry's commitment to beyond-design-basis event response collectively contribute to new emergency response performance requirements as summarized by the following:

- Nuclear facility operators are required to develop and maintain the ability to mitigate the consequences of beyond-design-basis external threats and dual unit events (protect critical safety functions).
- The nuclear industry is required to develop and maintain a collaborative infrastructure for responding in direct support of an affected nuclear facility operator(s), and for coordination of a strategic response to events that involve broad nuclear safety, social, political or economic ramifications.

These post-Fukushima performance requirements extend individual station coping capability, and industry support capability, beyond previous standards for accident mitigation. Implementation conditions may involve large area damage, radiological or other environmental hazards, and the psychological stresses associated with a long duration response. Existing utility and INPO training programs are not designed to address the development needs of individuals who must assume leadership and make timely decisions in such volatile, uncertain, complex or ambiguous environments.

To address these needs, the development of decision-making under stress (DMUS) training has been undertaken as a sub-project of the Emergency Response Training Development (ERTD) Project. The purpose of this sub-project is to provide a common industry approach for training and developing leadership and decision-making capabilities.

This document describes the process of developing DMUS training up to the end of 2015, and the remaining need to develop additional training offerings.

Job and Task Analyses

Reaction to Fukushima Event (IER L1 13-10)

The initial training needs and job/task analyses were conducted during development of IER L1 13-10, *Nuclear Accident at Fukushima Daiichi Nuclear Power Station*. An excerpt from that document, describing the relevant details of the Fukushima Daiichi event, is in Appendix A. Recommendation 6 of that report states the following regarding knowledge, skills, and proficiency (note highlighted elements):

> *Prepare personnel responsible for performing emergency response duties with the required knowledge, skills, and proficiency to execute their roles. A combination of training and realistic drills, as well as procedure guidance and human factoring, should be used to prepare the staff for emergency response duties. Emergency response duties to be considered include the following:*
>
> - *execute emergency and accident procedures*
> - *assign the highest priority to maintaining core cooling and containment integrity*
> - *interpret post-event data and indications given a sound knowledge of plant operations, safety systems, and design basis*

- *perform tasks associated with the installation and use of portable equipment during emergency conditions*
- ***determine expected plant conditions when essential plant status information is uncertain or unavailable***
- ***cope with the unavailability of primary communication methods as well as methods for monitoring critical plant parameters and emergency response functions***
- ***perform in challenging operating environments and extreme environmental conditions***
- *respond when radiation and contamination levels are high*
- ***make decisions while dealing with traumatic human impact, stress, and fatigue***

ERTD Working Group Analysis

The ERTD Working Group expanded upon the IER L1 13-10 analysis to determine more specifically the emergency response positions and functions with the highest needs for decision-making capability. This analysis is contained in the document *Analysis of Beyond Design Basis External Event Response Functions* (Initiative #1). This analysis identified and described many emergency response functions that require decision-making under sub-optimal or adverse working conditions. The functions and knowledge components specifically relevant to decision-making under stress are summarized in the table below.

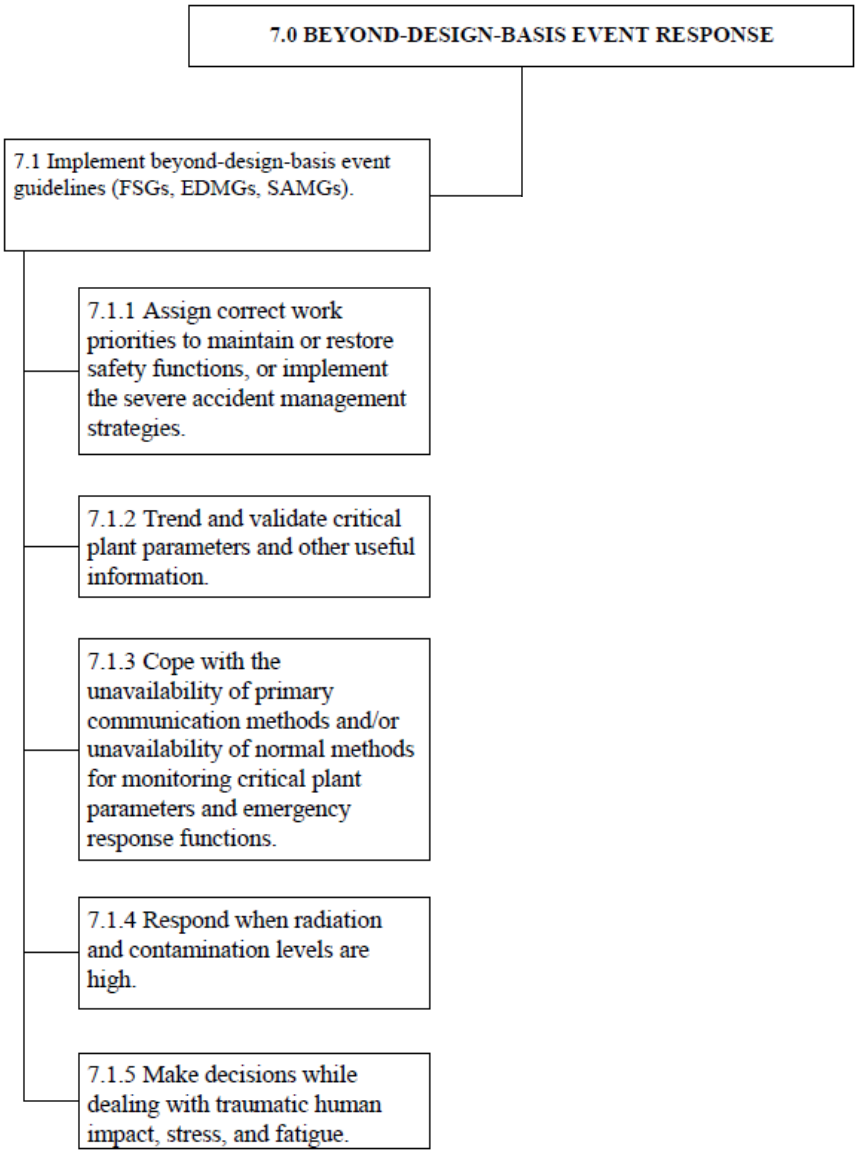
Roles	Functions	Knowledge Components
• Shift manager and to a somewhat lesser extent the shift supervisor and operating crew • Emergency director whether in control room, TSC, or EOF • TSC facility director • EOF facility director • OSC facility director • Key TSC operations and technical support • TSC or EOF logistics coordinator (point of contact for receipt of offsite support including Phase 3 FLEX equipment) • INPO Industry Response Center positions: emergency director, assistant emergency director, logistics coordinator	Prioritize, and monitor critical response actions in the working conditions that may exist following an extreme external event. (L1 IER 13-10, Rec. 5b) Make decisions while dealing with traumatic human impact, stress, and fatigue. (L1 IER 13-10, Rec. 6)	Anticipate that traumatic human impact, stress, and fatigue may be experienced. (L1 IER 13-10, Rec. 6. Anticipate the difficulty of making decisions while dealing with traumatic human impact, stress, and fatigue. (L1 IER 13-10, Rec. 6)

Training Guidelines (ACAD 15-010)

The Working Group's analysis was factored in to the inventory of emergency response functions and tasks included in document *ACAD 15-010: Guidelines for the Training and Qualification of Emergency Response Personnel*, specifically:

- Section 3.0, *Emergency Direction and Control*, item 3.7: **Recognize and address the effects of stress on emergency responders and on their performance.**
- Section 7.0, *Beyond-Design-Basis Event Response*, sub-section 7.1 and all its items as illustrated below. Note that while only item 7.1.5 explicitly describes decision-making under stress, this ability supports all of the other items in this sub-section.

Inventory of Utility Emergency Response Functions and Tasks



DMUS 1 Development

The ERTD Working Group defined a general framework for DMUS training:

- Provide credible content refined for nuclear industry application.
- Minimize the impact on current training schedules and the impact on time allotted for current training requirements.
- Design for broad applicability without station-specific detail.
- Generate learner-directed participation.
- Provide for experiential learning.
- Leverage existing knowledge and past experience.
- Consider a wide variety of instructional methods.
- Consider training technologies not typical of current nuclear power plant training programs.
- Limit recurring costs for INPO and utilities.

DMUS 1 Vendor

This general framework led the ERTD Working Group to look outside the nuclear industry for professionals with subject matter credibility and experience in designing and developing similar training. High Performing Systems, Inc. (HPS) was contracted to adapt their existing programs for our purposes. The final product would be a training product to fit the framework described above, titled *Decision-Making Under Stress for Emergency Responders*.

For the purposes of this and other documents that require differentiation between versions of this training, the HPS version of the decision-making under stress training is nicknamed DMUS 1.

HPS uses a systems approach to help leaders, teams and organizations improve performance. The founder and CEO, Dr. Henry L. (Dick) Thompson has been one of the U.S. military's subject-matter experts on stress on the battlefield. His research has covered the impact of stress of decision-making, cognitive performance, aggressive behavior, sleep deprivation, leadership and emotionally intelligent behavior. HPS was contracted to:

- Use HPS subject matter expertise in crisis response, stress management, and leadership development.
- Design training for 3-4 hours of contact.
- Design for classroom, and potentially plant reference simulator, as training settings.
- Link material to current nuclear industry emergency response strategies and practices.
- Organize the training content to be efficiently adaptable for inclusion into existing leadership development programs.
- Customize some examples and experiential exercises to nuclear operating experience, work situations, and anticipated emergency response challenges.
- Analyze the current INPO leadership curricula to recommend the best approach for adding DMUS into the existing programs.

Learning Objectives

The ERTD Working Group composed the following learning objectives for HPS to use in their development.

Terminal objective: Given crisis conditions, make timely and effective decisions.

Enabling objectives:

1. Given incomplete or conflicting event data and indications, interpret and determine relevancy.
2. Use relevant data to develop and prioritize actions in a timely manner.
3. Once actions are developed, implement actions and monitor progress during the working conditions that may exist following the event.
4. Identify and authorize deviations from normal work processes, when required, to complete actions.
5. Given the event, evaluate the potential for deteriorating conditions and in advance, initiate compensatory actions.
6. Given extreme working conditions, stress, uncertainty and fatigue, recognize and implement techniques to assist in coping with those conditions.
7. Identify and request offsite equipment and resources.
8. Given the event, evaluate the safety of the teams with the over-arching imperative need to protect the health and safety of the public.
9. Based on the evaluation above, make decision and communicate the basis for decision to team, include delegation of authority to make adjustments to the plan to meet objective.
10. Given extreme working conditions, stress and fatigue, demonstrate the ability to project outward calm to help lower stress.

Given on HPS's subject-matter expertise and focus, it was their professional opinion that DMUS 1 should focus on stress and its effects on one's ability to make decisions, and less on the role-specific tasks and outcomes described in the ERTD Working Group's objectives. The ERTD Working Group deferred to HPS's expertise, and accepted the revised learning objectives below:

Terminal objective: Given crisis conditions (stress), make timely and effective decisions.

Enabling objectives (organized to support content development):

- Introduction
    - Learn what will be covered in the training.
    - Experience the stress of US Air flight 1549.
    - Examine well-known examples of decision making under stress.
    - Learn why this session is important.
    - Learn the definition of the stress effect and its general impact on decision-making.
- Decision Making
    - Learn the types of decision-making.
    - Understand what is happening in the brain as decisions are made.
    - Learn the relationship of emotions and emotional intelligence to decision making.
- The Stress Effect
    - Learn the definition of stress.

    - Learn how stress impacts the brain and body.
    - Experience, personally, the physiological effects of stress.
    - Learn to use the Perception / Appraisal / Motivation / Action (PAMA) model.
    - Learn how to self-check stress levels.
- Stress and Decision Making
    - Learn how stress interferes with decision-making.
    - Experience, personally, the difficulty of making decisions under stress.
    - Experience how emotions affect stress.
    - Learn to recognize the lead up to Catastrophic Leadership Failure in self and others.
    - Recognize how leadership styles change under stress.
- Building Resilience
    - Understand how to use the Stress Resilient System model.
    - Learn techniques to build and maintain Stress Management Capacity.
    - Learn techniques to build and maintain Cognitive Resilience.
    - Learn techniques to build and maintain Stress Resilient Emotional Intelligence.
    - Receive feedback on ARSENAL results.
    - Build an action plan based on ARSENAL feedback.
- Scenario-based Practice Session
    - Resilience
- Wrap Up
    - Learn the next steps to take after completion of this training.
    - Learn the resources available to build a workable action plan.
    - Learn the INPO contacts available for assistance.

From these revised objectives, HPS delivered a condensed version of their regular 2-3 day course on decision-making under stress.

Practical Exercise

DMUS 1 includes a practical exercise that presents a scenario of an earthquake at a nuclear facility. Using high-quality graphics and audio, the presentation simulates the earthquake event. Participants are then required to assign workers to various tasks under time pressure as new information about the condition of the plant is reported to them by way of the presentation. A short “After Action Review” (debrief) follows the exercise. The exercise is at the end of the DMUS 1 course and is intended to provide an opportunity for participants to experience stress and apply the tools discussed in the training. The exercise was developed independent of HPS, Inc.

Need for Additional Training Offering

At the ERTD Working Group meeting on August 18-19, 2015, attendees discussed the costs for deploying DMUS 1 to the industry. These costs potentially involved instructor certification, course facilitation by HPS-certified instructors, course facilitation by personnel and other expenses such as travel and reproduction of materials.

Options for Providing Training to Industry

The group discussed options for providing industry-common DMUS training going forward. These options included:

1. Contract with HPS to present DMUS for Emergency Responder training at utility locations
2. Certify industry or INPO instructors to present DMUS for Emergency Responder training
3. Purchase license/prepare industry instructors to present the DMUS for Emergency Responder training materials, eliminating the tie to HPS
4. Develop INPO "Emergency Response" seminar/prepare facilitators to present within INPO's suite of leadership courses and seminars
5. Develop industry-owned course that does not require license fees or instructor certification– with HPS support and referencing HPS materials
6. Develop industry-owned course that does not require license fees or instructor certification– without HPS support and using only material that is not licensed or copyrighted

The working group analyzed the costs and benefits of each option, and recommended Options 1 and 5 in parallel. The industry-owned course described in Option 5 is the subject of this document.

For the purposes of this and other documents that require differentiation between versions of this training, the proposed INPO version of the decision-making under stress training is called Crisis Decision Making for Nuclear Leaders and nicknamed CDM4NL.

The details of the working group's analysis are excerpted in Appendix B from Attachment 1 to the *ERTD Working Meeting August 2015 Minutes*.

To gather feedback on their plan, the ERTD Working Group conducted a webcast on October 1, 2015 for corporate and fleet training managers. Webinar attendees discussed approaches for meeting the training need. Training managers supported the creation of CDM4NL, and contributed their input.

Initial Planning

Initial planning for CDM4NL (Option 5, above) suitable for delivery by station or fleet instructional staff was completed during the ERTD Working Group meeting in October 2015. The Working Group agreed that the intent of CDM4NL is to model DMUS 1, with some changes to align with the Generic Advanced FLEX course.

At this meeting, the working group discussed the following feedback from the pilots of DMUS 1:

- Good: What stress is and its effect
- Good: Stress effect demonstrated using biofeedback device
- Good: Stress resilience, but need more practice using tools and more focus on developing stress resilience
- Good: Industry-centric practical –but not discussed and leveraged as it could have been

The group also drafted revised learning objectives and additional scenarios for practical exercises (in addition to the earthquake scenario described above) to support the development of CDM4NL.

DMUS Training Development Working Group

The ERTD Working Group appointed a DMUS Training Development (DMUS TD) group comprised of industry and INPO instructors, which held its first meeting December 2-3, 2015. Working group members provided feedback on DMUS 1 that aligned well with feedback provided during the four pilots. Most significantly:

- The learning objectives are more of a course outline than a reflection of the Fukushima lessons learned and training needs analysis. Therefore, addressing these lessons learned and training needs is a gap to be filled by the new course.
- CDM4NL should devote less course time on the science of stress, and more on coping strategies and tools.
- The practical exercise (earthquake) is lacking consequences for the decisions that are made, which makes it difficult to discuss the quality of decisions made under stress.
- The After Action Review (debrief) is the primary learning opportunity, but it is rushed and unstructured.

The DMUS TD group also reinforced the following practical criteria for the new course:

- The offering will be classroom training that can be conducted within a 4-hour session by one facilitator.
- There will be no costs to industry for certification of instructors, beyond the time required for train-the-trainer instruction.
- Classroom materials will be inexpensive, and reproducible as much as possible at utility training sites.
- The design of the new course will leverage the work done by High Performing Systems and Dr. Henry L. Thompson (DMUS 1).

Learning Objectives

The DMUS TD Working Group refined the learning objectives drafted by the ERTD Working Group. These objectives are designed to address specific training gaps not filled by DMUS 1.

Terminal objective: Given your role as an emergency responder, understand and apply tools that support effective decision-making under crisis conditions, as described in the generic advanced FLEX course and in this course.

Enabling objectives:

1. Define *stress*.
2. Describe stress' effects on the brain and body.
3. Apply tools for recognizing, checking and controlling the effects of stress for yourself and others.
4. Describe how stress resilience and tolerance affect your ability to perform under stress.
5. Describe the influences of emotions, emotional intelligence and cognitive intelligence on leading during a crisis.
6. Discuss methods that support effective decision making during crisis conditions.
7. Contrast rational and intuitive decision-making methods and their applications.
8. In a simulated nuclear plant crisis event, apply methods for decision making under stress using the concepts and methods presented in this course.

The group also brainstormed to provide details for the practical application scenarios so that the design of CDM4NL could include discussion of the consequences of decisions, and the effects of stress on the decisions made.

Conclusion

The need for decision-making under stress training is clearly mandated by the recommendations of IER 13-10, and subsequent analyses of the tasks and abilities required for nuclear leaders to manage beyond-design-basis emergency events. To fill that need, the ERTD Working Group commissioned the development of DMUS 1. However, because of the prohibitive costs of delivering DMUS 1 to INPO-member emergency response organizations, the need for an industry-owned CDM4NL is clear. In addition to reducing training costs, the development of CDM4NL is an opportunity to address the refined needs and learning objectives identified in pilots and reviews of DMUS 1.

The learning objectives defined by the DMUS TD group are intended to fill the training needs of the industry, as determined by the resources described in this document, and the professional opinions and experience of the working group members. These learning objectives will form the basis of a subsequent Training Design Document.

Practical requirements for CDM4NL have emerged from the process and resources described above, and are summarized in the table below.

Requirement	Source
Provide credible content refined for nuclear industry application. Minimize the impact on current training schedules and the impact on time allotted for current training requirements. Design for broad applicability without station-specific detail. Generate learner-directed participation. Provide for experiential learning. Leverage existing knowledge and past experience. Consider a wide variety of instructional methods. Consider training technologies not typical of current nuclear power plant training programs. Limit recurring costs for INPO and utilities.	ERTD Working Group, general framework for DMUS 1
Address lessons learned and training needs not met by DMUS 1. Devote less course time (than DMUS 1) on the science of stress, and more on coping strategies and tools.	DMUS TD Working Group, December 2015

Requirement	Source
Create consequences for decisions made during the practical exercise, to promote discussion of the quality of decisions made under stress. Provide structure for the practical exercise debrief, to take full advantage of the learning opportunities of the practical exercise. Develop classroom training that can be conducted within a 4-hour session by one facilitator. Require no costs to industry for certification of instructors, beyond the time required for train-the-trainer instruction. Provide inexpensive classroom materials; if possible, make them reproducible at utility training sites. Leverage the work done by High Performing Systems and Dr. Henry L. Thompson (DMUS 1).	

Appendix A: Excerpt from IER L1 13-10

Nuclear Accident at the Fukushima Daiichi Nuclear Power Station

Human Limitations

During the Fukushima Daiichi accident, difficult and sometimes life-threatening decisions had to be made. At times, supervisory personnel were not prepared to make these decisions because they had not previously been exposed to an event of the magnitude they faced on March 11, 2011. The responders worked to stabilize the units under extraordinary working conditions[1] despite the personal risk and having no contact with their families or friends because of the severity of the accident on the surrounding area and population. Personnel on site during the initial accident response were highly stressed. While they performed their tasks admirably under extreme duress, the initial stress may have contributed to the confusion regarding the status of the IC and core cooling on Unit 1.

As the accident continued, many of the workers remained on site and worked almost continuously. Stress levels escalated as working conditions degraded physical demand, hunger, and lack of sleep. Insufficient sleep can have several safety-related consequences, including slowed reaction time, reduced vigilance, reduced decision-making ability, poor judgment, distraction during complex tasks, and loss of awareness in critical situations. It hampers a person's ability to perform tasks that require logical reasoning or complex thought. Making decisions is more difficult because the person cannot assess situations as well. These conditions may have contributed to the decision to secure HPCI on Unit 3 without first establishing alternative water injection into the core.

Before the accident, no contingency plans were in place to help workers deal with the radiation concerns or to help them identify the location and condition of family members when internet and phone systems became unavailable after power was lost. In general, emergency response training across the nuclear industry does not include exercises in which individuals must make decisions and provide direction to others under circumstances such as those described above. The impact of a high-stress, long-duration event on personnel well-being, morale, and decision-making capability must be recognized.

[1] The workers had to perform their tasks wearing anticontamination clothing and in full face respirators in areas with extensive debris, no electrical power, no lighting, widespread flooding, no communication capabilities, and extremely high radiation fields. Workers also had to perform tasks with limited information concerning the wellbeing of family members. In addition, more than 350 aftershocks of magnitude 5.0 or greater occurred in the first week following the initial March 11, 2011 earthquake.

Appendix B: Options for Crisis Decision-Maker Training

From the Minutes of the ERTD Working Group meeting, August 2015

OPTION	1: CONTRACT WITH HIGH PERFORMING SYSTEMS (HPS) TO PRESENT AT UTILITY LOCATION	2: CERTIFY INSTRUCTORS TO PRESENT HPS COURSE (INDUSTRY INSTRUCTORS OR INPO INSTRUCTORS)
DEVELOPMENT COSTS	0	Develop certification process 7000 1000 HPS estimated travel expenses $8000
DELIVERY COSTS	Course fee 4400 Participant kits @ $125 each 3125 1500 HPS estimated travel expenses $9025 NOT INCLUDED: Potential for participant travel expense varies from zero to $$$ depending on course location and need to cover mileage, airfare, lodging, meals, etc.	DELIVERY OF CERTIFICATION Train trainer course@ $2000 each 12000 Co-train sessions @ $6400 each 38400 Participant kits @ $125 each 18750 10800 Biofeedback monitors @ $1800 each 16500 Travel @ $1500/$2500 each $96450 6 instructors @ $16075 each $3125 ONGOING COST PER DELIVERY $18750 Participant kits @ $125 each Participant travel expense if presented at INPO @ $750 each
PROS	+ development is complete + success of pilots + instructor is SME + delivery is consistent	+ schedule flexibility linked to availability of certified instructors, not external vendor
CONS	− cost (initial and ongoing) − changes and updates may incur additional costs − class size limited to 25 − per student increase in cost with smaller classes − schedule flexibility is linked to HPS availability	− train the trainer class requires minimum of 6 participants − cost (initial and ongoing) − logistics/scheduling of certification process (train the trainer + 6 co-train sessions) − anticipated turnover rate of certified instructors necessitates continual pipeline

GENERAL COMMENTS	• Up to 25 students can complete the course during each delivery. • Course length is 4-hours. • Course location could be station, regional, INPO, etc.	• Up to 150 students can complete the course while certifying 6 instructors. • Course designed for 4-hours. • Certified instructors can be industry or INPO personnel. • Using certified INPO instructors will incur ongoing travel expense for instructor or participants.
ERTD WORKING GROUP INPUT	**Recommended in parallel with Option 5.** • DMUS for Emergency Responders course is successful as evidenced by pilot feedback. Although relatively expensive, this option should remain available and should be acknowledged by INPO. Together, Options 5 and 1 provide maximum credibility, flexibility, and cost efficiency.	Not recommended. • Cost of certifying instructors to present licensed material is prohibitive. • Evidence of long-term need for large classes is low. • We anticipate difficulty maintaining a pool of certified instructors.

OPTION	**3: PURCHASE HPS LICENSE/PREPARE INDUSTRY INSTRUCTORS TO PRESENT (similar to GFES material)**	**4: DEVELOP INPO "EMERGENCY RESPONSE" SEMINAR/ PREPARE INPO INSTRUCTORS TO PRESENT**
DEVELOPMENT COSTS	Purchase license – all course materials and instructor guide: $$$$$$	Estimated instructional design support 15000
DELIVERY COSTS	*The Stress Effect* @ $30 each 750 ARSENAL @ $30 each 750 1500	NOT INCLUDED: Potential for increase in travel expense associated with seminar attendance, especially if this is a stand-alone offering.
PROS	+ development is complete + content is tested + we can change or update content ourselves + no costly instructor certification, just instructor preparation time + recurring costs are minimized	+ developmental in-house to INPO + does not compete with other training requirements at station
CONS	− front end costs are assumed to be high − delivery may be inconsistent	− would first need to be justified using INPO's Leadership Course management process − requires development of content and potential adjustment of other courses / seminars − requires INPO to provide ongoing support for delivery and maintenance − logistics of shift manager attendance
GENERAL COMMENTS	• Assumes 25 students per course for comparison. • Course designed for 4-hours.	• One time cost to purchase biofeedback monitors @ $1800 each if used. Potential to need one primary and one back-up monitor if used. • Estimated developmental cost may be low.
ERTD WORKING GROUP INPUT	Not recommended if Option 5 can be implemented.	Not recommended if Option 5 can be implemented.

OPTION	5: DEVELOP INDUSTRY-OWNED COURSE WITH REFERENCE TO *THE STRESS EFFECT*/ARSENAL/ PREPARE INDUSTRY INSTRUCTORS TO INSTRUCT	6: DEVELOP INDUSTRY-OWNED COURSE USING OTHER SOURCES/ PREPARE INDUSTRY INSTRUCTORS TO INSTRUCT
DEVELOPMENT COSTS	Estimated instructional design support 3000 Estimated HPS development support 10000 $13000	Estimated instructional design support $3000
DELIVERY COSTS	*The Stress Effect* @ $30 each $750 ARSENAL @ $30 each $750	0
PROS	+ content credibility + continues to leverage Dr. Thompson's expertise + terms and concepts already in use and accepted within nuclear industry (pilots/SNPM) + can integrate with other nuclear content / Advanced FLEX content from War College + Can bridge to application during drills and exercises + can change or update content ourselves + development cost is relatively low compared to other options using SME support + maximum flexibility to schedule	+ no copyright issues + can integrate with other nuclear content/Advanced FLEX content from War College + Can bridge to application during drills and exercises + can change or update content ourselves + development and delivery cost is relatively low + maximum flexibility to schedule
CONS	− time to develop − need to work out copyright issues with HPS − tracking completion of ARSENAL is an administrative burden (methods that do not require tracking could be substituted for ARSENAL) − Recurring cost of delivery − Potentially extends role of ERTD Working Group	− time to develop − need to work out fair use issues with HPS − lacks some credibility as compared to involving the support of a recognized SME − potentially extends role of ERTD Working Group
GENERAL COMMENTS	− One time cost to purchase biofeedback monitors @ $1800 each if used. Potential to need one biofeedback monitor per site. − May not need to *provide The Stress Effect* to all participants. − Estimated developmental cost may be low.	− One time cost to purchase biofeedback monitors @ $1800 each, if used. Potential to need one biofeedback monitor per site. − Estimated developmental cost may be low.
ERTD WORKING GROUP INPUT	**Recommended in parallel with Option 1.** • Developing an industry-owned course with HPS support leverages Dr. Thompson's expertise, allows maximum customization to the needs of our industry, and controls recurring costs. Together, Options 5 and 1 provide maximum credibility, flexibility, and cost efficiency.	Not recommended if Option 5 can be implemented.