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EVALUATION OF CONSTRUCTION SAFETY IN DOE
COURSE TAUGHT IN AIKEN, SOUTH CAROLINA
AUGUST 4 TO AUGUST 7, 1992

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1.0 SUMMARY

This section summarizes trainee evaluations for the Safety and Health Training Section course, "Construction Safety in DOE", which was conducted August 4-7 at Westinghouse Savannah River, in Aiken, South Carolina.

Section 1.1 and 1.2 of this report summarize the quantitative course evaluations that trainees provided upon completion of the course. Appendix A provides a transcript of the trainees' written comments.

Numeric course ratings were generally positive and show that the course material and instruction were very effective. Written comments supported the positive numeric ratings. The course content and knowledge gained by the trainees exceeded most of the students' expectations of the course.

Results from the final examination showed that students gained significant knowledge from the course.

This was by far the largest construction course taught to date. The facilities were excellent and the support from Mary Tunison, Brian Dowdy and the training center management was some of the best received anywhere at any site, this year. The facility, a combination of all site safety staff in an old KMart building was set up as a training facility and suits this purpose to a "T". It would be nice if all training facilities were set up in this fashion.

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1.1 SUMMARY OF TRAINEE COURSE EVALUATION

This course was conducted at Westinghouse Savannah River, in Aiken, South Carolina, August 4-7, 1992. Edward Handwerk and Peter Cucuz presented the course to thirty-nine Westinghouse Savannah River, and Bectel Savannah River, Inc. personnel.

1.2 NUMERIC RATINGS

Thirty-five trainees completed a course evaluation form upon finishing the course. The first rating area of the form covered five items dealing with course content; the second rating area covered one item dealing with testing materials; and the third rating area covered thirteen items specifically associated with course topic areas.

For the first and second rating areas, respondents were instructed to rate the degree to which they agreed or disagreed with each statement using a five-point scale with 1 (low) anchored to "strongly disagree" and 5 (high) anchored to "strongly agree". The ratings are as follows:

COURSE CONTENT AND TESTING MATERIALS RATINGS

1. Developed specific skills and competencies in occupational safety compliance that I can use on the job.
Average Class Rating - 4.20
2. Gained a greater understanding of 29 CFR 1926, Safety and Health Regulations for Construction.
Average Class Rating - 4.34
3. Gained factual knowledge about Federal safety and health program requirements related to Construction.

Average Class Rating - 4.09

4. Would recommend this course to others.

Average Class Rating - 4.37

5. Compliance knowledge gained from this course will make work environments safer.

Average Class Rating - 4.20

6. The final test was a good measure of the knowledge gained in the course.

Average Class Rating - 3.91

The average class rating for the course content area and testing materials area was 4.19. This high rating reinforces the applicability of the course content to the trainees' interests and work environments.

The third rating area asked the respondents to rate the value of each of the fifteen topic areas using a five-point scale with 1 (Unsatisfactory), 2 (Satisfactory), 3 (Good), 4 (Very Good), or 5 (Excellent). The following are the average class ratings that dealt with topic content as well as with the value of the instructor:

INSTRUCTOR	TOPICAL AREAS PRESENTED	INSTRUCT	CONTENT
Edward Handwerk	Introduction to DOE Safety and Health Programs	3.97	3.66
Edward Handwerk	General Interpretations	4.00	3.77
Edward Handwerk and Peter Cucuz	General Safety and Health Provisions	4.03	3.91
Peter Cucuz	Scaffolding	4.06	3.86
Peter Cucuz	Floor and Wall Openings	4.06	3.97
Edward Handwerk	Ladders	4.09	4.09
Peter Cucuz	Electrical	3.94	3.77
Edward Handwerk	Power Transmission and Distribution	3.89	3.54
Edward Handwerk and Peter Cucuz	Materials Handling, Storage, Use and Disposal	3.86	3.63

Peter Cucuz	Cranes, Derricks, Hoists, Elevators and Conveyors	4.14	3.91
Edward Handwerk	Motor Vehicles, Mechanized Equipment and Marine Operations	3.94	3.80
Edward Handwerk	Rollover Protective Structures, Overhead Protection	3.94	3.80
Peter Cucuz	Hand and Power Tools	4.06	3.94
Edward Handwerk	Welding and Cutting	4.09	3.83
Peter Cucuz	Concrete and Masonry Construction	4.11	3.86
Edward Handwerk	Fire Protection and Prevention	4.03	3.74
Peter Cucuz	Steel Erection	4.09	3.83
Edward Handwerk	Demolition	4.00	3.69
Edward Handwerk	Occupational Health and Environmental Control/HazMat	4.03	3.74
Edward Handwerk	Personal Protective Equipment	4.06	3.89
Peter Cucuz	Signs, Signals and Barricades	4.03	3.83

The overall average class rating for specific topic content was 3.80. The overall average class rating for E.C. Handwerk was 3.99, for Peter Cucuz the rating was 4.04.

1.3 WRITTEN COMMENTS

After providing numeric course evaluations, participants provided written comments about the course. Written comments were transcribed and are presented verbatim in Appendix A.

Expectations

A majority of the students were pleased with both the presentations and subject matter addressed in the course.

Most Helpful Topics

Scaffolding and excavations were the primary subparts which were the most helpful to the students, in this course. Interpretation of the standards and how to utilize 1926 were also high on the "Most helpful" list.

Least Helpful Topics

Electrical and demolition were the least helpful to some of those answering the evaluation. This may be due to the lack of activity in these areas, but also it may be out of the realm of the job classification of those in attendance. This was not true under the "more emphasis" category where several students indicated more emphasis should be placed on electrical and demolition and new standards (all current and upcoming standards are addressed in the course).

Suggestions For Improvement

The field trip will be included in future classes along with expansion of the construction course to five days. Overheads and presentation materials are begin updated and revised for the new class. Other students felt more time was needed in electrical, excavations and demolition. Others wanted us to teach 1910 standards as well, but there is no time and we already offer two courses in the 1910 standards; S101 and P101.

1.4 EXAMINATION RESULTS

On the last day of the course, a final examination was administered to thirty-nine attendees. There were 25 questions all which were multiple choice

questions. The scores ranged from 76% to 100% with the average score being 93%. Thirty-nine persons successfully completed the class.

APPENDIX A

EVALUATION COMMENTS

"CONSTRUCTION SAFETY"

AUGUST 4-7, 1992

AIKEN, SOUTH CAROLINA (WESTINGHOUSE SAVANNAH RIVER)

APPENDIX A

TRAINEE EVALUATION RESPONSES

CONSTRUCTION SAFETY"

AUGUST 2-4, 1992 (AIKEN, SOUTH CAROLINA)

WESTINGHOUSE SAVANNAH RIVER

Please briefly describe how your expectations of this course were or were not met.

Were met.

Needed more on excavations.

Not enough time for in depth coverage.

Better understanding of 29 CFR 1926.

Yes, provided a general overview as I expected.

Good review of information.

Would like to concentrate on sections I use in more detail.

This course more than met my expectations.

The instructors did a real good job with their information, expectations were met.

More in depth.

Satisfied.

Received more detail than expected.

I think the instructors did well however, I think it would have helped if they had, had the class follow the handout material as it was discussed.

Exposed to the areas I needed.

Good overview of the subparts.

Was not sure of the expectations. Pleased with working knowledge on how to locate information.

Expectations met. I came in looking for an overview of all topics, and am leaving with a lot more than expected.

The most helpful topics covered or activities presented in this course were:
Excavations.

How to read standards i.e., tabbing and highlighting book.

Excavations.

Scaffolds.

All.

Scaffolding, steel erection , excavation, fall protection.

Slide presentations.

Excavation, scaffolds.

How to interpret the regulations.

Electrical, scaffolds.

Scaffolding.

Excavations - presented great!

Where and who to find standards.

Personal protective and life saving equipment--safety belts.

All covered topics were beneficial.

Steel connecting, cranes, derricks, elevators..., scaffolding.

Basic review of 1926 was helpful and I'm sure it will benefit supervisor.

Cranes, scaffolds.

Slides showing non-compliance.

The least helpful things discussed or done were:
Electrical.

Some of the videos.

Demolition.

Concrete and masonry construction.

Electrical.

All good.

Demolition, PE.

Subpart H.

All was informative.

Electrical, covered too quickly. Information vague.

None.

All topics were helpful.

Demolition, cranes, floor/wall coverings, due to I didn't get enough out of these topics.

More emphasis should be given to:
Electrical and excavation.

Exercises and ID.

Demolition.

All sections.

Electrical safety practices.

New standards such as Blood Borne Pathogens and ADA.

Explanations (a dictionary of construction terms would help).

Excavation and electrical.

1926.251, cranes, electrical (in the book), demolition.

Excavations.

Electrical, subpart K.

IH issues. Chemtree availability to supplement manufactures information on MSDS.
PE selection process and other topics that give one an appreciation for IH's responsibilities.

OSHA revisions, new standards.

Scaffolding, fall protection.

Electrical.

Less emphasis should be given to:
Break time.

What specific suggestions do you have for improving future sessions?
None. Good class.

More classroom participation.

More in depth studies in interpretation.

More classroom exercises.

Include more construction STR's that have little construction safety knowledge.

Job visit for practical.

Create a dictionary of construction terms.

Relate material covered to section objectives.

Better overheads.

Wish this had been the five day school.

Utilize the white book more. It seems to have good information in it.

May place more information in book (other than copy of slides) give so text to expand on highlight points on slides.

Five days are not sufficient.

Get a room with better acoustics. So much echo made a difficult to understand instructors.

Use this class as basic class and develop another for new revisions/standards review (OSHA).

Do not use paper pads or improve your writing. More information on wire rope patterns (handouts).

More use of overheads. Cover objectives prior to each section and cover the objectives.

Other materials to supplement or substitute for the provided handouts?

Illustrations on rigging terms.

Handouts good.

More hazard slides. There is no better way to.

I imagine it's cost prohibitive but it would be nice to get all the reference documents found within 1926. Also a topic index to 1910 would be helpful.

I would prefer handouts included with book (if it takes two books fine, but looking in OSHA book, Handout book, and yellow book is difficult).

Daily schedule/timing of activities, worktime?

Okay.

Start earlier.

Take less breaks.

Good.

Good scheduling, sufficiently flexible, ample breaks.

Excellent!

Less introductory material.

I would liked starting at 7:00, or 7:30 vice 8:00.

Adequate.

Facilities/training room arrangements?

Good.

Satisfactory.

Excellent.

Okay.

Appropriate.

What other types of safety training courses would you like to see available?
1910 standard.

Additional detailed specific section coverage.

1910 standards, in depth electrical.

Machine guarding, 1910 training.

Excavation/trenching. More detail. Looks like a course of its own.

Like to have the option to get specific class in the subparts (1 day course to get specific).

How to perform safety audits.

Any further comments?

Very good course.

Excellent course. Excellent instructors.

Thanks.

Very good course. I learned a lot and gained a good understanding to take back t site with me. Thanks.

Instructors had time to cover much more material. Additional class time is not required. Overhead projection should have standards referenced! Specifically cover objectives.

The computer overheads (red) were not clear and difficult to read. Maybe different color would help.

I'm not sure of this, but I believe airplane hanger was misspelled in one of the slides.

The slides of actual on site findings were good.

Having come from the Corps of Engineers, an agency proud of its safety practices, I never received formal training at all (all out). Recommend PNL contact them and show what is presently available. Huntsville Division/HQ, USACE should be interested.

APPENDIX B

TRAINEE EVALUATION FORM

EVALUATION FORM

C-101—Construction Safety in DOE

Date _____
 Name (optional) _____
 Title _____
 Location _____

Please evaluate various features of the course you have just completed. The information you provide here will be combined with that from other attendees and summarized for the sponsor, the U.S. Department of Energy. Results from this evaluation will be used to improve this course.

Course Content

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
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Overall, as a result of this course I believe that I:

developed specific skills and competencies in occupational safety compliance that I can use on the job.5	4	3	2	1
gained a greater understanding of 29 CFR 1926, Safety and Health Regulations for Construction5	4	3	2	1
gained factual knowledge about Federal safety and health program requirements related to Construction5	4	3	2	1
compliance knowledge gained from this course will make work environments safer.5	4	3	2	1
would recommend this course to others.5	4	3	2	1

Testing Materials

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
The final test was a good measure of the knowledge gained in the course.5	4	3	2	1	

Topic Areas

Please evaluate each topic area using the 5-point scale below.

5 Excellent 4 Very Good 3 Good 2 Satisfactory 1 Unsatisfactory

		Content					Instructor				
Introduction to OSH/DOE Safety and Health Programs5	4	3	2	1	5	4	3	2	1		
General Interpretations/Recordkeeping (OSH 200 Form)5	4	3	2	1	5	4	3	2	1		
General Safety and Health Provisions5	4	3	2	1	5	4	3	2	1		
Scaffolding5	4	3	2	1	5	4	3	2	1		
Floor and Wall Openings5	4	3	2	1	5	4	3	2	1		
Ladders5	4	3	2	1	5	4	3	2	1		
Electrical5	4	3	2	1	5	4	3	2	1		
Power Transmission and Distribution (Optional Section)5	4	3	2	1	5	4	3	2	1		
Materials Handling, Storage, Use and Disposal5	4	3	2	1	5	4	3	2	1		
Cranes, Derricks, Hoists, Elevators and Conveyors5	4	3	2	1	5	4	3	2	1		
Motor Vehicles, Mechanized Equipment and Marine Operations5	4	3	2	1	5	4	3	2	1		
Rollover Protective Structures, Overhead Protection5	4	3	2	1	5	4	3	2	1		
Hand and Power Tools5	4	3	2	1	5	4	3	2	1		

Welding and Cutting	5	4	3	2	1	5	4	3	2	1
Concrete and Masonry Construction	5	4	3	2	1	5	4	3	2	1
Fire Protection and Prevention	5	4	3	2	1	5	4	3	2	1
Steel Erection	5	4	3	2	1	5	4	3	2	1
Excavations, Trenching and Shoring	5	4	3	2	1	5	4	3		
Underground Construction, Caisson, Cofferdams, and Compressed Air (Optional Section)	5	4	3	2	1	5	4	3	2	1
Demolition (Optional Section)	5	4	3	2	1	5	4	3	2	1
Blasting and the Use of Explosives (Optional Section)	5	4	3	2	1	5	4	3	2	1
Occupational Health and Environmental Control/HazMat	5	4	3	2	1	5	4	3	2	1
Personal Protective Equipment	5	4	3	2	1	5	4	3	2	1
Signs, Signals and Barricades	5	4	3	2	1	5	4	3	2	1
Current Trends in DOE Construction (HQ Assessment)	5	4	3	2	1	5	4	3	2	1

1. Please briefly describe how your expectations of this course were or were not met. _____

2. The most helpful topics covered or activities presented in this course were: _____

3. The least helpful topics or activities in this course were: _____

4. More emphasis should be given to: _____

5. Less emphasis should be given to: _____

6. What specific suggestions do you have for improving future sessions? _____

7. Other materials to supplement or substitute for the provided handouts? _____

8. Daily schedule/timing of activities, worktime? _____

9. Facilities/training room arrangements? _____

10. What other types of safety training courses would you like to see available? _____

11. Any further comments? _____

12. **Overall rating:** Based on your comments above, please rate the course on a 5-point scale by circling the number of your choice.

5 *Excellent* 4 *Very Good* 3 *Good* 2 *Satisfactory* 1 *Unsatisfactory*

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