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EVALUATION OF CONSTRUCTION SAFETY IN DOE
COURSE TAUGHT IN KANSAS CITY, MO
JULY 7, 1992 - JULY 10, 1992

E. C. Handwerk

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Pacific Northwest Laboratory
Richland, Washington 99352

MASTER

1.0 SUMMARY

This section summarizes trainee evaluations for the Safety and Health Training Section course, "Construction Safety in DOE", which was conducted July 7-10 at Allied Signal Aerospace Company, in Kansas City, Missouri.

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.

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1.1 SUMMARY OF TRAINEE COURSE EVALUATION

This course was conducted at Allied Signal, in Kansas City, Missouri, July 7-10, 1992. Edward Handwerk, and Peter Cucuz presented the course to thirty-two Allied Signal, Department of Energy/KCAO, BDM International, SSC Laboratory, and Martin Marrieta personnel.

1.2 NUMERIC RATINGS

Twenty-nine 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 - 4.23
2. Gained a greater understanding of 29 CFR 1926, Safety and Health Regulations for Construction.
Average Class Rating - 4.52
3. Gained factual knowledge about Federal safety and health program requirements related to Construction.
Average Class Rating - 4.26

4. Would recommend this course to others.

Average Class Rating - 4.26

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

Average Class Rating - 4.16

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

Average Class Rating - 3.87

The average class rating for the course content area and testing materials area was 4.22. 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 twenty-four topic areas using a five-point scale with 1 (Unsatisfactory), 2 (Satisfactory), (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	3.74	3.48
Edward Handwerk	General Interpretations	3.94	3.71
Edward Handwerk and Peter Cucuz	General Safety and Health Provisions	3.87	3.77
Peter Cucuz	Scaffolding	4.10	4.03
Edward Handwerk	Floor and Wall Openings	3.81	3.81
Edward Handwerk	Ladders	4.00	3.97
Peter Cucuz	Electrical	3.77	3.68
Edward Handwerk	Power Transmission and Distribution	3.87	3.55
Edward Handwerk and Peter Cucuz	Materials Handling, Storage, Use and Disposal	3.84	3.74
Peter Cucuz	Cranes, Derricks, Hoists, Elevators and Conveyors	3.94	3.84
Edward Handwerk	Motor Vehicles, Mechanized Equipment and Marine Operations	3.84	3.45
Edward Handwerk	Rollover Protective Structures, Overhead Protection	4.00	3.74
Peter Cucuz	Hand and Power Tools	4.10	3.94
Edward Handwerk	Welding and Cutting	3.68	3.74
Peter Cucuz	Concrete and Masonry Construction	3.77	3.68
Edward Handwerk	Fire Protection and Prevention	3.81	3.77
Peter Cucuz	Steel Erection	3.81	3.77
Edward Handwerk	Demolition	3.48	3.48
Edward Handwerk	Occupational Health and Environmental Control/HazMat	3.74	3.71

Edward Handwerk	Personal Protective Equipment	3.90	3.87
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The overall average class rating for specific topic content was 3.74. The overall average class rating for E.C. Handwerk was 3.82, for P. Cucuz the rating was 3.90.

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.

Most Helpful Topics

Scaffolding and excavations were the most helpful to a majority of those in the class, although all topics seemed to help various class members.

Least Helpful Topics

Several areas like fire protection, welding, motor vehicles, and steel erection were singularly identified by students in addition to a comment on more depth.

Suggestions For Improvement

Numerous suggestions for improvement were addressed by the students. It should be noted that the Marriott Court Yard Hotel where the instructors stayed delayed the start of the class by several hours. Materials had been delivered to the hotel on Saturday, but when the instructors checked in and requested the materials, they were told they had not arrived. Due to the

three hour time difference between the East Coast and the West Coast, the instructors were delayed in presenting any materials. This snowballed in requiring us to shorten the topic time for the subparts in order to get done. Access to the building was not afforded to us due to the July 4th weekend holiday, but would not have mattered due to the lack of materials. After we had put a trace on the materials, the hotel management found the materials in the managers office, after first denying that it had ever been delivered. We are still waiting on an apology letter form the hotel management for the embarrassing situation, time lost and damaging affect to the course evaluations.

Additional comments regarding the class start and stop times were noted. In my instructions to the sponsor, I have start time at 7:30 am, and an end time of 4:00 pm. I am still unsure why the site chose to end the class at 3:30 pm instead of our agreed upon time. No answer was given.

The hands-on time will be added into the new revised course but will require additional hours to cover a site-visit.

1.4 EXAMINATION RESULTS

On the last day of the course, a final examination was administered to thirty-two attendees. There were 25 questions all which were multiple choice questions. The scores ranged from 68% to 92% with the average score being 81%. Twenty-six persons successfully completed the class.

APPENDIX A

EVALUATION COMMENTS

"CONSTRUCTION SAFETY"

JULY 7-10, 1992

KANSAS CITY, MO (ALLIED SIGNAL AEROSPACE COMPANY)

APPENDIX A

TRAINEE EVALUATION RESPONSES

CONSTRUCTION SAFETY"

JULY 7-10, 1992--KANSAS CITY, MO

ALLIED SIGNAL AEROSPACE COMPANY

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

I got information that I did not have before.

Have better understanding of OSHA construction standards.

Instructors seemed to have a vast amount of construction safety knowledge but did not know how to teach. Either read from book or when talking assumed you were very knowledgeable.

Should have materials at site prior to the start of class.

Disappointed in start.

I didn't know anything about this standard before class so I learned a lot.

Gave me insight into the requirements and how to find information in the act.

My expectations were met exactly.

The course served as an introductory level on how to use 29 CFR 1926. It was somewhat fragmented in presentation.

Improved knowledge of 1926.

Expectations were met.

I learned quite a bit. Became familiar with CFR 1926.

My goal was to become more knowledgeable with 1926. Expectations were met.

A lot more interesting than anticipated, could have been a 40 hour course and would have been more interesting by not having to rush through some topics.

I understand code book layout and how to get around in it much better. Course provided dedicated time to review code.

My expectations were met; to obtain a better understanding of construction safety.

The intent was good and needed from technical items to course overview through instructor organization should be improved.

Relative to time. Expectations were exceeded, excellent instructors.

Very good class. Instructors were very good and informed.

The most helpful topics covered or activities presented in this course were:
Fire Protection and prevention, welding and cutting.

Excavation.

Overall reviews helpful.

Gained familiarity with OSHA regulation 1926.

Excavation, scaffolding.

All were very helpful.

Electrical.

Excavation, electrical.

Feel that all topics were helpful.

Trenching, steel erection, cranes.

Excavation, scaffolding.

All items were helpful. Handouts will be very beneficial.

Cranes, scaffolding, excavations.

Excavation, scaffolding, PPE, OH and EC/HM and hand and power tools.

Excavations and shoring, scaffolding.

Going through the code book and marking it up. I feel this is the only way to get familiar with code uninterrupted.

Scaffolding, electrical.

Electrical, welding and cutting, scaffolding.

Expectations of DOE.

General overview of DOE expectations.

The least helpful things discussed or done were:

Machine operations. Lift slab concrete could have covered subpart D a little quicker.

Welding and cutting.

All good.

ROPS.

Electrical.

None.

HazMat.

Signs, fire protection, and material handling.

Steel erection.

Writing on black board with lights out made it hard to see.

Cranes, motor vehicles.

Floor and wall openings and industrial hygiene.

Some of our attendees need a more in depth course.

Fire protection.

More emphasis should be given to:

OSHA requirements.

Excavating.

Code book, subpart A/B (5.01).

Electrical, welding and cutting, general interpretations.

Major differences between OSHA 1910 and 1926 were not stressed enough. I think some in the class never really got the point.

Slides depicting actual violations.

DOE interpretations.

Visual devices/aids.

Less emphasis should be given to:

Personal opinion.

HazMat, PPE.

Contractor/prime contractor/sub relationships as related to DOE and operating contractors.

Noise.

Closer survey, at start of class, of students field of work and interest and how construction projects are set-up and managed on this site. More focused to construction management as worked at this site.

Personal preferences/desires instead of what the act states. Examples - toe board requirement, working on an energized panelboard using PPE instead of deenergizing panel.

App ~~lication~~ .

Personal opinions on part of instructors.

What specific suggestions do you have for improving future sessions?

More visual examples.

Improve coordination of class materials, 35mm slides.

Other materials to supplement or substitute for the provided handouts?

More videos and slides.

Instructors should be consistent with video aids. Use viewgraphs or computer generated slides. Very distraction when the systems were changed.

Held course in hotel. Breaks (2) lunch (1) end at 12:00 noon on Friday. Donuts, coffee, soda are standard at these meetings. What happened? Course material was not properly layed out. Slides in order for display. Videos show not just talked about. Overhead/computer working at get go.

All instructors should have a professional speaking delivery and an above average content of materials.

More time - longer.

Establish a class time schedule for the week and try to stick to it.

More slides or videos depicting violations.

More advance notice to clear scheduled and make course longer.

Might help to go right through in sequence.

Then using the Canadian films; tell class what the differences are in the requirements between U.S. and Canadian standards.

More visual aids/hands on experience.

More exercise to work examples.

Keep opinions to a minimum.

Daily schedule/timing of activities, worktime?

Okay.

Better coordination on front end of class.

Good.

Too many breaks. Course material not that in-depth for 10-15 minutes each hour. Cut lunch to 30-45 minutes to finish up earlier.

Too many breaks were given considering the topics covered in class.

Excellent considering time and length of course.

Tuesday class (start) was seriously hampered because of delays getting started. Class time were originally scheduled for 7:30 to 3:30. The change to 7:30 to 4:00 was unfair to other work assignments.

Worked well.

Facilities/training room arrangements?

Good.

Deficient. Difficult reading notes. Computer toy required turning lights out.

Instructors needed to get in earlier so they could get set up.

Okay.

Poor. Too crowded not set up for all A/V equipment used.

Donuts and coffee would be advisable for morning break.

We did need more room.

Poor interruptions by other work assignments, could be avoided by having off-site.

Adequate.

What other types of safety training courses would you like to see available?
Would like to see other courses, but unaware of courses available.

National Electrical Code.

More in-depth course on specifics.

Expanded course on excavation.

29 CFR 1910.

Specific one day in each subpart. We will choose as required.

A 1910 course.

DOE order 5480.9.

Focused on excavation work.

Any further comments?

Good class, well informed presenters.

Would like a 5 day course in construction with site visit.

I felt I gained something from each topic even though I was familiar with it.

Thanks.

Knowledge of current construction practice made the class much more interesting. Instructors were able to address specific asked by class mates.

One of the best courses taken here. Instructors kept class interesting with personal experiences and videos.

It was difficult to cover all material in the time frame provided.

Thanks for a good class.

Equipment/materials and overall course seemed to be disorganized. Couldn't get it together. Pete was very well versed on subject matter.

Use of visual aids on white board should be improved on one instructors part.

Ed and Pete were superlative. Thoroughly enjoyed their mix of styles.

Very disruptive, first day, because of lost presentation material. (Nice recovery though).

It would be nice to get out to the field some.

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
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The final test was a good measure of the knowledge gained in the course.5	4		3	2	1
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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**

5.2

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U.S. Department of Energy
19901 Germantown Rd.
Germantown, MD 20874

13 Pacific Northwest Laboratory

H. N. Bowers
E. C. Handwerk
M. A. Leckband (5)
Publishing Coordination
Technical Report Files (5)

G. R. Florczak
U.S. Department of Energy
EH 31.2
19901 Germantown Rd.
Germantown, MD 20874

Rick Rainey
Allied Signal
P.O. Box 419159
D/933, MC 40
Kansas City, MO 64141-6159

Peter Cucuz
909 W. Gartner Rd.
Naperville, IL 60540

END

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