

SANDIA REPORT

SAND2008-5296
Unlimited Release
Printed 09 2008

ITC-20 Evaluation

Evaluation

20th International Training Course (ITC-20) on the Physical Protection of Nuclear Facilities and Materials

October 14 through November 2, 2007

Amanda A. Ramirez

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Approved for public release; further dissemination unlimited.



Sandia National Laboratories

Issued by Sandia National Laboratories, operated for the United States Department of Energy by Sandia Corporation.

NOTICE: This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government, nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, make any warranty, express or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represent that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government, any agency thereof, or any of their contractors or subcontractors. The views and opinions expressed herein do not necessarily state or reflect those of the United States Government, any agency thereof, or any of their contractors.



SAND2008-5296
Unlimited Release
Printed 09 2008

20th International Training Course (ITC-20) on the Physical Protection of Nuclear Facilities and Materials Evaluation Report

Amanda A. Ramirez

Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-MS1378

Abstract

The goal of this evaluation report is to provide the information necessary to improve the effectiveness of the ITC provided to the International Atomic Energy Agency Member States. This report examines ITC-20 training content, delivery methods, scheduling, and logistics. Ultimately, this report evaluates whether the course provides the knowledge and skills necessary to meet the participants' needs in the protection of nuclear materials and facilities.

Table of Contents

Acronyms	7
1.0 Executive Summary	9
1.1 Course Introduction	9
1.2 Improvements from the Nineteenth International Training Course	9
1.3 Evaluation Report.....	9
1.4 Course Evaluation Results	9
2.0 Introduction to ITC-20.....	10
2.1 Purpose of Evaluation Report.....	10
2.2 Objectives.....	10
2.3 Ownership	10
2.4 Scope	11
2.5 Training Methodology	13
3.0 Participant Demographics.....	17
3.1 Description.....	17
3.2 Participants by International Location.....	17
4.0 Course Evaluation Results.....	18
4.1 Data Results	18
4.2 Daily Module/Subgroup Evaluations.....	18
4.3 Daily Quiz Results	23
4.4 Final Course Evaluation.....	24
4.5 Field Trip Comments	26
5.0 Recommendations	27
5.1 General Course Comments	27
5.2 Modules that could be Improved by the Listed Recommendations.....	28
5.3 Evaluation Instruments	30
6.0 Summary.....	32
6.1 Purpose of Evaluation Report.....	32
6.2 Objectives.....	32
6.3 Results.....	32
Appendix A: Daily Evaluation Questions and Results	34
Appendix B: Guest Speaker Evaluation Results.....	67
Appendix C: Final Evaluation Questionnaire Results	71
Appendix D: Changes from ITC-19 to ITC-20.....	80
Appendix E: Logistics for ITC-20.....	81
Appendix F: ITC-20 Schedule and Lecture List.....	82

List of Figures

Figure 1. Design and Evaluation Process Outline 11
Figure 2. Participant Confidence Levels..... 19
Figure 3. Subgroups that were Helpful in Understanding the Concepts.....20
Figure 4. Instructors were Clear and Understandable21
Figure 5. Subject will be Valuable to my Work22
Figure 6. Quiz Results by Module Percentage23

List of Tables

Table 1. Participants by International Location.....17
Table 2. Some Results from the Final Course Evaluation24

Acronyms

ASD	Adversary Sequence Diagram
CDP	critical detection point
CTA	Central Training Academy
DBT	Design Basis Threat
DEPO	Design and Evaluation Process Outline
DOE	Department of Energy
IAEA	International Atomic Energy Agency
INFCIRC	Information Circular
ITC-19	19th International Training Course: The Physical Protection of Nuclear Facilities and Materials
ITC-20	20th International Training Course: The Physical Protection of Nuclear Facilities and Materials
LIMP	Lagassi Institute of Medicine and Physics
MTS	Material Transportation System
NNSA	National Nuclear Security Administration
NPP	nuclear power plant
NTC	National Training Center
PPS	physical protection system
PANL	Path Analysis Tool
PN	Probability of Neutralization
PTR	Pool Type Reactor
SNL	Sandia National Laboratories
SPO	Special Protective Officer
VEASI	Very Easy Estimate of Adversary Sequence Interruption

1.0 Executive Summary

1.1 Course Introduction

The Twentieth International Training Course (ITC-20) on the Physical Protection of Nuclear Facilities and Materials was held in Albuquerque, New Mexico, from October 14–November 2, 2007. The goal of the ITC-20 was to enable participants to apply the principles of a performance-based methodology to design and evaluate the physical protection of nuclear materials and facilities against the threat of theft or sabotage.

1.2 Improvements from the Nineteenth International Training Course

Course organizers reviewed data from the Nineteenth International Training Course to determine necessary course improvements. Among the many improvements this year was a tour of a nuclear power plant and a revision of the Evaluation section of the course, including adding a new Tabletop Analysis Module, Path Analysis tool and Multipath Analysis tool. The improvements also included revisions to the following modules: Risk Management, Threat Definition, Intrusion Detection Sensors, Access Delay, Alarm Control and Display, Alarm Assessment, Entry Control, and Contraband Detection.

1.3 Evaluation Report

The goal of this evaluation report is to provide the information necessary to improve the effectiveness of the ITC provided to the International Atomic Energy Agency Member States. This report examines ITC-20 training content, delivery methods, scheduling, and logistics. Ultimately, this report evaluates whether the course provides the knowledge and skills necessary to meet the participants' needs in the protection of nuclear materials and facilities. The participants provided both quantitative and qualitative feedback on the course when they completed the daily module evaluation and the final course evaluation form, located in the Course Evaluation Results section. The evaluation forms covered the following topics: module lectures and related subgroups, guest lecturers, the Nuclear Power Plant Tour, Sensor Test Site Tour, and Response Force Demonstration. This report also contains valuable recommendations for course improvement provided by students, instructors, subgroup leaders, and Sandia National Laboratories staff involved in the event. These suggestions are located in the recommendations section of this report.

1.4 Course Evaluation Results

ITC-20 participants provided high ratings for course lectures, subgroups, guest lectures, the Sensor Test Site Tour, the Response Force Demonstration, and the Diablo Canyon Nuclear Power Plant Tour, as referenced in the Course Evaluation Results Section and Appendix A. Students “strongly agreed” or “agreed” that many of the course modules “will be valuable to my job.” Students expressed that the course was well-organized and that they acquired an understanding of the Design and Evaluation Process Outline methodology. The course exposed participants to the importance of having a good physical protection system. Student quiz results revealed varying degrees of comprehension of course material, suggesting areas of course improvement in individual modules and the level of difficulty of quiz questions.

2.0 Introduction to ITC-20

The Twentieth International Training Course (ITC-20) on the Physical Protection of Nuclear Facilities and Materials was held in Albuquerque, New Mexico, from October 14 through November 2, 2007, at the Sheraton Uptown Hotel. The goal of the ITC-20 was to enable participants to apply the principles of a performance-based methodology to design and evaluate the physical protection of nuclear materials and facilities against the threat of theft or sabotage.

The US Department of Energy's (DOE) National Nuclear Security Administration (NNSA) and the International Atomic Energy Agency (IAEA) jointly sponsored the ITC-20. The sponsors expected the participants to gain knowledge of the Design and Evaluation process Outline (DEPO), including skills necessary to conduct an evaluation of their own PPS. Upon returning to their countries of origin, participants in the course should be able to understand and apply the principles for the design and evaluation of their facility's PPS, or otherwise use the knowledge and skills gained to increase their state's awareness and capabilities in the area of physical protection.

2.1 Purpose of Evaluation Report

The goal of this evaluation report is to provide the information necessary to improve the effectiveness of the ITC program provided to the IAEA member states. Course participants are professionally involved in the management, regulation, and operation of security systems at nuclear facilities.

2.2 Objectives

The objectives of this report are to:

- Report the results of the course evaluation
- Identify improvements needed in course lesson content; these may include relevance of material and appropriateness of level of material required to provide the knowledge and skills necessary to meet participants' needs in the protection of nuclear material and facilities
- Identify improvements needed to ensure a clear systematic approach is presented
- Identify changes to overall course organization to ensure optimum use of time, instructor lectures, and associated subgroup content

2.3 Ownership

The ITC-20 was sponsored by Sandia National Laboratories (SNL), the DOE/NNSA, the US Department of State, and the IAEA. SNL's International Security Projects Department organized the three-week course. John Matter, Department Manager, was the Course Director, and Jose Rodriguez was the Project Manager. Training Specialist, Amanda Ramirez, produced the course materials in collaboration with subject matter experts. Loretta Humble coordinated all logistical support for the course and participants. Paul Ebel was the course consultant and the trainer for the subgroup instructors.

2.4 Scope

The course content consisted of 25 modules that covered the DEPO model as it applies to PPS. This model, illustrated in Figure 1, includes the following steps: 1) Define PPS requirements, 2) Design the PPS, and 3) Evaluate the PPS. There were also guest lecturers from US government agencies and various countries.

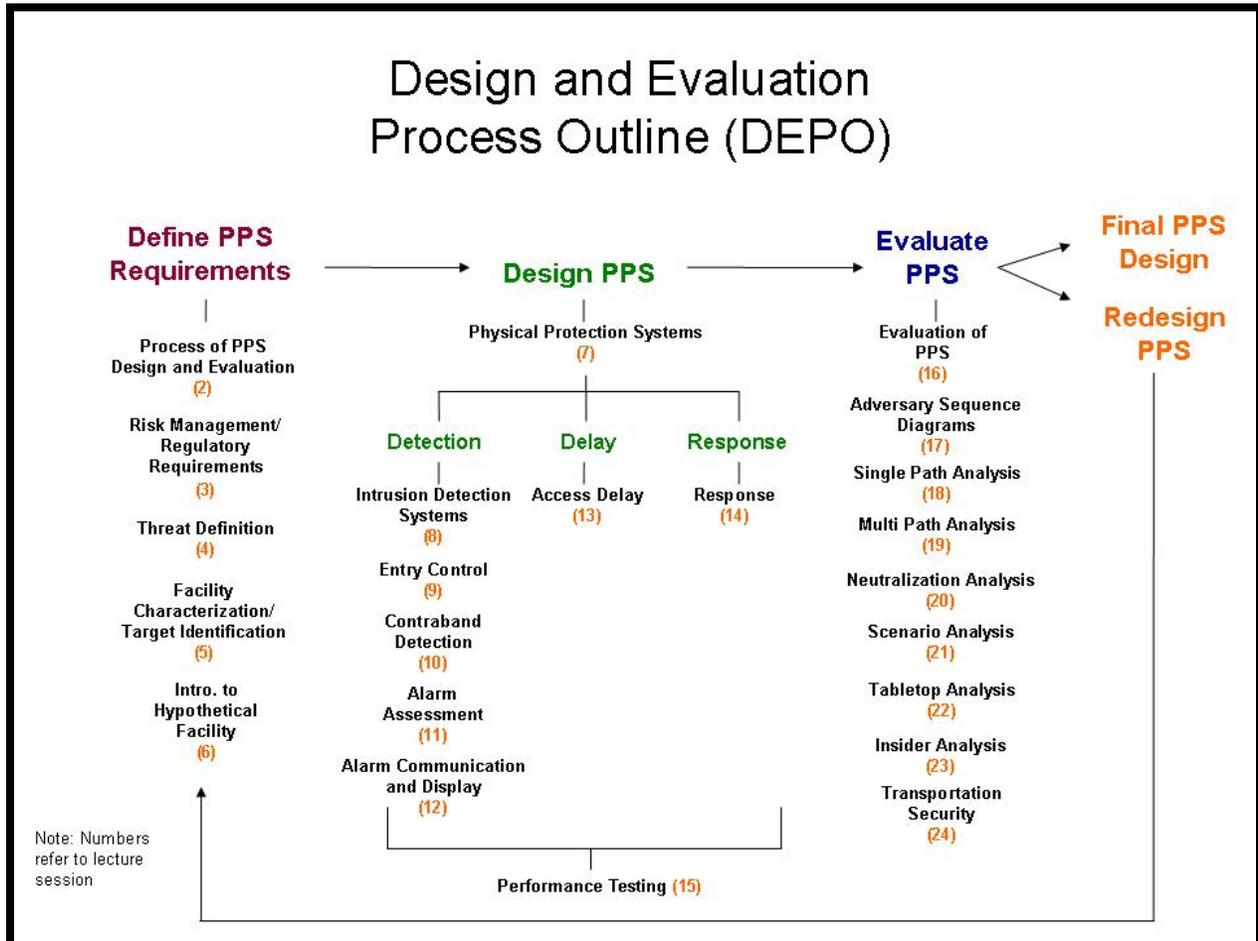


Figure 1. Design and Evaluation Process Outline

ITC-20 Course Introduction and Modules with Presenters

Introduction

1. Introduction to ITC-20, John Matter

I. Define Physical Protection System (PPS) Requirements

2. Process of PPS Design and Evaluation, Jose Rodriguez
3. Risk Management and Regulatory Requirements, Bruce Varnado
4. Threat Definition, John Matter
5. Target Identification and Facility Characterization, Bruce Varnado
6. Introduction to Hypothetical Facility, Paul Ebel

II. Design Physical Protection System (PPS)

7. Introduction to Design of PPS, John Matter
8. Intrusion Detection, Dave Hayward
9. Entry Control, Dale Murray
10. Contraband Detection, Chuck Rhykerd
11. Alarm Assessment, Dale Murray
12. Alarm Control and Display, Doug Adams
13. Access Delay, Charles Greenholt
14. Response Force, Allan Swanson
15. Performance Data and Testing, Jose Rodriguez

III. Evaluate Physical Protection System (PPS)

16. Introduction to Evaluation of PPS, John Matter
17. Adversary Sequence Diagram, Jose Rodriguez
18. Single Path Analysis, Mark Snell
19. Multipath Analysis, Mark Snell
20. Neutralization Analysis, Mark Smith
21. Scenario Analysis, Jose Rodriguez
22. Tabletop Analysis, Cal Smith
23. Insider Analysis, Bruce Varnado
24. Transportation Security, Derek Farr
25. Introduction to Final Exercise, Paul Ebel

ITC-20 US Guest Lecturers

- Melissa Krupa, DOE/NNSA International Physical Protection
- Kevin Leifheit, DOE/NNSA Domestic Physical Protection
- Marshall Kohen, Nuclear Regulatory Commission
- John Mentz, US Department of State

ITC-20 International Guest Lecturers

- Vladimir Kruchtenkov, IAEA
- Bradley C. Perrin, Canada
- Patrick Champenois, France
- Wolfgang Gutschmidt, Germany
- Alan Robinson, United Kingdom

2.5 Training Methodology

The ITC-20 training course used the following primary activities and resources to teach the students using the DEPO approach to PPS design and evaluation.

Lectures—SNL subject matter experts delivered the course lectures. Students attended the lectures in a large room seated at long tables, three to four per table. The DEPO flowchart was displayed in one corner of the room. PowerPoint Slides were projected onto a large screen in the front of the room. Lectures were one to two hours in duration and were conducted in English. There were a total of 25 DEPO lectures, and 9 guest lectures. The instructional objectives for each DEPO lecture and corresponding subgroup exercise objectives can be found in Appendix A.

Subgroup Exercises—The ITC-20 included 17 subgroup exercises corresponding with the DEPO module lectures. Students were divided into seven subgroups, with one instructor facilitating each group. Groups were pre-selected based on technical background and areas of expertise, regional diversity, political compatibility, and gender balance. The length of time allotted to subgroup exercises ranged from one to four hours with the final subgroup lasting twelve hours. Subgroups were held in hotel rooms that had been cleared of bedroom furniture. Tables and chairs were brought in and arranged in the center of the rooms. Posters were displayed on the walls for some of the exercises. Throughout each exercise, the lecturer moved among the subgroup rooms to enable students and subgroup instructors to ask additional questions that would clarify the lecture and/or the course.

The subgroup structure provided a collaborative learning environment for the participants. Students were able to ask questions of the subgroup leaders and engage in conversation with their fellow subgroup members to develop common solutions. The final exercise involved completing the full DEPO process for the Hypothetical Neutron Burst Reactor facility. Students were given two days to complete this exercise. Each subgroup presented its solutions to a panel of experts and classmates on November 2, 2007, which was the last day of the course.

In the course feedback, many students commented on the importance of interacting in a small group with their peers, which gave them an opportunity to learn about other states' approaches to PPS. Additionally, the informal and more personal environment enabled students and subgroup leaders to make professional contacts, form a team, and learn about countries and cultures different from their own.

Student Participation—Students were expected and encouraged to actively participate in the course. Students asked questions during and after each lecture in the large group setting and actively participated in completing the subgroup exercises. The final subgroup exercise required the subgroup to evaluate a current hypothetical facility PPS and design PPS upgrades for the facility. At the end of the exercise, the students presented their recommended upgrades to a panel of PPS experts.

Guest Speakers—Guest speakers from the IAEA, United States, United Kingdom, Canada, France, and Germany presented information regarding their approaches to and experiences with government programs and regulations, and PPS design and implementation.

Course Instructional Materials—ITC-20 organizers provided students with five books containing reference text, PowerPoint presentations from the lectures, subgroup exercises, supporting information, and the Hypothetical Facility Exercise Data Book.

Course Evaluation Process—Students completed Daily Module Evaluation forms and took short daily quizzes, which tested their knowledge of course content. They also completed a Final Course Evaluation. The purpose of gathering and analyzing these various sources of data is to assist managers and instructional designers in making decisions on ITC improvements. Students provided their evaluation data anonymously.

This evaluation report presents and analyzes data that has been collected during the ITC-20.

The primary instruments used for data collection were the following:

- **Student Quizzes**—Each day, students were given quizzes that consisted of brief six to twelve fill-in-the-blank, true-or-false, and multiple-choice questions. These short quizzes on course content were given to students at the end of each day in an attempt to determine how effective the lectures and subgroups were and to confirm that the students understood the instructional objectives. Quiz answers were displayed in the classroom for students to review the morning after each quiz was given.
- **Daily Module Evaluations**—Students were asked to provide feedback on lectures and subgroup activities that occurred each day. The Daily Module Evaluation form included questions about the student confidence in performing the stated objectives as well as general questions for each presentation and subgroup (see Appendix A).
- **Final Course Evaluation**—The final course evaluation consisted of 17 questions (rate or fill-in-the-blank) requesting information about the course in general.

The various evaluation instruments gave students an opportunity to provide feedback to instructors and staff during the ITC. The feedback was used to make improvements and adjustments in the course.

Although the evaluation instruments provided useful data, some challenges and issues arose:

- Language difficulties interfered with quiz performance and participants' ability to provide meaningful feedback. Some participants were unable to understand questions or remember the correct word for the appropriate answer.
- Participants often gave patterned responses to questions in the Daily Module Evaluation Forms. Their answers showed a pattern from one subgroup to another, such as Strongly Agree, Neither Agree nor Disagree, or Agree on all lectures and subgroups. There was also inconsistency between the patterned answers and the verbal discussions that occurred with the participants (e.g., although they would express compliments or concerns about a particular lecture, the response on the evaluation form did not reflect their verbal comments). Some verbal comments were recorded and included in the Final Course Evaluation results.

Morning Review—Paul Ebel, the Course Consultant, began each day with a review of the previous day's lectures.

Field Trips—During ITC-20, students participated in three field trips. Field trips are helpful because they provide an effective means of synthesizing three key knowledge areas—

performance criteria and testing methods, response force training and capabilities, and systems design and integration. The field trips also allow the students greater access to subject matter experts, equipment, and facilities and allow for interactions in a less formal, non-classroom-like environment.

- **SNL's Area III Sensor Test Site**—The first field trip was to SNL's Technical Area III Intrusion Sensor Test Site. Here, the students were able to view demonstrations of interior and exterior intrusion detection equipment, video systems, and performance data collection systems. In addition, a subgroup exercise on Gathering Performance Data (11S) was conducted; in this exercise, the students worked in subgroups with an assigned subject matter expert to characterize the performance of a preselected PPS component using actual tools, equipment, and methodology. The exercise allowed the students to gain hands-on experience with several key PPS technologies and gave them their first opportunity to work as a team in solving and presenting the results of a practical exercise.
- **Response Force Demonstration at the DOE National Training Center**—The DOE National Training Center (NTC), located on Kirkland Air Force Base, provides training programs and services that are primarily focused on nuclear safeguards and security. Their facilities include a live-fire range, classrooms, and shoot house. A field trip to this facility is one of the highlights of the course because it provides the students a clear understanding of the DOE training and performance requirements for response force personnel. For many of the students, this trip is their first experience witnessing response force training, equipment, and methods. The demonstrations—which include primary and secondary weapon marksmanship, forced entry techniques, and recapture/hostage rescue drills—helped elucidate the need for a professional, well-trained, and well-equipped response force. Following the demonstrations, the students were able to view the equipment display area that included weapons, equipment, and two types of armored vehicles. The students were also able to talk with SNL Protective Force Officers and NTC instructors.
- **Diablo Canyon Nuclear Power Plant**—A field trip to a nuclear power plant has historically been part of the ITC; however, following the events of September 11, 2001, this activity was not allowed until ITC-20. The operators and security managers of the Diablo Canyon Nuclear Power Plant, located in San Luis Obispo County, California, hosted the day-long tour of their facility. This tour allowed the students to see how system engineering principles were used to implement a PPS within the unique constraints of the facility. Each of the major elements of a PPS—detection, delay, and response—were observed and discussed within the framework of regulatory requirements and the site's specific operational and physical conditions. This activity provided the students a practical example of the tools, methods, and guidelines that they studied in class and reinforced the need for a performance-based, integrated systems approach to PPS design and implementation. The students were also able to view a complete system and to discuss its design elements with those plant personnel responsible for its implementation and maintenance. This greatly helped the students better understand system engineering and issues such as operational impact, performance trade-offs, maintenance, and system life-cycle consideration.

Social Activities—The students enjoyed a number of group activities, including the opening banquet, three dinners away from the hotel, a social, and a graduation banquet. A picnic was held on the first weekend for staff, subgroup leaders, and students. Due to the addition of the NPP tour, tours of Santa Fe, Los Alamos National Laboratory's Bradbury Science Museum, and Bandelier National Monument were removed from the schedule.

3.0 Participant Demographics

3.1 Description

The ITC-20 involved 38 participants from around the world, including two observers from Taiwan. Eight geographic regions were represented, making this training course a truly multinational event.

3.2 Participants by International Location

The IAEA Office of Nuclear Security staff selected the course participants based on member State nominations. The agency required that each student be formally nominated for the training course. The nomination form described the individual, including his or her education level, a description of his or her work, previous participation in IAEA activities, relevance of the training, language certificate, medical certificate, and government statement. English proficiency is required because the ITC is conducted entirely in English.

The ITC-20 had a worldwide representation; there were attendees from nearly every continent on the globe. Table 1 lists countries that were represented as well as the number of attendees.

Table 1. Participants by International Location

Number of Participants	Country
1	Armenia
1	Australia
1	Belgium
1	Bulgaria
2	Canada
1	Chile
1	China
1	Egypt
1	France
1	Germany
1	Ghana
2	India
1	Indonesia
1	Japan
1	Kazakhstan
1	Lithuania
1	Mexico
1	Morocco
1	Netherlands
1	Pakistan
1	Poland
1	Republic of Korea
2	Romania

Number of Participants	Country
1	Russia
1	Serbia
1	Slovakia
1	Slovenia
2	South Africa
1	Spain
2	Sweden
1	Switzerland
1	Ukraine
1	Vietnam

4.0 Course Evaluation Results

4.1 Data Results

These data reveal correlations, recurring responses, and themes that are common to the various sources of course evaluation information gathered from Student Quizzes, Daily Module Evaluations, and the Final Course Evaluation. Below are the highlights of the results.

<p>Students Requested Additional Training in:</p> <ol style="list-style-type: none"> 1. Multipath Computer Tool (19 responses) 2. Transportation Security (15 responses) 3. Tabletop Analysis (12 responses) 4. Insider Analysis (10 responses) 5. Performance Testing (9 responses) 6. Alarm Assessment (8 responses) 7. Scenario Analysis (8 responses) 	<p>Topics Most Helpful in My Job [Students]:</p> <ol style="list-style-type: none"> 1. Process of PPS Design and Evaluation (18 responses) 2. Single Path Analysis (17 responses) 3. Insider Analysis (16 responses) 4. Transportation Security (15 responses) 5. Entry Control (15 responses) 6. Intrusion Detection Sensors (14 responses) 7. Risk Management and Regulatory Requirements (14 responses) 8. Tabletop Analysis (13 responses)
<p>Student Quizzes—Highest Average Scores</p> <ol style="list-style-type: none"> 1. Introduction to Hypothetical Facility (97%) 2. Alarm Control and Display (96%) 3. Access Delay (93%) 4. Insider Analysis (90%) 5. Introduction to Evaluation of PPS (89%) 6. Introduction to DEPO (88%) 	<p>Student Quizzes—Lowest Average Scores</p> <ol style="list-style-type: none"> 1. Intrusion Detection Sensors (47%) 2. Adversary Sequence Diagram (64%) 3. Tabletop Analysis (67%) 4. Contraband Detection (72%) 5. Single Path Analysis (72%) 6. Scenario Analysis (75%)

4.2 Daily Module/Subgroup Evaluations

This year, the Daily Evaluations were changed to focus on determining how the participants felt about the stated objectives. The idea behind this is to determine how confident participants were that they could perform the stated objectives after listening to the lectures and participating in the subgroups. (Please see Appendix A for complete evaluation questions and results.) The participants were also asked which modules would be most useful for their work, if the instructor was clear and understandable, and if the subgroup helped them understand the concepts.

Figure 2 charts the level of confidence that students had in performing the stated learning objectives after they sat through a lecture and, when applicable, worked through a subgroup. The responses were on a scale of 1 to 5 (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Disagree). The chart compares the lecture results in pink to the subgroup results in purple. The students were less confident in the Multipath Analysis, Single Path Analysis, and Neutralization for both the lecture and subgroup objectives. Participants were also asked to share comments; these results are in Appendix A.

Participant Confidence Levels in Performing the Learning Objectives from the Lectures and Subgroups

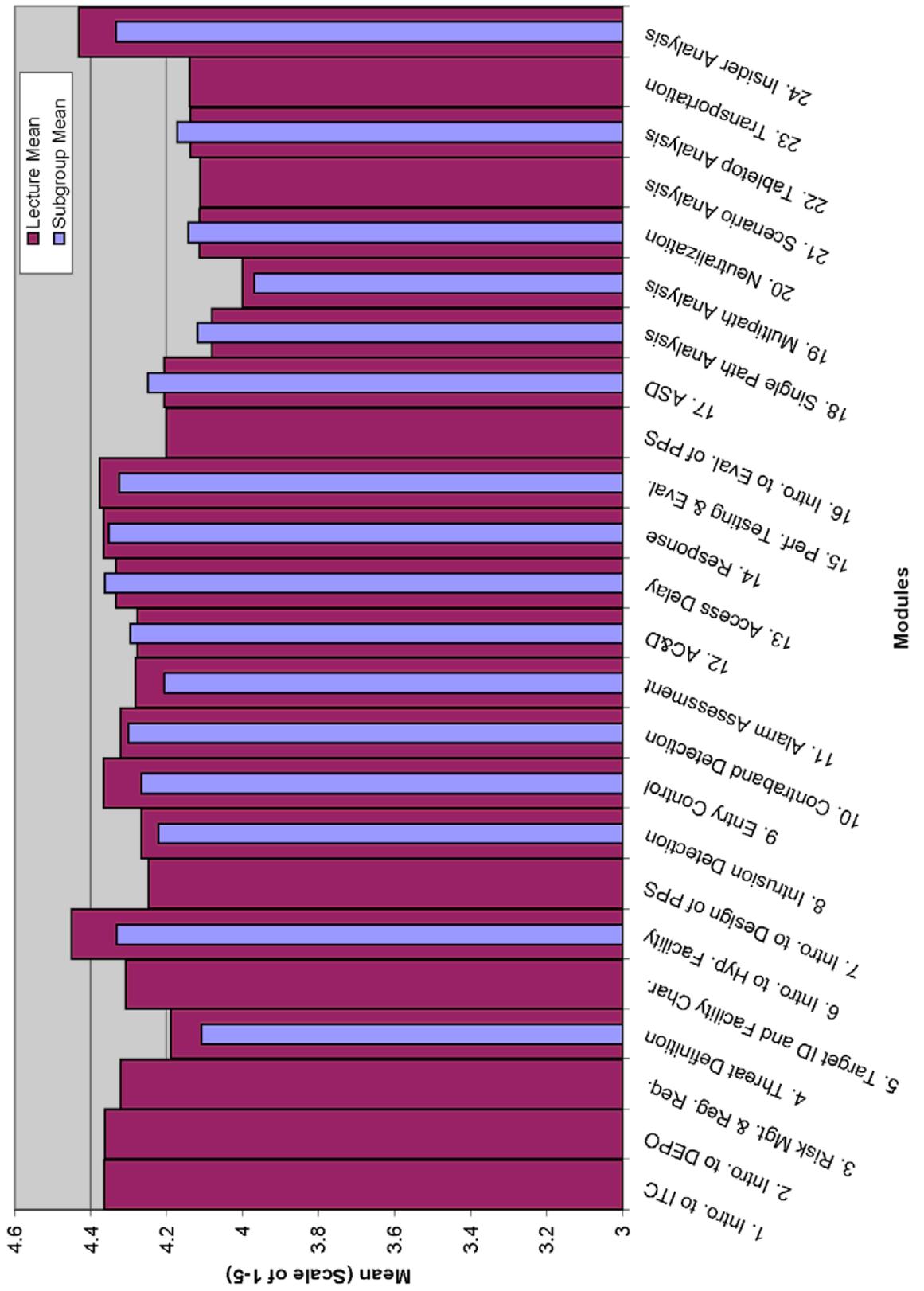


Figure 2. Participant Confidence Levels

The Daily Evaluations also asked participants if the subgroup helped them understand the concepts that were taught in the section. Figure 3 illustrates that the Threat Definition and Performance Testing subgroups were most useful in helping students understand the concepts. The Single Path Analysis, Multipath Analysis, and Alarm Assessment subgroups were the least useful.

Subgroup helped me understand concepts taught in this section

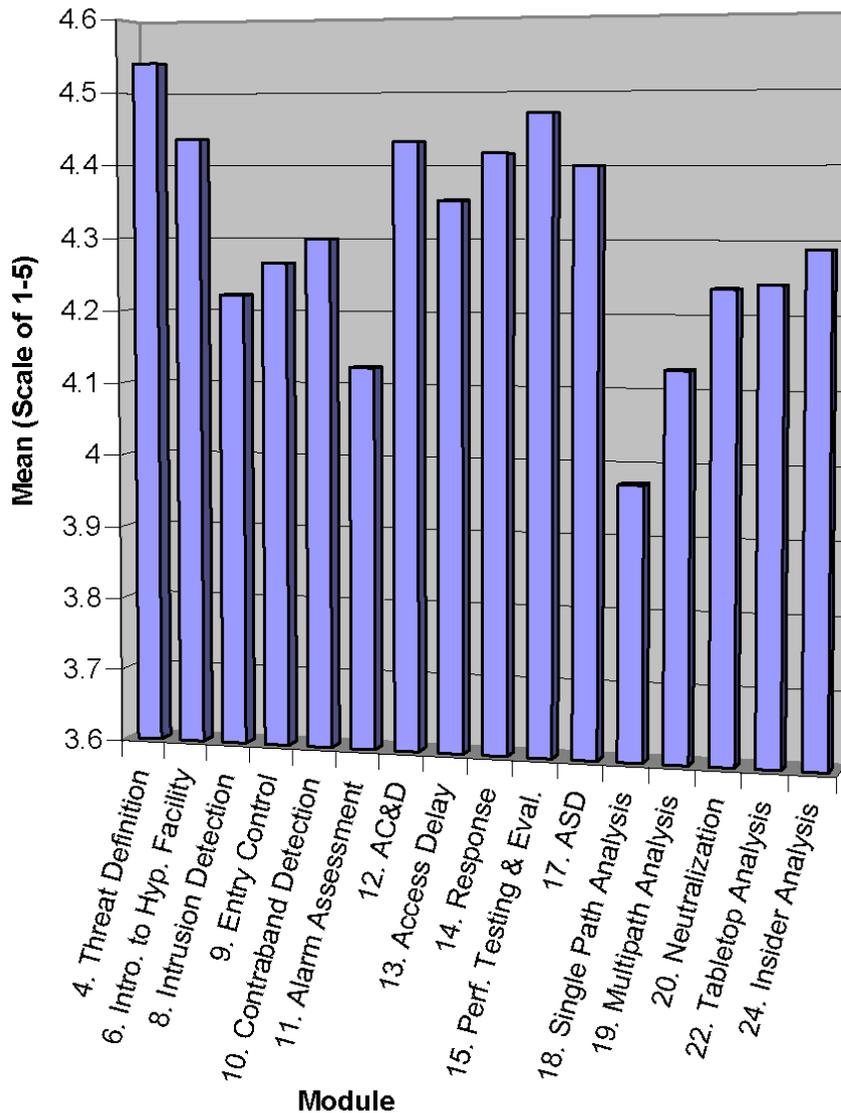


Figure 3. Subgroups that were Helpful in Understanding the Concepts

The Daily Evaluations also asked participants whether the instructor for each module was clear and understandable. The results, shown in Figure 4, showed that the module Insider Analysis, taught by Bruce Varnado, had the highest rating for “Instructor was clear and understandable.” Introduction to DEPO, taught by Jose Rodriguez, was rated second highest in this category.

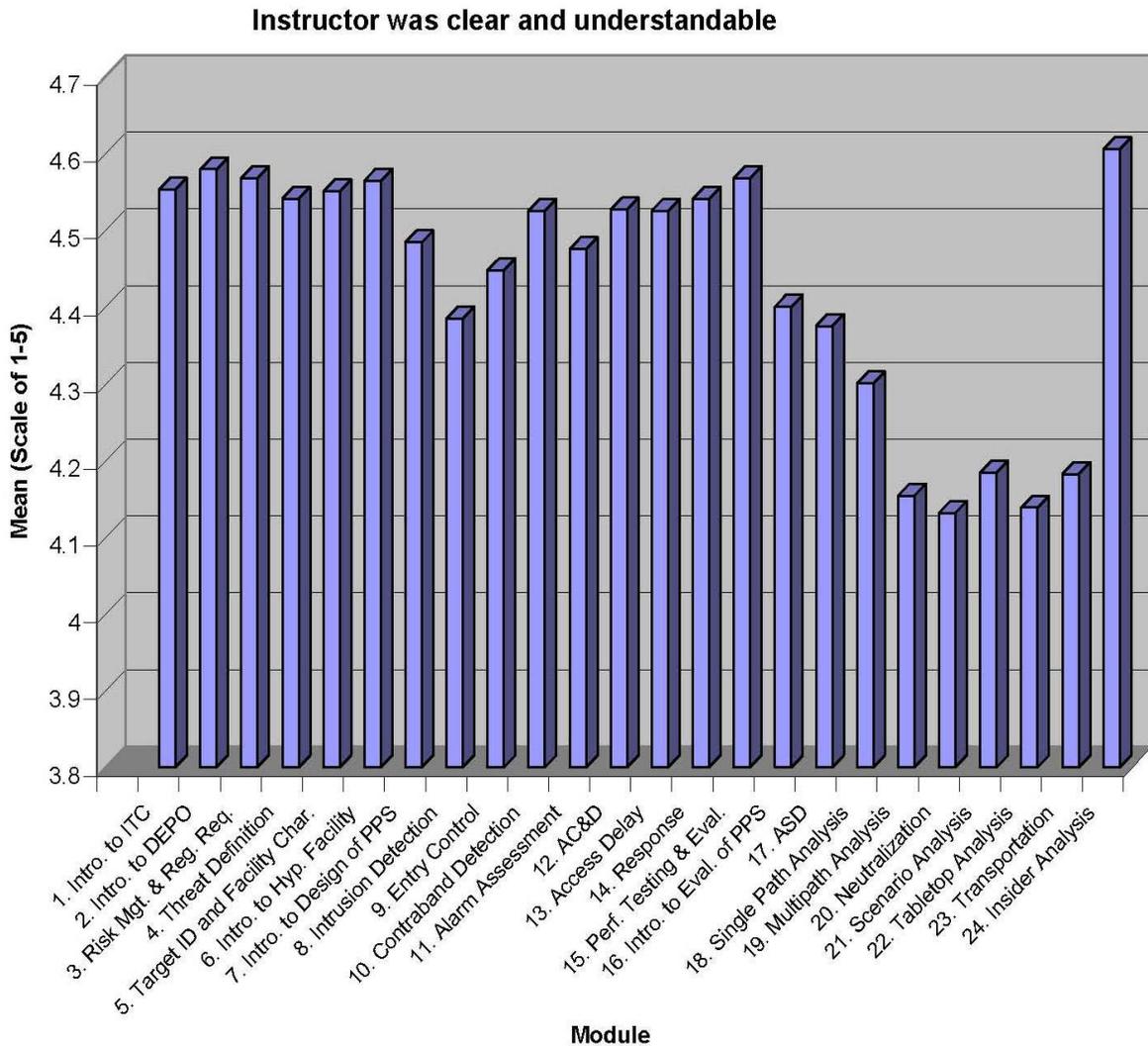


Figure 4. Instructors were Clear and Understandable

The Daily Evaluations also asked participants Threat Definition, Introduction to DEPO, and Insider Analysis were rated as the three modules that would be most valuable to the students' work (see Figure 5 below).

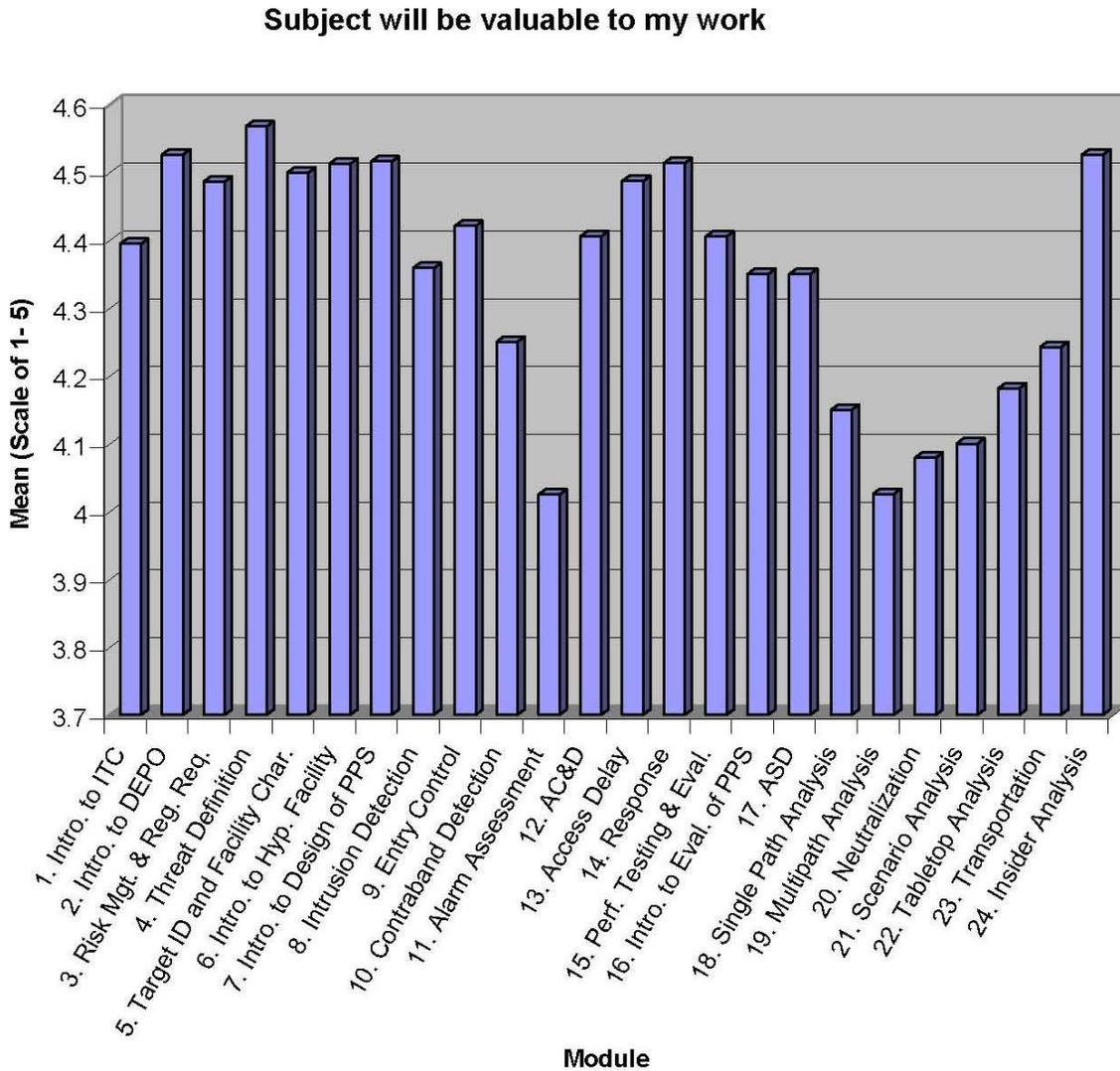


Figure 5. Subject will be Valuable to my Work

4.3 Daily Quiz Results

Students were given short daily quizzes that contained questions based on the learning objectives for each module. The goal of the quizzes is to determine the extent to which students understood the material. This is the third consecutive ITC to have quizzes. During ITC-18, the overall average was 64%, during ITC-19 it was 75%, and during ITC-20 it is 80%. Because these quizzes have been a combination of multiple choice, fill-in-the-blank, and true-or-false questions, they cannot be directly compared; however, it appears that the overall scores continue to increase.

Figure 6 below illustrates the quiz results by module percentage. The highest scoring modules were Introduction to Hypothetical Facility (97%), Alarm Control and Display (96%), and Access Delay (93%). The low scoring modules were Intrusion Detection (47%), Adversary Sequence Diagram (64%), Tabletop Analysis (68%) and Single Path Analysis (72%).

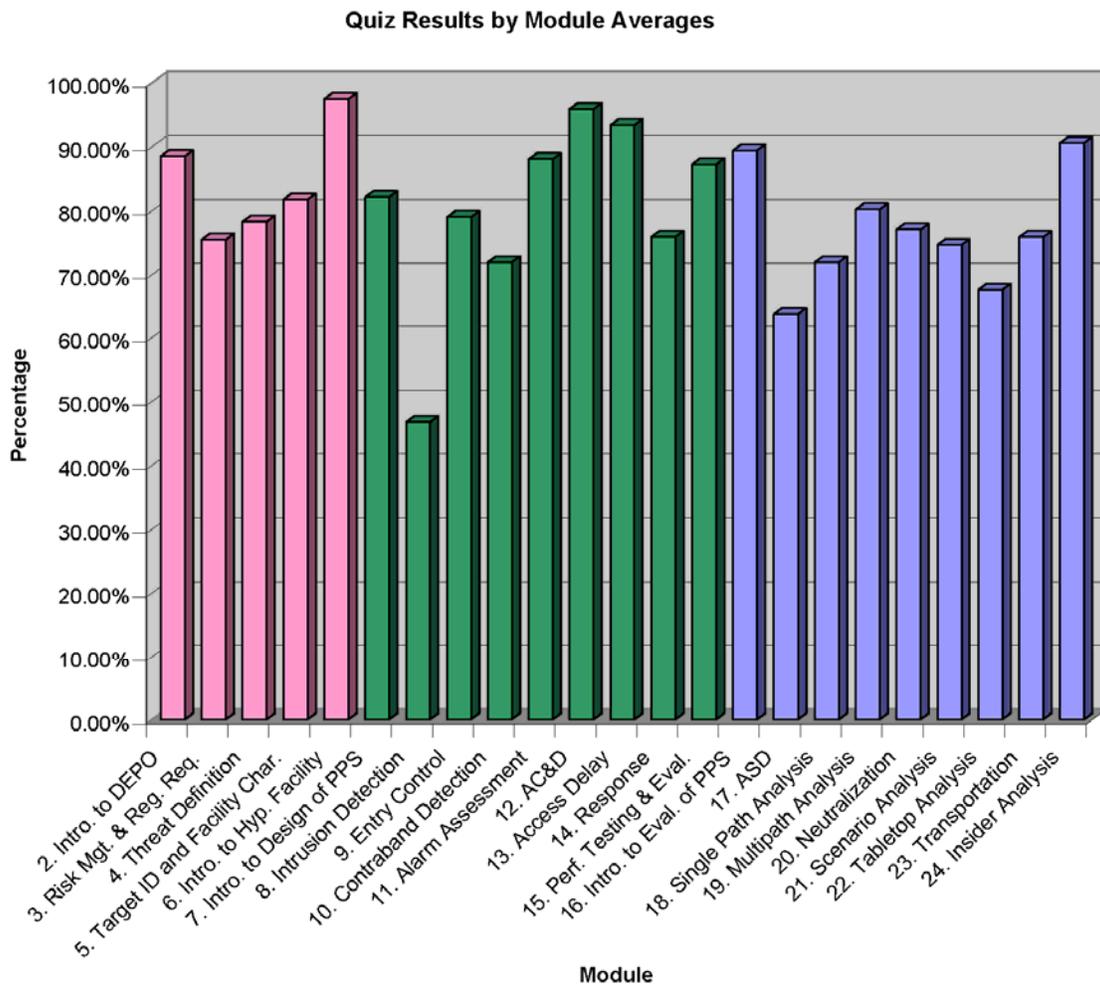


Figure 6. Quiz Results by Module Percentage

4.4 Final Course Evaluation

The information gathered from the final course evaluation was consistent with previously gathered evaluation data. Students were asked general questions about the course and more specific questions about using the new information in their job. Table 2 below shows the results of some of the questions that were asked in the final course evaluation. Following the table are summaries of responses to additional questions. Complete final evaluation data (specific student comments) can be found in Appendix C.

Table 2. Some Results from the Final Course Evaluation

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
1. The ITC-20 met my expectations.			1	18	21
2. I will be able to apply the information I have learned to my work.			2	20	18
3. The subgroup sessions helped me understand and apply the information.			4	13	23
4. The lectures were clear and easy to understand.		1	4	21	14
5. The agenda was easy to follow.			3	17	20
6. The final exercise was useful.			3	13	23
7. Much of the course material was new to me.	1	6	6	16	11
8. I understood most of the concepts taught during the course.			1	26	13
9. Some of the material was hard to understand because it was unclear or poorly presented.	5	15	11	7	1
10. I did not understand some of the material because of language difficulties.	7	15	4	11	1
11. The guest lectures added value to the course.		1	11	16	10

Some statements clearly have a range of responses. This indicates that some students had difficulty with the language while other students were familiar with the material before attending the course. This range of responses is consistent with the daily evaluations. For example, the responses to question 9, which indicate that some material and presentations need improvement, were identified in the daily evaluations and quiz results.

- **How could the ITC have been better for you? (Responses are paraphrased)**

Responses	# of Responses
The course was good as it is.	14
Shorter duration, 3 weeks is too long	3
6 Day week was too long	2
Lecturers need to speak more slowly and clearly	3
More focus on insider	2
More time in the subgroups	1
Less ambiguous written material	1
Other participants having higher level English skills	1
Some exercises were difficult to understand and need more explanation	1
A module needs to be added that addresses the architecture for new facilities	1
It answered some of the security related problems	1
The final exercise should have been allocated more time	1
Less info. through lectures and exercises	1
Should be more examples about detection systems around the sea	1

- **In which modules would you like additional training?**

Below is a list of 7 modules that had 9 or more requests for additional training,

Module	# of people requesting additional training
19. Multipath Analysis	19
24. Transportation Security	15
14. Response	14
22. Tabletop Analysis	12
18. Single Path Analysis	10
23. Insider Analysis	10
15. Performance Testing	9

- **Which modules will help you most in your job?**

Module	# of people requesting additional training
2. Process of PPS Design and Evaluation	18
18. Single Path Analysis	17
4. Threat Definition	17
23. Insider Analysis	16
9. Entry Control	15
24. Transportation Security	15
8. Intrusion Detection Sensors	14
3. Risk Management and Regulatory Requirements	14

4.5 Field Trip Comments

In general, participants felt that the field trips to Diablo Canyon Nuclear Power Plant, SNL's Area III Sensor Test Site and the Response Force Demonstration at the DOE National Training Center were useful in enforcing the concepts that were taught in the classroom. The one negative complaint about the field trips is that there is not enough time to see and do everything that student's want to. Some of the student comments are listed below:

- Very interesting, the travel to Diablo Canyon
- I also enjoyed and learned significantly from visits to SNL and Diablo Canyon Reactors
- The field visits to Sandia lab and NPP gives the feel of it's application
- The visit to Diablo Canyon was both enjoyable and informative
- Visit to the test bed was great!
- Excellent exercises in the field. We've learned a lot

5.0 Recommendations

Recommendations for course improvements came from daily module and final course evaluations; informal comments from participants; and suggestions for the course instructors, instructional designer, and the logistics staff.

5.1 General Course Comments

Lectures

- Some lecturers need to more place emphasis on the module objectives.
- Some lecturers need to relate their specific module to the rest of the DEPO process.
- Lecture notes should be included in the Power Point slides for the instructors to reference when preparing for their presentations. This will help them focus on the course and module objectives.
- Lecturers need to be briefed on their target audience and given tips for presenting to the specific audience.

Audio/Visual Issues

- The projector and computer need to work correctly to play the videos.

Guest Lecturers

- The guest lecturers need to speak slowly and clearly for the students.
- Guest lecturers need to understand the importance of sending SNL course materials, including text and slides in their presentation package, by the requested date.

Course Materials

- The slides should be printed in color to illustrate all concepts that are discussed during the course.
- Participants would like material on CDs.
- Course materials need to be assessed to ensure that materials are specific and clear to avoid confusion.

Course Scheduling and Timing

- Some subgroups need to be evaluated for additional time or revised to fit into allotted time.
- The six-day week was too much for the participants. Unnecessary information needs to be cut from the materials to provide a more concise course that fits into a five-day week.

Student Activities (Field trips, demonstrations, etc.)

- The NPP tour was extremely beneficial to most participants, because it helped them put reality to the systematic approach. Using the DOE jet for this trip was very efficient. Next time, the trip should be scheduled during a five-day week.
- The Sensor test site exercises and the visit to the Live Fire went well and were beneficial for participants. It is recommended that ITC continue taking these trips.

Dry Runs

- All lecturers should prepare for the course by participating in the dry runs, practices, and critique periods prior to the event. The students were impressed with some of the lecturers' presentations and disappointed in others, due to lack of presentation skills and/or clarity.

Course Registration Process

- Although we used two copiers to collect passport information this year, it still caused a bottleneck. Collecting passports the first morning of class and returning them at lunchtime will prevent a bottleneck during registration next year.

Hotel Coordination

- There needs to be better coordination with the location and timing of the coffee and snacks for the breaks.

Food Accommodations

- There were times during ITC-20 that the hotel did not provide enough food for the participants. The food options were also minimal. This should be negotiated next year.

5.2 Modules that could be Improved by the Listed Recommendations

(Modules 1,2,6,9,12,13,16,21,25 are not listed below because they do not have significant recommendations)

Module 3. Risk Management and Regulatory Requirements

- Give more examples of how to calculate the likelihood/probability of attack, since participants are still having difficulties with this topic.
- Revise text to match slide presentation.
- Print a large poster of the risk equation, emphasizing Probability of Effectiveness.

Module 4. Threat Definition

- Revise text to match slide presentation.

Module 5. Facility Characterization and Target Identification

- Hand out copies of Information Circular (INFCIRC) 225 at the beginning of this module.
- Include security culture in the characterization of the facility.

Module 7. Introduction to Design of PPS

- Define deterrence and mitigation and discuss when they are applied.
- Describe boundaries of PPS.

Module 8. Intrusion Detection

- Review quiz questions to determine if the questions need to be revised or if information is not clearly presented and understood.

Module 10. Contraband Detection

- Subgroup objectives need to be rewritten so that they correspond to the lecture and text.
- Revise subgroup exercises so that they are better applied to the hypothetical facility.

Module 11. Alarm Assessment

- Add the definition of “Zone” to the lecture.
- Review the objectives to ensure clarity
- Better define the major performance requirements for design and evaluation of video systems.

Module 14. Response Force

- This presentation needs a content review.
- This presentation needs shortened.
- Module needs to clearly tie into the systematic approach that is presented.
- Terms need to be consistent with the rest of the course.

Module 15. Performance Testing

- The subgroup instructors need to emphasize what performance testing is and what it should be used for, since there was some confusion on this.
- The subgroup materials need to clearly state and lead students through the steps that they need to take to conduct performance testing (as much as possible) during the subgroup.

Module 17. Adversary Sequence Diagram (ASD)

- Objectives need to be reviewed and presentation needs to be simplified.

Module 18. Single Path Analysis

- This module needs to be reviewed. Quiz scores indicate difficulty understanding some concepts.

Module 19. Multipath Analysis

- This module needs to be reworked; perhaps removing the software and teaching only the concepts would eliminate the confusion with the presentation and the subgroup exercise.

Module 20. Neutralization

- This module needs to be revisited, to ensure that it flows with the rest of the process.

Module 22. Tabletop Analysis

- The materials need to have a more direct focus with less detail and a clear outline of necessary steps.
- The subgroup exercise needs to be greatly scaled down to help understand the main concepts; perhaps doing only part of a Tabletop exercise instead of trying to fit in an entire exercise.

Module 23. Transportation

- Review the module objectives to identify how this fits into DEPO and ensure that participants understand how it applies.

Module 24. Insider Analysis

- The subgroup exercise needs to be reviewed and revised so that participants can work through it in the allotted amount of time.

Solution Sets

- Solution sets need to be revised to include directions for subgroup instructors and need to be checked to ensure solutions are correct.

5.3 Evaluation Instruments

- A pretest should be administered the first day of class and a post-test should be given on the last day to determine the students' overall knowledge improvement. The questions should be based on course objectives and should be the same for both tests.
- An evaluation instrument should be developed for subgroup instructors to obtain specific course feedback on subgroup exercises.
- The daily evaluations should be given to the participants at the beginning of each day so they can fill them out as the day progresses.
- Daily evaluations need to be re-designed so that course administrators can compare the daily evaluations to the quiz scores (what participants think they know, versus the knowledge that they exhibit).

- Field trip questions need to be developed and inserted into the daily evaluations to measure the added value of the field trips.

6.0 Summary

ITC-20 on the Physical Protection of Nuclear Materials and Facilities was successful, this was proven by students:

- High test scores and final presentations.
- Indicated usefulness of DEPO concepts in students work assignments.
- Public and written expression of appreciation for the multicultural experience.

6.1 Purpose of Evaluation Report

The goal of this evaluation report is to provide the information necessary to improve the effectiveness of the ITC program provided to the IAEA Member States. Course participants are professionally involved in the management, regulation, and operation of security systems at nuclear facilities.

6.2 Objectives

The objectives of this report are to:

- Report the results of the course evaluation.
- Identify improvements needed in course lesson content—the relevance and level of material to provide the knowledge and skills necessary to meet participants’ needs in the protection of nuclear material and facilities.
- Identify improvements needed to ensure a clear systematic approach is presented.
- Identify changes to overall course organization to ensure optimum use of time, instructor lectures, and associated subgroup content.

6.3 Results

This report summarizes the efforts made by course organizers to meet the ITC-20 course and module objectives. Organizers reviewed ITC-19 participants’ feedback and implemented many course delivery suggestions in ITC-20. During ITC-20, feedback was successfully captured from participants using a variety of survey tools, including Daily Module Evaluations, Student Quizzes, the Final Course Evaluation, and verbal discussions. The information captured from these survey tools will be used to further improve an already excellent training course.

The course flowed well and most lecturers did an impressive job of conveying the information that was linked to the instructional objectives. The subgroup exercises supported the information covered in the lectures and enabled the students to utilize and increase their knowledge of the subject matter. The field trips gave students some experience with many of the concepts that were introduced during the course. The students generally feel confident in their ability to make improvements at their facilities or in doing their job assignments. Students felt the information they received will be very useful to them in the future. They appreciated the technical expertise from SNL’s subject matter experts as well as their hospitality and camaraderie. The students also felt a great benefit in learning how other countries implement physical protection.

One ITC-20 student summarized the experience as follows:

ITC was a very informative experience for me. It was a career building experience for me. Before I attended the course, I had a limited knowledge on Physical Protection of Nuclear Material. As a member of the competent authority responsible for PP of nuclear facilities, I was able to clearly understand my responsibility in terms of PP of Nuclear Material. I will apply the knowledge obtained to my work which would benefit my country in terms of always ensuring that our PPS are in place in case of a malevolent act.

Appendix A: Daily Evaluation Questions and Results

1. Intro to ITC

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify contacts for information, problems, and emergency situations. ONE STUDENT CHECKED AGREE AND DISAGREE	14	21	3	1	
Recognize the basic goal and structure of ITC.	20	17	1		

Please answer the following questions by checking the appropriate box

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	22	15	1		
The subject will be valuable to my work.	17	19	2		

Comments:

- IAEA was to long.
- All materials of course are valuable for me. The ITC 20 is well prepared and the lecturer's is professional. In introduction session, all the information is clearly.
- Must be more exemples of PPS and DBT.
- Important logistic information has been provided.
- The instructors are all very professional and knowledgeable.
- This lecture was useful in understanding the background of the course and told information.

2. Intro to DEPO

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
List the objectives of a Physical Protection System (PPS). NO COMMENT 1	17	17	3		
Recognize different approaches for the design and evaluation of PPS. NO COMMENT 1	15	17	5		
Identify the approach used in ITC to design and evaluate PPS.	15	20	3		
List the three basic steps in the Design and Evaluation Process Outline (DEPO).	20	17	1		
Identify the primary steps in establishing PPS requirements.	17	17	4		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	22	16			
The subject will be valuable to my work.	20	18			

Comments:

- All materials in DEPO is very clearly, I can learned much from it.
- I hope that we give a video presentation describing PPS and material of PPS.

3. Risk Management and Regulatory Requirements

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Define risk and risk management.	15	21	2		
Recognize the security risk equation.	21	14	2	1	
Describe three generic ways to reduce risk.	19	16	2	1	
Understand the difference between performance and prescriptive physical protection system requirements.	14	17	6	1	
State the physical protection system effectiveness approach used in ITC.	16	19	1	1	1

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	22	14	1		
The subject will be valuable to my work. NO COMMENT 1	19	17	1		

Comments:

- We must have a many examples about how calculate the risk of attack.
- Being satisfied with a excellent presentation!

4. Threat Definition (DBT)

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Define Design Basis Threat (DBT).	15	22	1		
Explain the use of a DBT in the threat-based approach to physical protection.	13	23	2		
State the roles and responsibilities of the organizations involved in the DBT process.	13	21	4		
Describe the steps in developing a DBT.	9	22	7		
List the adversary capabilities that should be included in a DBT.	11	20	4	3	
Recall the triggers for reviewing a DBT.	13	18	7		

After sitting through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Develop a hypothetical threat assessment table for this course. NO COMMENT 1	12	18	7		
Apply the methodology for threat definition described in Session 4 to define a Design Basis Threat for the external adversary to be used in this course. NO COMMENT 1	11	18	8		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	21	15	1		
The subject will be valuable to my work. NO COMMENT 1	21	16			
The subgroup helped me understand the concepts taught in this section. NO COMMENT 1	22	13	2		

Comments:

- Must have more exercises.
- Subgroup was a bit rushed and fell behind near the end.
- Subgroup is helpful.

5. Facility & Target Characterization

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
List several important sources of supporting information used in PPS design and evaluation.	12	26	1	1	
List the major target ID process steps.	14	24	2		
Demonstrate the use of selected theft categorization tables.	15	21	3	1	
Recognize the process for vital area identification. NO COMMENT 1	19	19	1		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	23	16	1		
The subject will be valuable to my work.	20	20			

Comments:

- Please give more detail example the target identification on NPP.
- I hope that you give more examples for a real facility.

6. Hypothetical Facility

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Locate information about the Lagassi Institute of Medicine and Physics (LIMP) facility in the data book.	20	18	2		
Discuss the LIMP hypothetical facility.	19	20	1		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Use the major target identification process steps in developing theft categories for the nuclear and radiological material at the LIMP PTR Facility on the basis of IAEA INFCIRC/225.	15	23	2		
Identify sabotage targets at the PTR.	20	18	2		
Determine the undesirable consequences of theft of nuclear material and sabotage of nuclear facilities based on INFCIRC 225/Rev. 4.	18	18	3	1	

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Locate the theft and sabotage targets in the LIMP PTR Facility.	20	18	2		
Use virtual "fly-by" application to identify features of the physical protection system.	13	20	7		
Use the data in the "exercise data" book of the course. NO COMMENT 2	14	21	3		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	24	14		1	
The subject will be valuable to my work. NO COMMENT 1	21	17	1		
The subgroup helped me understand the concepts taught in this section. NO COMMENT 1	21	16	1		1

Comments:

- Hypothetical Facility could be in nuclear power reactor.
- The same as yesterday: very good instructors/lecturers, very good materials and easy to understand.
- How can we get a "Serious Sam" program?
- Subgroup activities especially group discussion is great! Often we rush to stay on schedule.
- Hypothetical Facility is a very good idea.

7. Intro to Design of PPS

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify two PPS design strategies. Explain principle of timely detection and critical detection point (CDP). NO COMMENT 9	9	20	1	1	
List three basic PPS functions. NO COMMENT 9	16	14	1		
Describe process, components, and performance measures of each PPS function. NO COMMENT 9	6	22	3		
Draw timelines for adversary and PPS response. NO COMMENT 9	10	21			
Characterize three effective PPS design concepts. NO COMMENT 10	9	16	5		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 9	16	14	1		
The subject will be valuable to my work. NO COMMENT 9	16	15			

Comments:

- At the end of the day, the absorption capacity of the brain is overloaded.
- The training content is very condensed and intensive, very exhausted every day.
- In view of the fact that the approach adopted is that based on systems engineering, it might be useful to describe boundaries of a PPS (as a system).

8. Intrusion Detection Sensors

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify the role of intrusion detection sensors.	16	22	2		
Identify sensor classifications. NO COMMENT 1	11	26	2		
Recognize the definition of "protection-in-depth."	16	22	2		
Recognize sensor technologies.	11	20	9		
Recognize the characteristics of a good intrusion detection system design.	15	24	1		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Determine which types of sensors provide effective detection for given threat tactics and environmental conditions. NO COMMENT 1	12	26	1		
Evaluate and determine effective placement of exterior intrusion sensors. NO COMMENT 1	12	25	2		
Determine the advantages and methods of combining sensor systems. NO COMMENT 1	13	22	4		
Identify sensors that may not be suitable for various physical and environmental conditions. NO COMMENT 1	12	23	4		

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Determine an effective placement of interior intrusion sensors. NO COMMENT 1	13	20	6		
Evaluate and upgrade an existing interior detection system. NO COMMENT 1	11	24	4		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	18	18	3		
The subject will be valuable to my work. NO COMMENT 1	19	15	5		
The subgroup helped me understand the concepts taught in this section. NO COMMENT 1	17	19	3		

Comments:

- This part was more technical so I didn't understand everything. I will clarify certain aspects with my instructor.

9. Entry Control

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize the purposes of entry control. NO COMMENTS 3	18	19			
Identify the basis and techniques of personnel entry control and distinguish between False accept and False reject errors. NO COMMENTS 3	16	19	2		
List three advantages and three disadvantages of personnel badges. NO COMMENTS 3	12	20	5		
Recognize a description of the technology of Positive Personnel Identification Systems (Biometric). NO COMMENTS 3	15	22			
Recognize advantages and disadvantages of various types of seals. NO COMMENTS 3	12	22	3		
Recognize the features of a good entry control system. NO COMMENTS 3	18	19			

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Select generic equipment for an effective entry control system to verify credentials. NO COMMENTS 3	14	20	3		
Determine appropriate False accept and False reject error rates of positive personnel identification equipment depending on application. NO COMMENTS 3	17	16	4		

Recommend environmental protection mechanisms for positive personnel identification devices. NO COMMENTS 2	11	24	3		
Analyze a portal design and procedures. NO COMMENTS 2	10	26	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENTS 2	19	17	2		
The subject will be valuable to my work. NO COMMENTS 2	19	16	3		
The subgroup helped me understand the concepts taught in this section. NO COMMENTS 2	22	14	1		1

Comments:

- Is it possible to give us the best name of Company will produce a good equipment of entry control and detection sensor?

10. Contraband Detection

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Define contraband. NO COMMENT 1	20	19			
Identify the basis and techniques of contraband detection systems with particular emphasis on searches, metal (x-ray) and explosives detectors.	14	26			
Recognize the different kinds of radioactive material detectors and their strengths.	13	24	3		
List the features of a good contraband detection system.	13	25	2		
Discuss how to assess the impact of the DBT on contraband detection effectiveness, selection, and design.	13	23	4		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Select generic equipment for an effective system to detect contraband.	14	24	2		
Select generic equipment to detect the following contraband: a. Firearms and tools b. Explosives c. Shielded radioactive material	16	20	4		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	22	17	1		
The subject will be valuable to my work.	17	19	2	1	1
The subgroup helped me understand the concepts taught in this section.	18	18	3		1

Comments:

- From my point of view poorly adapted to this ITC. All this information *released* are accessible near specialized computers. I strongly would prefer to have something about the problems of the threshold for detection of nuclear materials under the fear of physical protection.

11. Alarm Assessment

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify the purpose and methods of alarm assessment for a physical protection system. Recognize major performance requirements for the design or evaluation of a video system for alarm assessment.	14	24	2		
Recognize key differences between assessment and surveillance.	18	21	1		
Identify major video components for alarm assessment.	12	24	4		
Recognize major performance requirements for the design or evaluation of a video system for alarm assessment.	13	22	5		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	21	17	2		
The subject will be valuable to my work.	12	21	4	2	1
The subgroup helped me understand the concepts taught in this section.	13	21	5		1

Comments:

- Technical subject which I didn't really get the whole calculation process. In my facility, special people are trained to do the installation. Agents are only operate them.

11. Alarm Assessment

Please answer the following question by checking the appropriate box.

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize the relationship of using different lenses to the length of sectors.	10	29	1		
Determine the optimum placement of cameras within a detection zone.	11	28	1		
Identify hardware that is necessary for a complete video alarm assessment system.	8	29	3		
Evaluate the effectiveness of an assessment system.	12	26	1	1	

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The subgroup helped me understand the concepts taught in this section.	19	19	2		

Comments:

- No reference for almost all the lecture notes preceding their respective slides.
- Make more video examples.
- Clarification of the calculations in the sub-group was beneficial (equal triangles).

12. Alarm Control & Display

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Explain the role of alarm communications and display in the security system.	13	26			
Recognize the basics of security communication systems. NO COMMENT 1	12	26	1		
Identify the basics of alarm display. NO COMMENT 1	11	27	1		
Recognize that site-specific choices can be made. NO COMMENT 1	12	26	1		
Infer that this technology is changing rapidly. NO COMMENT 1	10	28	1		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Evaluate the different types of alarm communication networks. NO COMMENT 1	13	25	1		
Evaluate the effectiveness of various alarm display systems. NO COMMENT 1	12	26	1		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 2	21	16	1		
The subject will be valuable to my work. NO COMMENT 3	15	22			
The subgroup helped me understand the concepts taught in this section. NO COMMENT 3	17	19	1		

Comments:

- General Comment: I still have questions with respect to qualification of equipment vis-à-vis, fire resistant; operation during emergencies, seismic operation.

13. Access Delay

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify the role of delay systems. NO COMMENT 2	15	23			
List three characteristics of a good barrier system design. NO COMMENT 2	13	25			
Recognize the definition of penetration. NO COMMENT 2	15	22	1		
Recognize attack tools associated with barrier penetration time. NO COMMENT 2	13	22	3		
Recognize the value and limits of fences, vehicle barriers, structural barriers, doors of all kinds, gates, windows, and utility ports. NO COMMENT 2	13	24	1		
Recognize the attributes of dispensable materials and three representative dispensable materials.	14	24	2		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Use the example representative data to determine delay times for given paths and penetration equipment.	17	21	2		
Recognize where to add barriers that will effectively increase delay time for the adversary.	15	24	1		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	22	17	1		
The subject will be valuable to my work. NO COMMENT 1	19	20			
The subgroup helped me understand the concepts taught in this section. NO COMMENT 23	8	7	2		

Comments:

- Well done. I am very happy with the lectures, and materials and organization.
- Calculation with tables is difficult for me. I really prefer go in the field to estimate the delay time but I understand that it is not possible or difficult to accomplish in this course.

14. Response Force

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Discriminate between response force and guard functions.	22	18			
List the principal role of a response force in a PPS.	18	22			
List four major considerations of response planning.	15	22	3		
Recognize the types of operations conducted by response forces.	17	20	3		
Identify the important roles command, control, and communications play in successful response force operations.	14	22	4		

Recognize major factors affecting response force performance that are important to system effectiveness.	16	20	4		
--	----	----	---	--	--

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Determine the time for the response force at LIMP to respond to an intrusion alarm. NO COMMENT 3	15	19	3		
Compare response force times and adversary task times to understand how effective the response force would be in interrupting an adversary team. NO COMMENT 3	16	19	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 3	21	15	1		
The subject will be valuable to my work. NO COMMENT 3	20	16	1		
The subgroup helped me understand the concepts taught in this section. NO COMMENT 4	19	15	1		1

Comments:

- Very good coverage of the material and practical application in the sub group.

15. Performance Testing

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify the purpose and importance of different kinds of testing. Involve the end users of the data in this activity.	16	23	1		
Describe probability of detection and confidence levels.	15	25			

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Plan and execute a performance test of an intrusion sensor.	14	24	2		
Plan for a limited scope system test and consider important safety and operational issues.	15	24	1		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 3	21	16			
The subject will be valuable to my work. NO COMMENT 3	17	19		1	
The subgroup helped me understand the concepts taught in this section. NO COMMENT 3	19	17			1

Comments:

- Visit to the test bed was great!
- Times for the lecture and practicals were limited.
- Excellent exercises in the field. We've learned a lot.

- It is more valuable if there is performance test of the sensor for prevent adversary coming from the sea.

16. Intro to Evaluation of PPS

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
List PPS performance evaluation goals.	14	24	2		
Recognize the PPS effectiveness measures used in ITC.	13	24	3		
Describe what is meant by path analysis.	12	26	2		
Describe what is meant by scenario analysis.	10	26	4		
Describe what is meant by tabletop exercise.	10	25	5		
Identify the tools used in the ITC.	10	25	5		
Explain the role of experts in PPS evaluation.	10	28	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	18	20	2		
The subject will be valuable to my work.	16	22	2		

Comments:

- We need more examples.

17. Adversary Sequence Diagram ASD

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify an Adversary Sequence Diagram (ASD) and describe what it represents.	13	25	2		
Describe why an ASD is useful in the analysis of a PPS.	14	23	3		
Identify the parts of an ASD and diagram a facility from a simple example.	13	22	5		
Identify the five steps to use when creating an ASD.	11	21	8		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Construct a site-specific and target-specific ASD.	13	23	4		
Demonstrate that the ASD represents credible paths that adversaries can follow to accomplish sabotage or theft and the path elements along the path.	13	25	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	19	17	4		
The subject will be valuable to my work.	18	18	4		
The subgroup helped me understand the concepts taught in this section.	4	6			
NO COMMENT	31				

Comments: None

18. Single Path Analysis

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize that the VEASI (Very-simplified Estimate of Adversary Sequence Interruption) computer code calculates the probability of interruption and identifies the critical detection point (CDP).	15	20	4	1	
Identify the input and output parameters of VEASI.	15	16	8	1	
Identify some advantages and disadvantages of using VEASI.	14	17	8	1	
Construct and analyze example single path models using VEASI.	13	19	5	3	
Evaluate VEASI results in making upgrade recommendations.	11	20	6	3	
Determine input for VEASI for complex protection elements.	11	17	9	3	
The subgroup helped me understand the concepts introduced in the lecture. NO COMMENT 1	12	18	6	2	1

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Apply VEASI to evaluate the physical protection system of the research reactor.	15	17	6	2	
Use a computerized EXCELTM version of VEASI. NO COMMENT 2	13	17	6	2	
Interpret the results of VEASI.	14	19	6	1	

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	19	16	4		1
The subject will be valuable to my work.	17	16	4	2	1
The subgroup helped me understand the concepts taught in this section. NO COMMENT 26	5	8		1	

Comments:

- Some exercises are not totally clear or language could be more easily understandable for you-Engl./USA people.
- It was difficult to understand the meaning of the questions, trying to find the answers though out all the tables . . . It was getting more an art than a science. It’s hard for me to find all these information in the tables.
- This was the most difficult session thus far. Our group fell behind because of a lack of clarity in some of the questions.
- Diplomacy.

19. Multipath Analysis

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize the motivation for multipath analyses.	11	24	3	2	
Describe what Path ANaLysis (PANL) Software is and its uses.	12	20	7	1	
List and describe the 10 PANL evaluation steps.	9	19	9	3	
Recognize the strengths and limitations of PANL.	10	20	9	1	

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Enter an ASD into PANL for the PTR.	12	22	4	2	
Determine the input data to the PANL software for a given threat, facility condition, and target.	8	24	6	2	
Analyze the effectiveness of a PPS using the PANL software.	9	22	7	2	
Understand how to perform system upgrade analysis.	9	22	6	3	
Complete a sensitivity analysis for input data to the PANL software.	10	20	7	3	

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	16	15	6	2	
The subject will be valuable to my work. NO COMMENT 1	11	20	6	2	
The subgroup helped me understand the concepts that were taught in the lecture. NO COMMENT 1	16	17	2	3	1

Comments:

- The lectures on single and multipath analysis were too specific in terms of software used. I would have preferred a more general treatment of the subject matter. The presenter, while obviously intelligent was not a good lecturer. I would not recommend this section of ITC to my colleagues.
- Too much theoretical... I think that the teacher should only go with the base principles and stick to that because with all the explanations I had, I'm totally lost...
- Software we dealing through collective execute. Is not to much user friendly tool. "Maybe the "step by step" application would be easier to used for those who are not experts on this issue.
- Too much information! Overload (counterproductive); the tool (PANL) becomes the focus and no more the ideas / concepts that support it. (my feeling).

- The theoretical part was much harder to understand. The subgroup work with Mark as subgroup teacher was better.
- Time allocated for practical was too short.

20. Neutralization

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Describe the role of PN in system effectiveness evaluation. NO COMMENT 1	12	23	4		
Recognize methodologies to determine PN. NO COMMENT 1	11	22	6		
Describe the data required to compute PN. NO COMMENT 1	10	23	5	1	
Comprehend threat posture, response force posture, Rules of Engagement, Order of Battle (both general and site-specific). NO COMMENT 1	10	21	8		
Explain how to evaluate effective response force upgrades to increase PN. NO COMMENT 1	11	21	7		

Please answer the following questions by checking the appropriate box

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 2	13	17	8		
The subject will be valuable to my work. NO COMMENT 2	11	20	6	1	

Comments:

- Marginally better than lectures on Path Analysis. I suggest that these modeling lectures be reorganized.

- It was tough to try to listen to the lecturer after receiving the multi path analysis. I found it very theoretical and I'm not sure that the human aspect is consider for a real situation. It's only numbers...
- Booooooring.
- Two Marks' after each other is one to many.
- A very long day. Very theoretical!

20. Neutralization

Please answer the following question by checking the appropriate box.

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Identify the Response Force posture for the Institute.	10	26	2		
Define the Response Strategy and Rules of Engagement for the Response Forces.	10	23	5		
Determine the Order of Battle for each target set at the Institute.	10	21	6	1	
Analyze Response Force/Threat engagements to compute PN at specific targets.	8	26	4		
Determine upgrades to increase Response Force effectiveness. NO COMMENT 1	10	25	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The subgroup helped me understand the concepts taught in the section.	14	21	2		1

Comments:

- I had a hard time trying to stay focus after receiving the multi path lecture...
- Always the same generic comment. Too much information to anivlate immediately. But very useful for my job in the pvore. Thanks for that.

21. Scenario Analysis

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Define what is meant by <i>scenario analysis</i> and <i>scenario</i> in the context of evaluating PPS performance.	11	24	3		
Recognize the steps needed to perform scenario analysis.	10	22	6		
Recognize the necessary steps that are make up a structured approach to creating scenarios.	8	24	6		
Identify the types of factors that are important in developing a set of scenarios and the reasons why scenarios may fail.	8	25	5		
Recognize how to create a scenario around a path description.	9	23	5		
NO COMMENT 1					

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable.	13	21	3		1
The subject will be valuable to my work.	11	24	2		1

Comments:

- Virtual game
- See 1st page. First page comment was: Always the same generic comment. Too much information to anivlate immediately. But very useful for my job in the pvore. Thanks for that.

22. Tabletop Exercise

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Describe a tabletop exercise. NO COMMENT 1	10	22	5		
Discuss the role of tabletop exercises in helping to determine security system effectiveness.	12	24	2		
Describe the tabletop exercise planning and execution process.	7	25	6		
Describe the use and integration of tabletop exercise results with other system analysis tools.	9	24	5		
State the general benefits, capabilities, limitations and tabletop exercise obstacles.	10	24	4		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize issues that need to be addressed in the scoping stage of tabletop exercises. NO COMMENT 1	10	24	3		
Differentiate between attack descriptions resulting from path analysis and scenario analysis. NO COMMENT 1	9	23	5		
Describe After-Action Activities by identifying what LAGASSI PPS elements were exploited and describe what mitigation measures can be implemented to address each limitation. NO COMMENT 1	10	25	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	12	20	3	1	1
The subject will be valuable to my work. NO COMMENT 1	10	24	2		1
The subgroup helped me understand the concepts taught in this section. NO COMMENT 1	11	22	3		1

Comments:

- Green page: Header/Footer Error 24 22
- The explanations were too long for noting and get me even more confused. However, the sub group help me to understand the meaning of the exercise.
- I was too tired to absorb information.
- Virtual game
- See 1st page. First page comment was: Always the same generic comment. Too much information to anivlate immediately. But very useful for my job in the pvore. Thanks for that.

23. Transportation Security

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Compare and contrast fixed site analysis and the Material Transportation System (MTS) using DEPO. NO COMMENT 5	9	21	3		
Identify specific issues associated with the MTS. NO COMMENT 5	7	22	4		
Analyze a transportation PPS. NO COMMENT 6	8	21	2	1	

Identify mitigating actions that can be taken to reduce the likelihood of theft or sabotage. NO COMMENT 6	8	22	1	1	
--	---	----	---	---	--

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 5	10	19	4		
The subject will be valuable to my work. NO COMMENT 5	10	22		1	

Comments:

- We need to know the regimentation about the transportation.
- 6 day class is very tough to get people stay focus. Lecturer giving at the end of the day are difficult to stay concentrate. We are having information but we are not concentrate anymore.
- The approach “we only ---- in guns” is not applicable in my country
- Some slides seemed repetitive.
- The 90% of nuclear materials transport in Europe is Category III so the measure of response force escorting the convoy is not applicable for economic reasons and following the INFCIRC 225/Rev 4.

24. Insider Protection & Analysis

Please answer the following question by checking the appropriate box.

After sitting through the presentation, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Recognize a description of an insider.	19	20			
Identify insider unique issues and concerns.	16	23			
Define potential insiders at a facility.	19	20			
Utilize the system approach to prevent and protect against Insiders.	16	23			

Apply techniques to prevent and protect against insiders.	16	23			
Evaluate protection system effectiveness against insiders.	16	22	1		

After working through the subgroup, I can...

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Apply the insider PPS design evaluation technique to the PTR Hypothetical Facility.	16	20	3		
Use the methodology outlined in Lecture 23, Insider Analysis.	14	22	3		
Suggest solutions to reduce the vulnerability to the insider threat of theft of special nuclear materials.	17	20	2		

Please answer the following questions by checking the appropriate box.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The instructor was clear and understandable. NO COMMENT 1	23	15			
The subject will be valuable to my work. NO COMMENT 1	20	18			
The subgroup helped me understand the concepts taught in this section. NO COMMENT 1	16	19	2		1

Comments:

- Subgroup seemed to revisit the same details and require endless copying of the last ex to the next work sheet.

Appendix B: Guest Speaker Evaluation Results

DOE International GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	16	22	2		
The subject will be valuable to my work.	11	25	4		
The allotted time was appropriate.	13	24	2	1	

Comments:

- Except meanings of abbreviations should be included in presentations.
- This material must be given in the beginning of ITC.
- Did she know what she was talking about? It sounded like it was just a lot of words. It was after lunch, no one, I think was quite listening.

DOE Domestic GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	14	24	1		
The subject will be valuable to my work.	11	25	4		
The allotted time was appropriate.	12	27	1		

Comments

- Meanings of abbreviations should be included in presentations.
- Probably good intro. for everyone but words, words, words. My head is exploding.

NRC GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	12	25	2		
The subject will be valuable to my work.	9	25	4	1	
The allotted time was appropriate.	10	26	3		

Comments:

- Meanings of abbreviations should be included in presentations.
- This material must be given in the beginning of ITC.

DOS GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	9	24	4		1
The subject will be valuable to my work.	7	21	8	1	1
The allotted time was appropriate.	8	26	3		1

Comments:

- Meanings of abbreviations should be included in presentations.
- This material must be given in the beginning of ITC.
- He could have changed the tone of his voice at least once, sleepy...

IAEA GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	15	17	3		
The subject will be valuable to my work.	13	18	4		
The allotted time was appropriate.	13	19	3		

Comments:

- Spoke too quickly; difficult to understand.
- Time allocated was insufficient for all speakers.
- It's very valuable information for me.
- I don't think the content of this presentation will be useful in my work.
- Too specific on RR.

Canada GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	17	20			
The subject will be valuable to my work.	15	21	1		
The allotted time was appropriate.	15	22			

Comments:

- It is very good information.

France GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	15	21		1	
The subject will be valuable to my work.	15	19	2	1	
The allotted time was appropriate.	13	22	1	1	

Comments:

- It is very good.
- Perfect! Modern!

Germany GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	18	17	2		
The subject will be valuable to my work.	16	17	4		
The allotted time was appropriate.	14	20	3		

Comments:

- It is very good.
- I think the content was too general to be useful in my work.
- Old Fashion.
- Difficult to understand.

United Kingdom GUEST SPEAKER:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
The material was clear and understandable.	12	19	3	2	
The subject will be valuable to my work.	10	20	3	3	
The allotted time was appropriate.	12	21	1	2	

Comments:

- We couldn't hear properly.
- Did his battery went low on the pacemaker...
- It is very good.
- Speaker should stay retired.
- This content was far too much general to be useful in my work. Everything he said has been already point out in other presentations or during the ITC.

Appendix C: Final Evaluation Questionnaire Results

20th International Training Course on the Physical Protection of Nuclear Facilities

These questions will help us identify the strengths and weaknesses of the course you have just completed. Your answers will be useful to us as we try to improve the course for future participants.

A. Circle the number that indicates how strongly you agree or disagree with each of the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
1. The ITC-20 met my expectations.			1	18	21
2. I will be able to apply the information I have learned to my work.			2	20	18
3. The subgroup sessions helped me understand and apply the information.			4	13	23
4. The lectures were clear and easy to understand.		1	4	21	14
5. The agenda was easy to follow.			3	17	20
6. The final exercise was useful.			3	13	23
7. Much of the course material was new to me.	1	6	6	16	11
8. I understood most of the concepts taught during the course.			1	26	13
9. Some of the material was hard to understand because it was unclear or poorly presented.	5	15	11	7	1
10. I did not understand some of the material because of language difficulties.	7	15	4	11	1
11. The guest lectures added value to the course.		1	11	16	10

B. Please answer the questions below.

12. How could the ITC have been better for you?

- Shorter duration; less ambiguous written material; other participants having higher level English skills; some lecturers were poor presenters
- More time in subgroups to work on the topics. Although, some exercises were difficult to understand and need more explanation
- More focus on the insider and transportation
- I think you are on the path of attaining excellence
- More about motivation of insiders
- In ITC, emphasis is to improve PPS of existing facilities. A module needs to be added which would address the architecture for new facilities, improved from security stand point. The inherently secure set up could be thought of.
- Everything is good enough
- It answered some of the security related problems
- ITC-20, The Best!
- Held seminars of varied topics so different countries to educate them the NPP concept
- Afford more opportunity to use Internet and give student the power-point of the class
- If the lecturers speak more slowly and pronounced clearly
- I would have liked to have more time to test intrusion systems, physical barriers and more time to play with the software (especially with PANL)
- For me was excellent
- Less number exercise, more connection with INFCIRC 225
- It would be good if I could learn by myself after the lectures but this needs time
- It gives me a lot of information and good relationships
- It was good enough
- Less pressure on the schedule! I realize this is a very full schedule but so many group exercises were rushed
- The main disadvantage for us was the duration of the course. Three weeks are very long time, but on the other hand I don't think that the material can be covered in a shorter period.
- Exclude 6 day work week
- Maybe some items should be replaced with complex material which needs more time to be understood (Ex. No Diablo- more PANL)
- The presentation time of every section is longer
- The lecturers speak English more clear and slow
- Add more performance pictures
- I believe that the ITC has been very good for me
- Good steps, ok
- The final exercise could have been allocated long time taking into consideration communication challenges amongst subgroup members due to language problems

- This ITC is very better for me than other training courses because in the ITC there are many exercises and pictures
- All was ok! Thank you
- It was the best
- There should be more example about detection systems around the sea
- Less information through lectures (and exercises).
- This course was properly presented and divided and I don't see at this moment any need to improve it
- I don't consider any changes to improve the ITC
- 3 weeks is too long, 1 day weekend is too short
- Learn the total system of PP
- Don't have

13. Have you read the text? Was it useful to you?

- Some of it, yes
- Not yet, I read only the slides. I'll do it once I'll be back home
- If the lecturers were understandable/ didn't read them
- Very useful but I think some did not have references
- Yes (5)
- The text is elaborative and very helpful. A few places need reinforcement/ revision. If possible text could be supplied earlier (at home places) the participants would be more prepared.
- Yes, very
- Yes, partially
- Yes, very useful
- Yes, it's helpful
- Yes, it was useful for me
- All is useful but it needs more time
- I have had the opportunity to read most of the text before coming because the materials are in my office
- Yes, maybe could add bibliography
- What text do you mean?
- Definitely
- Not really because the material is to be read carefully in order to understand better
- Not really, The text will be useful as I try to apply this at home
- When I need additional information on some of the subjects I read the text and it was useful to me
- Some of the text I read, some not (overall good)
- After reading text the material was understood easier than just lectures. Of big help
- Yes, it helped me understand knowledge better when listening to lectures
- I did not have time to read all material, but the text are very interesting and clear
- Only from time to time, the time was missing
- No, I have not had the opportunity to read the text
- Yes, I read some text and it was very useful

- I had not time to do this, but I think that it will be useful for me when I come back home
- Yes, provided a broader understanding of the lecture slides
- Yes, sure the material of ITC-20 can enhance my knowledge in improving my international security perspective
- Yes, absolutely
- All lectures were useful, and presented in an understandable manner
- Yes, it is very useful to understand the concepts and it's application in my work place
- Yes, detailed description and reference data
- Yes, neutral position

14. Given the list of modules below, check the ones in which you would like additional training.

Define PPS Requirements	Design PPS	Evaluate PPS
Process of PPS Design and Evaluation (2) <input type="checkbox"/> 4	Intrusion Detection Sensors (8) <input type="checkbox"/> 6	Adversary Sequence Diagrams (17) <input type="checkbox"/> 4
Risk Management and Regulatory Requirements (3) <input type="checkbox"/> 8	Entry Control (9) <input type="checkbox"/> 3	Single Path Analysis (18) <input type="checkbox"/> 10
Threat Definition (4) <input type="checkbox"/> 6	Contraband Detection (10) <input type="checkbox"/> 6	Multipath Analysis (19) <input type="checkbox"/> 19
Facility Characterization/Target Identification (5) <input type="checkbox"/> 3	Alarm Assessment (11) <input type="checkbox"/> 8	Neutralization Analysis (20) <input type="checkbox"/> 3
Intro. to Hypothetical Facility (6) <input type="checkbox"/> 1	Alarm Communication and Display (12) <input type="checkbox"/> 6	Scenario Analysis (21) <input type="checkbox"/> 8
	Access Delay (13) <input type="checkbox"/> 6	Tabletop Analysis (22) <input type="checkbox"/> 12
	Response (14) <input type="checkbox"/> 5	Insider Analysis (23) <input type="checkbox"/> 10
	Performance Testing (15) <input type="checkbox"/> 9	Transportation Security (24) <input type="checkbox"/> 15

15. Using the table above, list the modules that will help you most in your job.

Define PPS Requirements	Design PPS	Evaluate PPS
Process of PPS Design and Evaluation (2) <input type="checkbox"/> 18	Intrusion Detection Sensors (8) <input type="checkbox"/> 14	Adversary Sequence Diagrams (17) <input type="checkbox"/> 10
Risk Management and Regulatory Requirements (3) <input type="checkbox"/> 14	Entry Control (9) <input type="checkbox"/> 15	Single Path Analysis (18) <input type="checkbox"/> 17
Threat Definition (4) <input type="checkbox"/> 17	Contraband Detection (10) <input type="checkbox"/> 13	Multipath Analysis (19) <input type="checkbox"/> 13
Facility Characterization/ Target Identification (5) <input type="checkbox"/> 13	Alarm Assessment (11) <input type="checkbox"/> 11	Neutralization Analysis (20) <input type="checkbox"/> 10
Intro. to Hypothetical Facility (6) <input type="checkbox"/> 7	Alarm Communication and Display (12) <input type="checkbox"/> 11	Scenario Analysis (21) <input type="checkbox"/> 12
	Access Delay (13) <input type="checkbox"/> 12	Tabletop Analysis (22) <input type="checkbox"/> 13
	Response (14) <input type="checkbox"/> 12	Insider Analysis (23) <input type="checkbox"/> 16
	Performance Testing (15) <input type="checkbox"/> 12	Transportation Security (24) <input type="checkbox"/> 15

- I would say all except perhaps the multi-path which I really doubt I can run this program. However I understand the usefulness
- Most of them are very useful to carry out my job as a nuclear security inspector and working to the regulator
- All the modules were useful to me because much of the material was new for me! I think that single path analysis and multipath analysis must be subject of separate training course

16. Write a statement about your ITC experience.

- Very compressive in terms of quantity of information- that information was relevant to my job.

- Disappointing in some lectures because of poor lectures.
- Would prefer shorter duration for course and therefore condensation of some or the material (e.g. path analysis).
- English language capabilities of participants need to be of higher standard
- It helps me to know the chronology of how to design a PPS with tools to achieve my goal. It's easier now to understand all the complexity of designing a PPS in a nuclear facility. I can now bring back the knowledge home and work on my own facility.
- I have been building a global network in PPS nuclear
- ITC-20 has greatly improved my personal security awareness and more importantly the need for physical security at nuclear facilities.
- ITC is most of interesting and professional making
- The course is conducted in a very congenial atmosphere. A lot of technical material is presented which is supported by hands on experience as well as exercises.
- An important aspect is the effort in keeping the syllabus current. Constant up gradation in the content keeps it abreast with the changing techno-political scenarios
- It is very useful, gives a lot of helpful knowledge and opportunity to share experience with experts from other countries
- Some references to text material during lecture may be helpful
- Extra time for lab visits then the present will be helpful
- It was Great!
- Complete fresh experience to study and discuss together with so many different countries attendance
- I have a good days in ITC and I like subgroup.
- I think the review in the morning was useful.
- ITC was very good organized. The exercises helped me to better understand the presentation. Practical exercise were very helpful for me.
- What a great security course, with such a wonderful organization, experienced lecturers, useful materials... I am very impressed
- It's going to be useful to my work and also meet different people, different ideas, is good.
- Really good
- It is good and really helpful.
- It was great, a little bit tiring but the provided information was important. The last exercise was stressful maybe to modify and not make at the end of the third week, it is too much of a stress
- Congratulations to the whole ITC team. I can only estimate the immense amount of effort required to make this happen. The dedication of the whole team was amazing- they stopped their lives to make this a good experience for us. I will always remember this experience.
- I would like to thank you for this great course. It was pleasure to meet all these experts and to talk to them, I've learned a lot
- Please do not force students to feel guilty because they need to go to the restroom
- This was an opportunity to get more broader information/ knowledge about the physical protection issues.
- A knowledge received during ITC will help me in my future, hope, involvement on the PPS issues

- Hard work, very busy: But very good arrangement and administration: very advanced and useful
- Very interesting methodology
- Very well scheduled
- All staff with high level professional
- Very friendly team
- Hard but helpful with good documentation. Very interesting, the travel to Diablo. Design and Evaluation process outline give a good structure. Good location in Sheraton with large rooms
- I have learned the DEPO model which will be critical in my job in designing a PPS. On a personal level the experiences from individuals from all over the world provided them with the opportunity of working with people from diverse backgrounds thus enhancing my interpersonal skills. I also take back the experience of being in the US for the first time and the great cultural experience of NM. I also enjoyed and learned significantly from visits to SNL and Diablo Canyon Reactors.
- About my ITC experience, it was very important for me because I met many people from all countries with experiences in the physical protection.
- I obtained very good experience to define PPS requirements, design PPS and evaluate PPS. It was very good course
- ITC was very informative experience for me. It was a career building experience for me. Before I attended the course, I had a limited knowledge on Physical Protection of Nuclear Material. As a member of the competent authority responsible for PP of nuclear facilities, I was able to clearly understand my responsibility in terms of PP of NM. I will apply the knowledge obtained to my work which would benefit my country in terms of always ensuring that our PPS are in place in case of a malevolent act.
- I just received much valuable things during attended ITC due to it's materials could help me in solving my problem in our nuclear facilities; especially in implementing design and evaluation of PPS. I hope I could be able to be an expert/ guest lecturer in our Regional/ RTC on PPS
- I've received a lot of useful information
- Good comprehensive course and basis for any PPS
- ITC participation is a great experience particularly the sub-group exercises. The field visits to Sandia lab & NPP gives the feel of it's application. This also provides the opportunity to interact with various countries participants and their practices which are helpful in altering our systems
- Nice to meet this kind of people from all over the world and work on security. ITC was a great experience
- Good SNL, Good Abq. Good world wide students
- Thanks, I learning much new things, will be useful in my work. Thanks Again
- It is the best instrument to understand the DEPO
- Get a very good view about safety and security in nuclear facilities

17. Please expand on any previous question or write additional thoughts, comment, or suggestions regarding the ITC course.

- I found some of the written material used in groups to be rather obtuse and

ambiguous.

- I felt that I gained little from the guest lecturers
- The Path Analysis Lecturer and his material were difficult for me to concentrate on
- The visit to Diablo Canyon was both enjoyable and informative
- Reduce the length of the course and ask IAEA to more rigorously test for English language capabilities
- Choose the lecturers on their presentation skills as well as their subject matter knowledge
- I think that the last lectures from the international community were not all useful. I would suggest to perhaps have less lecturers and give more time for the final exercise. I could find some redundancy in the lecture of the speakers
- Anyway, many thanks for the great time. I really appreciate my experience. It will be really helpful in my career.
- The coffee must be better!!
- Also the evaluation after class could perhaps be moved to the following day, because after class you're so tired and you don't bother about the comments. The quiz I understand must be after class
- There is the need to introduce riot control in to the program, i.e. dealing with demonstrations against nuclear facilities
- To make the world a secure place and still harvest the benefits of nuclear energy- "Atoms for Peace"- it is essential to have such courses more frequently. Many trained professionals in the field can definitely make a positive contribution to the whole cause of a visionary.
- I think that it will be very helpful to provide course material as electronic copies on CD, to avoid a necessity to transport heavy books in baggage
- No
- It's great that the lecturer's, and the instructors are just excellent
- The arrangements for the leisure time (Saturday and Sunday trips) are especially important for the attendees who left their own country for 3 weeks.
- I think the final exercise should be given more information. Such as cost requirement.
- Suggestions: More time for PANL, maybe it'll be good to organize other course or workshop according to PANL, and another course for SAVI.
- If I had to improve something I would point out more experienced instructors (but it was just a minor comment)
- To make number exercise different cultures of participants makes it difficult to cooperate and develop work
- As soon as possible I wish ITC materials (ppt, video, etc.) to be distributed
- I found the final exercise to be very stressful. Our group struggled and fell behind and this because frustrating for all of us. Fortunately we were rescued by our instructor and accomplished the task. If there was a way to provide more structure * to the subgroup process, it may reduce the stress of this event, otherwise... excellent job.
*Suggestions? What is the "elected subgroup leaders" had a short session on the expectations of leading the group, schedule and format of the presentation?
- Some of the final lectures can be given in the beginning of ITC. Those that gave

general info. & material.

- Thank you for everything. Sandia did the great job. Subgroup leaders helped students feel safe in a friendly environment. Gary Rocheau is perfect teacher
- As already mentioned before some sections need more time to be solved. Maybe structure of the schedule could be changed in favor of topics that need more time. Otherwise I can say that organization of (??). Big ITC is a big challenge for every organization. I'm proud and grateful that I had the opportunity to attend ITC-20
- Would be necessary to have ITC Regional in South Africa: Thanks to All
- I am hopeful that ITC course presenters will be available to be contacted past ITC-20 for any further questions that participants may have. I also hope that the ITC staff have a database of past course attendees that they may recommend for support should it be necessary. The course should run indefinitely into the future.
- About the ITC course I hope that you add another module about the protection of information.
- It would be better if the breaks between lectures will be longer, because it is difficult to hear and understand very long lectures in English (it is not our native language).
- ITC was a wonderful experience to me. My thanks to all the lecturers, guest lecturers, and organizers. Good project, well done.
- Question: ITC course is wonderful. Could we conduct a training course such as Vital Area Identification in my country? Since Sandia is an expert in this area...
- During the lectures and exercises I have received more information than I can understand. Feelings of "overload" that was frustrating and counter productive.
- I think that the diversity between participants is too (??, wide?) (knowledge of English, experience, level) this is obvious while the subgroups are doing exercises.
- I think that it may be too much information for just three week training
- SG Exercises are mixed basic and high level
- High level Ex. Should be separated clearly
- High level Ex. Are obstacle for beginners
- More practical experiences

Appendix D: Changes from ITC-19 to ITC-20

ITC-19 Recommendations Implemented in ITC-20

- The participants were able to visit and tour a nuclear power plant.
- The evaluation section of the course was revised and updated.
 - Added VEASI and PANL
 - Added Tabletop Analysis
 - Revised Introduction to Evaluation, Adversary Sequence Diagram, Single Path Analysis, Multipath Analysis, Neutralization Analysis and, Scenario Analysis
- The Risk Management and Regulatory Requirements Module was revised.
- The Threat Definition Module was revised.
- The Target Identification and Facility Characterization Modules were combined.

Appendix E: Logistics for ITC-20

Loretta Humble, member of SNL's International Protocol Office, coordinated the complex and involved logistics for the course.

Logistics and Hotel

John Matter acted as host for the training course; subgroup leaders, Jose Rodriguez, Loretta Humble, and Amanda Ramirez acted as escorts. The Sheraton Uptown did a good job. The facilities were satisfactory and the staff was accommodating to participants' needs and course adjustments. The hotel requirements were laid out in a contract prior to the event, which worked very well for budgeting purposes. Two Avis rental vans were provided for subgroup instructors to use in transporting participants around in the evenings and weekends, which worked well.

Dinners away from Hotel

The dinners away from the hotel were a success this year. Students went to La Hacienda Restaurant in Old Town for Mexican food, which was very good. Students also went to Kelly's Brew Pub to enjoy some American-style hamburgers. The final dinner, at the National Atomic Museum, was catered by the Cooperage Restaurant. All restaurants provided good food and service.

Other Issues and Comments

- Many of the guest speakers did not include text with their slides, and their slides were not turned in until they arrived at the course. It is necessary to emphasize the need for text that belongs with the slides as well as providing both to Loretta by the specified date in order to allow time to prepare copies for students.
- The food served by the hotel was not always satisfactory; there was stale bread and sometimes not enough food. These issues were addressed with the hotel.
- The course picnic was held at Oak Flats this year, which was a success.

Appendix F: ITC-20 Schedule and Lecture List

ITC-20, October 14 - November 2, 2007

Week One

	Monday 10/16	Tuesday 10/16	Wednesday 10/17	Thursday 10/18	Friday 10/19	Saturday 10/20	Sunday 10/21
7:00 AM	BREAKFAST	BREAKFAST	BREAKFAST	BREAKFAST	BREAKFAST		
8:00 AM	Review	Review	Review	Review	Review		
9:00 AM	Intro to ITC (1)	Facility & Target (5)	Intrusion Detection (8)	Contraband Detection (10)	Alarm Assessment SG (11S)	Free Time	
	BREAK	BREAK	BREAK	BREAK	BREAK		
10:00 AM	IAEA Nuclear Security Program	Hypothetical Facility (4)		Contraband Detection (10)	Alarm Control & Display (12)		
	Intro to DREPO (2)		Intrusion Detection SG (6S)		BREAK		
	BREAK	BREAK		Contraband Detection SG (10S)			
12:00 PM	Regulatory Requirements & Risk M. management (3)	Facility & Target SG (5S)	LUNCH	LUNCH	Alarm Control & Display SG (12S)	Team Building Exercise	Free Day
	LUNCH	LUNCH					
1:00 PM			Entry Control (9)	Alarm Assessment (11)			
2:00 PM	Threat (4)	Facility & Target SG (5S)	BREAK	BREAK	Delay (13)		
	BREAK	BREAK	Entry Control (9)	Alarm Assessment (11)	BREAK		
3:00 PM			BREAK	BREAK	BREAK		
4:00 PM	Threat SG (4S)	Intro to Design (7)	Entry Control SG (9S)	Alarm Assessment SG (11S)	Delay SG (13S)		
	BREAK	BREAK					
5:00 PM	Feedback	Intrusion Detection (8)	Feedback	Feedback	Feedback		
		Feedback					
6:00 PM		Free Time					
7:00 PM		Offsite Dinner					
8:00 PM							

ITC-20, October 14 - November 2, 2007

Week Two

	Monday 10/22	Tuesday 10/23	Wednesday 10/24	Thursday 10/25	Friday 10/26	Saturday 10/27	Sunday 10/28
7:00 AM	BREAKFAST	BREAKFAST	BREAKFAST	BREAKFAST		BREAKFAST	
8:00 AM	Review	Review	Review	Review		Review	
9:00 AM	Response Force (14)	Performance Testing (15)	Intro to Evaluation (16)	Single Path Analysis SG (16S)	Class Trip to Dabbs Canyon NPH	Neutralization SG (20S)	
	BREAK	BREAK	BREAK	BREAK			
10:00 AM	Response Force (14)	Plan Test SG (15S)	Advisory Sequence Diagram (17)	Multi-Path Analysis (19)		Scenario Analysis (21)	
	BREAK	BREAK	BREAK	BREAK		BREAK	
11:00 AM	Response Force SG (14S)	TRAVEL	ASD SG (17S)	Multi-Path Analysis (19)		Tabletop Exercise (22)	
12:00 PM	LUNCH	TOUR SENSOR TESTBED	LUNCH	LUNCH			Free Day
	LUNCH	LUNCH					
1:00 PM	TRAVEL	Collect Data (15S)	Single Path Analysis (16)	Multi-Path Analysis SG (19S)		Tabletop Exercise SG (22S)	
2:00 PM	TRAVEL	TRAVEL	BREAK	BREAK			
3:00 PM	DEMO AT LIVE FIRE RANGE	Analyze Data (15S)	Single Path Analysis SG (18S)	BREAK			
	BREAK	BREAK					
4:00 PM	TRAVEL	Present Results (15S)	Neutralization (20)	Neutralization (20)		Transport Security (23)	
	BREAK	Feedback	Feedback	Feedback		Feedback	
6:00 PM		Free Time					
7:00 PM		Offsite Dinner					
8:00 PM							

ITC-20, October 14 - November 2, 2007
Week Three

	Monday 10/29	Tuesday 10/30	Wednesday 10/31	Thursday 11/1	Friday 11/2
7:00 AM	BREAKFAST	BREAKFAST	BREAKFAST	BREAKFAST	BREAKFAST
8:00 AM	Review	IABA	Introduction to Final Exercise (25)	Final Exercise SG (25S)	Presentation 1
9:00 AM	Insider Protection & Analysis (24)	Australia	BREAK	BREAK	Presentation 2
	BREAK	BREAK	BREAK	BREAK	Presentation 3
10:00 AM	BREAK	France	BREAK	BREAK	Presentation 4
	BREAK	BREAK	BREAK	BREAK	Presentation 5
11:00 AM	Insider SG (24S)	Germany	Final Exercise SG (25S)	Final Exercise SG (25S)	Presentation 6
	BREAK	BREAK	BREAK	BREAK	Presentation 7
12:00 PM	BREAK	UK	BREAK	BREAK	BREAK
1:00 PM	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
2:00 PM	DOE International	Group Photos Subgroups prepare questions	Final Exercise SG (25S)	Final Exercise SG (25S)	Summary (26)
	DOE Domestic	BREAK	BREAK	BREAK	
3:00 PM	BREAK	Panel Discussion	BREAK	BREAK	
	NRC	BREAK	BREAK	BREAK	
4:00 PM	DOS	Panel Discussion	Final Exercise SG (25S)	Final Exercise SG (25S)	Free Time
5:00 PM	Feedback	Feedback	BREAK	BREAK	
	Free Time	Free Time	BREAK	BREAK	Reception
6:00 PM					
7:00 PM					
8:00 PM		Tour and Dinner at National Atomic Museum			Graduation Dinner

ITC-20 Lecture List

1	Introduction to ITC	John Matter
2	Introduction to DEPO	Jose Rodriguez
3	Risk Management & Regulatory Requirements	Bruce Varnado
4	Threat Definition	John Matter
5	Target Identification and Facility Characterization	Bruce Varnado
6	Introduction to Hypothetical Facility	Paul Ebel
7	Introduction to Design of PPS	John Matter
8	Intrusion Detection	Dave Hayward
9	Entry Control	Dale Murray
10	Contraband Detection	Chuck Rhykerd
11	Alarm Assessment	Dale Murray
12	Alarm Control & Display	Doug Adams
13	Access Delay	Charles Greenholt
14	Response Force	Alan Swanson
15	Performance Data & Testing	Jose Rodriguez
16	Introduction to Evaluation of PPS	John Matter
17	Adversary Sequence Diagram	Jose Rodriguez
18	Single Path Analysis	Mark Snell
19	Multipath Analysis	Mark Snell
20	Neutralization Analysis	Mark Smith
21	Scenario Analysis	Jose Rodriguez
22	Tabletop Analysis	Cal Smith
23	Insider Analysis	Bruce Varnado
24	Transportation Security	Derek Farr
25	Final Exercise	Paul Ebel

Distribution

- 1 Technical Library, 9536 (electronic copy)
- 1 John Matter, 6754, MS 1361
- 1 Jose Rodriguez, 6754, MS 1361
- 1 G. Bruce Varnado, 6754, MS 1361
- 1 Mark Snell, 6754, MS 1361
- 1 Loretta Humble, 6036, MS 1378
- 1 Evelyn Serna, 6037, MS 1379
- 1 Amanda Ramirez, 6037, MS 1379