

**95th Annual Meeting of the
National Conference on Weights and Measures**

**July 11 – 15, 2010
St. Paul, Minnesota**

**Addendum Sheets to the Interim Report of the
Professional Development Committee (PDC)**

Reference
Key Number

400 INTRODUCTION

The Professional Development Committee (Committee) submits its Interim Report to the National Conference on Weights and Measures. The Report consists of the Interim Report offered in Publication 16, “NCWM Committee Reports,” and this Addendum. Page numbers in tables below refer to pages in Publication 16.

Presented below is a list of voting and information items. Voting items are indicated by the suffix **V** or, if the voting item is part of the Consent calendar, by the suffix **VC**. If the item is an Information item, it is indicated by the suffix **I**; if the item is Withdrawn, it is indicated by the suffix **W**. Items marked with a **D** after the key numbers are Developing items. The developing designation indicates an item has merit; however, the item is returned to the submitter for further development before any action at the national level. The Committee’s Final Report is proposed to be grouped in the following order:

Information and Developing Items

The following items are information (I) or under development (D) and require not formal action of the NCWM:

Reference Key Number	Title of Item	Publication 16 Page No.
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Details of All Items
(In Order by Reference Key Number)

401 EDUCATION

401-1 I National Certification Program (NCP)

The Committee set a goal at the 2009 annual meeting to conduct an on-line beta test on the retail motor fuel curriculum. The beta test has been completed and the results reviewed and analyzed.

Results:

- 63 took exam/43 completed exam /20 timed out and did not receive a score.
- 6 passed with passing set at 85%.
- 20 would have passed if passing was set at 75%.
- 27 would have passed if passing was set at 70%.

What did the results show about the exam process itself?

- The large number of people who timed out was caused by the settings of the service. Each section was timed, and the time from one section could not be added to the next sections but the instructions did not make that clear to the candidates. In addition, if candidates timed out in the first section, they were not allowed to continue to the other sections. The NCWM staff has corrected this. In the future if a candidate times out on a section, the candidate will just progress to the next section or the test will end. The Candidate will receive the score for all questions answered correctly.
- Some candidates had web navigation issues. It was difficult or impossible to use an electronic version of Handbook 44 as a reference while taking the test. Reviewing past answers was cumbersome because the candidates were required to page back question by question. There is no solution for this as this is the way the testing service operates. Candidates should consider using a hardcopy of Handbook 44 when taking the test.
- Graphic quality of illustrations needed improvement. We are going to make every effort to provide quality graphics in the first case, and to improve graphics where test results show that improvements are necessary.
- The grading of short answer questions was very intolerant of variations like capitalization and punctuation. The Committee believes that short answer questions are necessary to test for the ability to apply code requirements. To help in this regard, the Committee is working on improved instruction on how to take the test. As sample test, which will not be timed or graded, may even be built into the test itself. The Committee is also looking at using a pull-down help feature on some questions to aid the candidate in properly formatting the answers.
- Some candidates could not see the entire question without scrolling down. Others experienced difficulty seeing the graphics. These problems are related to the candidates' computer settings and can be corrected by changing the screen resolution, or by using the zoom function on the bottom of the internet browser. The graphics can be seen by adjusting the candidates' browser security settings. The Committee thinks that the sample test can be designed so that the candidate discovers these problems before getting to the real test. The candidate will then have the opportunity to leave the exam and make the needed setting changes or consult with IT as needed. In addition, a guide to taking NCWM certification tests could be written addressing frequently asked questions (FAQs) that arise out of taking the tests.

What did the results show about the exam content?

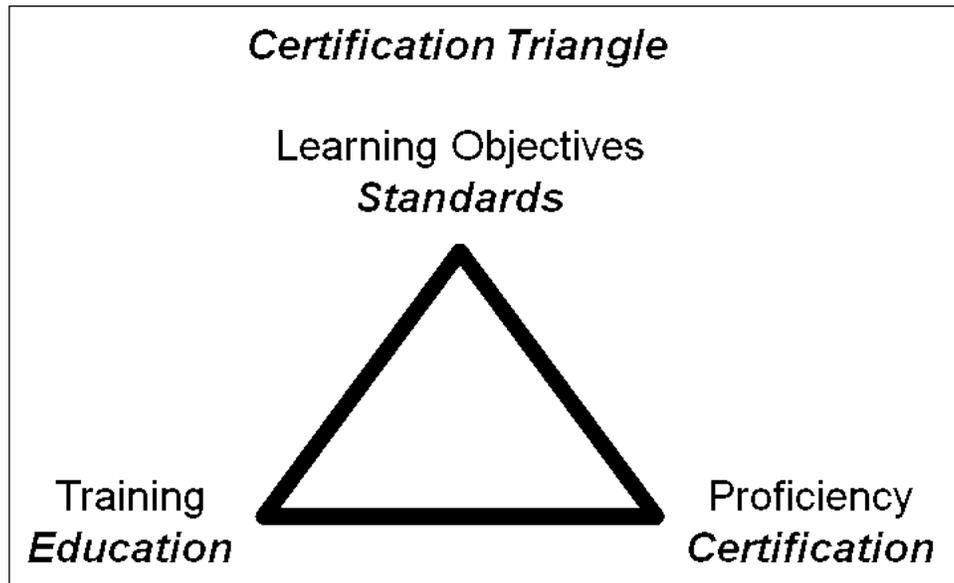
- The Committee analyzed the scoring versus the elapsed time on each section and found that 16 of the 20 people, who timed out on the test, did so on the 1st section relating to general Handbook 44

questions. Three (3) timed out in the general liquid measuring section, and only 1 person timed out on the retail motor fuel device (RMFD) section. The Committee will be adjusting the timing by taking 5 minutes off the RMFD section, and adding it to the HB 44 section. The Committee also expects that timeout problems will decrease as candidates become accustomed to taking tests with timed sections.

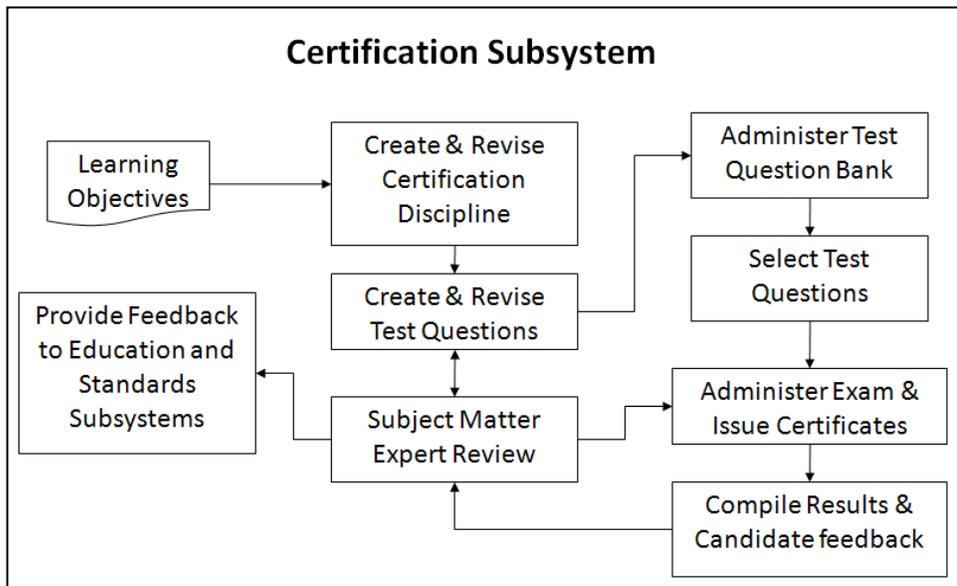
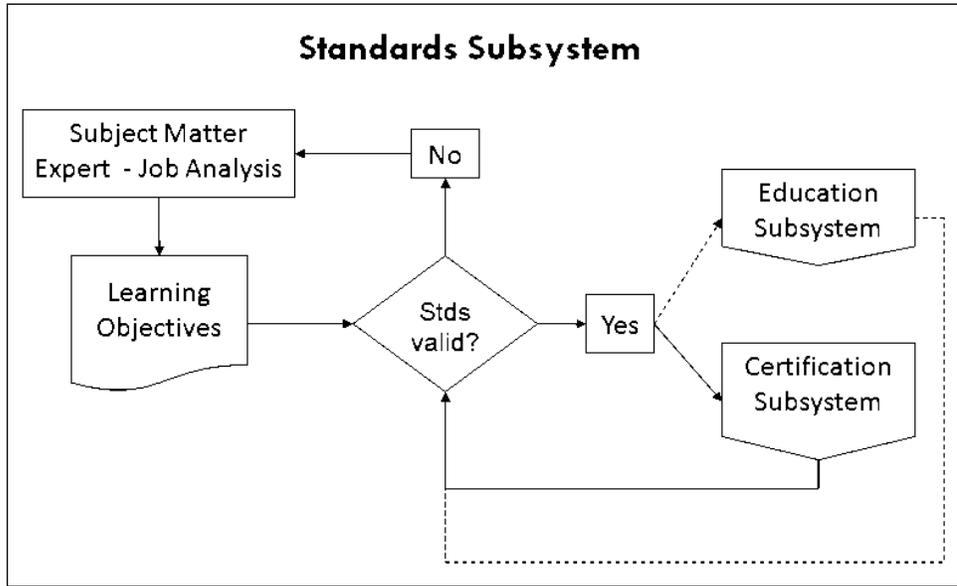
- Questions with high error rates and low average times were identified as problem questions. People thought they knew the answers as evidenced by the quickness of their responses, but the error rate indicates that something is potentially wrong with those questions. Questions with high error rates and long response times will also be subject to review to determine whether they exceed the learning objectives.
- Georgia Harris, NIST Weights & Measures Division, assisted the Committee with information on ISO 17204, which is the ISO guide for certification bodies. One component of this guide is analysis of the cut score that defines the passing grade. A wealth of information exists on setting the cut score to define the minimally competent person. The competent group includes individuals at the basic, proficient, and advanced levels. The Committee wants to ensure that the candidate at the bottom of the basically competent group has a reasonable chance of passing the test. Based upon the results of the beta test, the Committee thinks that the cut score for the RMFD test should be set at either 70% or 75%.
- Future tests will require similar question evaluation and cut score analyses. This will require staff resources to coordinate the review of questions and tests.

What did the result show about the Committee’s plan for certification?

The low passing rate may indicate that the parts of the system were not working together. It is important that users of the NCWM certification program understand how the pieces fit together and form a coherent system. To illustrate the relationships we can describe the system as a triangle of interdependent parts (see diagram below). The standards come in the form of goals with measureable learning objectives. The education part involves training provided to help the candidate reach the desired level of proficiency for each of the learning objectives. The certification involves an assessment of proficiency that measures whether or not the objectives have been met.



The Committee has until now focused attention on the standards and the certification pieces in the triangle. These two pieces can be described in the flowcharts below.



The Committee has described this work in a number of documents available on the PDC pages of the NCWM website:

- The Curriculum Outline, which breaks the profession of Weights and Measures into component parts called curriculum segments.
- The Core Competency Model, which explains how to create the curriculum segments as learning goals with measurable learning objectives or milestones.
- The Curriculum Segments that have been developed.
- The Certification Disciplines, which identify the areas of certification offered and the Curriculum Segments on which the exam will be based.

Results of the beta test indicate it will be very important as the program moves forward that trainers integrate the learning objectives into their materials and design courses in such a way that students will achieve the desired levels of learning. See item 401-2 Instructor Improvement.

What will happen next?

The PDC will adjust the timing allocation on the test, will review and fix the problem questions, develop the practice test, and set the cut score. The NCWM board will be continuing to develop the infrastructure to manage the certification program.

Discussion: Comments were heard from the regulatory sector noting that the average score was 72% but the test takers were the most likely the cream of the crop of the regulatory agencies. Therefore the test may not be a “basic test even if the bar is lowered to 72%. Concern was expressed that the cut score not be set so high that the test would not be useful for service agent certification. The necessity of short answer questions on a basic test was questioned. The speaker thought that making sure that the test is really a basic test was more important than rushing the test into production by an August 1 deadline.

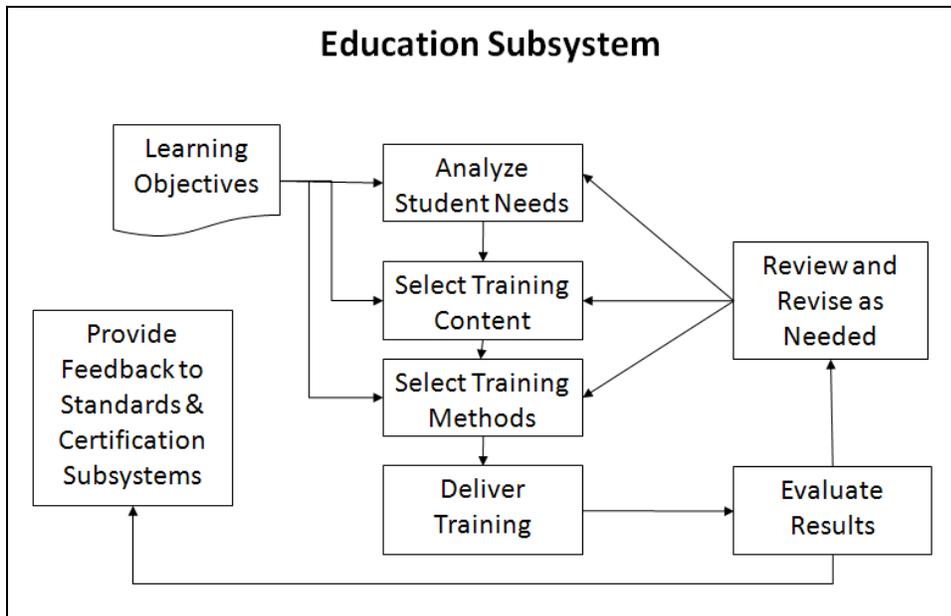
A beta-test-taker found that the timing element was intimidating, and questioned whether the test itself might be more useful as a learning tool than as a certification tool. He suggested candidates be allowed to take the test together and discuss the questions. The Committee agrees that collaborative work would be an excellent training technique but certification must be done individually.

An associate member indicated that there is a lot of interest in using it at the associate level. The speaker echoed the regulatory member’s concerns that the quality of the people taking the test was in the upper 20% and that if service people had taken this test the passing level would have been much lower.

The Committee plans to ask the people who took the beta test to be among the first people to take the official version so that we can measure improvement in the test.

401-2 D Instructor Improvement

Prior to the open hearing, Georgia Harris, NIST Weights & Measures Division, provided the Committee with reference material on teaching methods and assessment of training success. Distilling the essence of these materials, the Committee feels that instructors need to be trained in more than just the technical material; they need to be trained in setting the learning objectives, developing the training materials with those objectives in mind, selecting training methods that incorporate adult learning styles, and evaluating the effectiveness of their training.



The chart below covers three levels of learning objectives and relates them to the training activities most likely to be successful, and best methods for assessing the success of the training. The curriculum segments state the learning objectives using verbs similar to those in the bottom row of the table. These drive both the training activities required to promote adult learning and the assessment tools appropriate to measure success at that level.

Assessments	Multiple Choice	Multiple Choice	Practical Examples Short Answer
Training Activities	Lecture Videos Examples	Discussion Review Learner Presentation	Exercises Simulations Demonstrations
Cognitive Levels	Knowledge	Comprehension	Application
	Define Relate List	Restate Discuss Describe Identify	Employ Apply Use Illustrate

The NIST Weights and Measures Division has expressed strong interest in collaborating with the NCWM in efforts to educate instructors in adult learning techniques and relating them to the learning objectives in the NCWM curriculum. The Committee is considering developing another document describing how to translate a curriculum segment into a lesson plan.

The Committee would like to remind everybody designing training materials that the Core Competency Model document is available on the PDC section of the NCWM website. (www.NCWM.net)

Discussion: No comments were received from the floor.

401-3 Recommended Topics for Conference Training

The Committee asked for suggestions for future training or recommendation on how to prioritize suggestions already on the list. Based upon the needs identified in the first two items, the Committee would like to recommend that the regional associations and the NCWM consider offering training or trainers on how to identify learning objectives, and design training materials that integrate interactive activities and adult learning styles. Georgia Harris mentioned that NIST has a 1.5 hour course on taking technical material and turning it into a course for adult learners.

Discussion: No comments were received from the floor.

402 PROGRAM MANAGEMENT

402-1 I Safety Awareness

The Committee has not received any reports of safety incidents in the last 6 months.

Craig Harris, Ohio, has prepared safety material on handling diesel emission fluid (DEF). Anyone interested in seeing or utilizing this material should contact the Director of Ohio Weights & Measures.

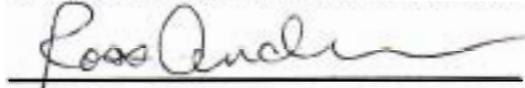
The Committee asks for suggestions on safety articles people would like to see in future newsletters and /or safety issues which must be addressed immediately. They would like to remind regional associations to check the submission deadlines for their upcoming article assignments. Completed articles should be sent to NCWM headquarters by the submission deadline.

Discussion: The Committee was informed that Douglas Deiman, Alaska, is now the safety liaison for the Western Weights and Measures Association (WWMA.)

402-2 I PDC Publication

The PDC Publication will remain on the website at this point and not be printed as a separate handbook. The Committee anticipates organizing the material into three sub-pages (Curriculum Development, Training, and Certification) following the triangle model pictured in section 401-1. We will work with the NCWM staff to establish those pages and keep them updated.

Discussion: No comments were received from the floor.



Mr. Ross Andersen, Chair, New York

Mr. Stacy Carlsen, Marin County, California

Ms. Julie Quinn, Minnesota

Mr. Dale Saunders, Virginia

Mr. Steven Grabski, Walmart

Professional Development Committee