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National Highway Institute Web conference Training Standards Guide (WCT)



NATIONAL HIGHWAY INSTITUTE

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1. Introduction

The National Highway Institute (NHI) Web conference Training Standards Guide provides the standards for development of Web conference training (WCT) for the National Highway Institute.

1.1 Course Structure

A Web conference training course may be segmented in one of two formats: lesson only, or modules with associated lessons. Use the most appropriate structure for logical sequencing of course content.

Web conference Training

Course A	Course B
Lesson 1	Module 1
Lesson 2	Lesson 1
Lesson 3	Lesson 2
Lesson 4	Module 2
Lesson 5	Lesson 1
Lesson 6	Lesson 2

2. General WCT Development Standards

This section covers general development standards for NHI Web conference training. For additional resources, templates, and examples, refer to the NHI WCT Developer Toolkit at www.nhi.fhwa.dot.gov/resources/wct_developer.aspx.

2.1 Platform Standards

Because NHI does not have control over consumers' training platforms, the following standards were developed internally, and represent the baseline for online courseware. All courseware must be designed for use on the minimum platform configurations.

2.2 Hardware

Use the following the minimum hardware configurations during development.

- Minimum operating system: XP Professional with Service Pack 2 or higher
- Minimum processor speed: Intel Pentium III or higher
- Standard screen resolution: 1024x768
- Video card: 32 bit

2.3 Browser Specification

Design courseware for optimal viewing using the standard FHWA configuration browser.

- Internet Explorer 6.0
- Flash Player 10.1 or higher

2.4 Hosting

All NHI WCT courseware resides on the FHWA server at <http://fhwa.adobeconnect.com>.

2.5 WCT Development Tools

All WCT developed for NHI **must** use Adobe Connect. Developers must obtain a user ID and password from NHI. This enables them to log in to the Adobe Connect Virtual Classroom. Developers and facilitators need to be registered as presenters in order to format the virtual classroom. Developers should contact the NHI Instructional Systems Designer (ISD) to facilitate completion of these tasks.

Be sure that all developed products use the latest version of the NHI WCT template. This can be found in the NHI WCT Developer Toolkit www.nhi.fhwa.dot.gov/resources/wct_developer.aspx. Verify with the COTR that they are using the correct version of the template before beginning to develop courseware.

Other non-proprietary development tools may be used in conjunction with Adobe Connect. These tools include:

- Adobe Flash (version 10.1 or later).
- JavaScript.
- Adobe Photoshop.
- Adobe Premiere.
- Adobe Captivate.
- Adobe Acrobat.

Any other development tools require approval from the COTR.

Developer Note on Supplemental Training Materials

If a WCT includes an end-of-course assessment, that instrument must be provided as a Web-based training product and must be developed in Adobe Presenter.

Likewise, if a Web-based independent study module is required for the course, that training product must be developed in Adobe Presenter.

Refer to the NHI Web-based Training Standards Guide for the current Adobe Presenter version and other development standards specific to those products.

3. Standards for Design Plans

Design plans contain the findings and recommendations that are usually the result of a needs analysis. Design plans ensure the course is instructionally sound, which means it is job-relevant, task-based, problem-centered, interactive, engaging and well organized.

Depending on the project, the design plan may be completed in a series of iterations, beginning with a high-level plan that details basic course content and a course overview. A more detailed plan that may include an extensive content outline, explanation of instructional activities, information on graphics and resources to be used, and an overview of the assessment.

Design plans typically contain the following information. Refer to the development contract and NHI TPM for additional clarification on what should be included in all plans.

- Introduction and background
- Statement of business need
- Target audience characteristics
- Course goal(s)
- Course learning outcomes (terminal learning objectives, required; enabling objectives, optional)
 - NHI provides more specific guidance on the development of performance-based learning outcomes in the *NHI Style and General Standards Guide*.
- Overarching instructional approach, theme, metaphor
- Delivery method(s)
- Course structure (diagrams of modules that show chunking and sequence of instruction)
- Use of media (animation, audio, video), if recommended
- Description of instructional strategies
- Estimated course duration, by module
- Evaluation strategy
- Content and exercises mapped to each course learning outcome (in bulleted or outline format)
- Description of graphics designated to enhance content
- Proposed use of narration, if applicable
- Identification of prototype content

- Projected timelines for tasks and milestones (design, testing, implementation, and evaluation for online course development)

Design Plan Note

Following delivery of the DDP, the COTR may request a demonstration of a particular exercise to determine how certain interactivities are facilitated within the context of the virtual classroom.

The Adobe Connect virtual classroom comes equipped with various features to support an interactive online learning environment. Those features should be utilized as described in the design plan to provide Web conference training. Some typical uses of each of the features are listed below.

Adobe Connect Features	
Pod Name	Typical Use
Camera and Voice	<ul style="list-style-type: none"> ▪ Display photo or video image of presenter.
Attendee Pod	<ul style="list-style-type: none"> ▪ Check for understanding or agreement. ▪ Survey participants. ▪ Solicit feedback on facilitation of meeting.
Chat Pod	<ul style="list-style-type: none"> ▪ Ask and answer open-ended question(s). ▪ Post hyperlinks to Web sites. ▪ Provide further information to select attendees. ▪ Encourage attendees to share ideas with each other. ▪ Email contents of the pod.
Note Pod	<ul style="list-style-type: none"> ▪ Capture discussion points. ▪ Provide a way for small groups to document their results. ▪ Email contents of the pod.
Share Pod	<ul style="list-style-type: none"> ▪ Demonstrate software. ▪ Share a view of your computer files. ▪ Allow another attendee to access your computer. ▪ Collaborate on a document. ▪ Navigate through a Web site.
Whiteboard Tool	<ul style="list-style-type: none"> ▪ Edit illustrations, such as diagrams, charts, documents, maps, and photographs. ▪ Record participant responses. ▪ Create visual examples.
Poll Pod	<ul style="list-style-type: none"> ▪ Ask multiple choice questions with one or more correct answer(s). ▪ Gather opinions, i.e., conduct a survey. ▪ Prioritize a list of text items.
Web Share Pod	<ul style="list-style-type: none"> ▪ Share new content or resources. ▪ Instruct participants to search for information.
File Share Pod	<ul style="list-style-type: none"> ▪ Share documents in formats that cannot be displayed in

Adobe Connect Features	
Pod Name	Typical Use
	<p>a share pod, such as Word, .pdf, Excel, or .zip files.</p> <ul style="list-style-type: none"> ▪ Post participant workbook, pre- and post-assignments, agendas, and resource materials.
Phone	<ul style="list-style-type: none"> ▪ Facilitate introductions. ▪ Ask and answer verbal questions. ▪ Explain new ideas, concepts, or methods. ▪ Encourage learners to answer each other's questions.
Demo (via Share Pod)	<ul style="list-style-type: none"> ▪ Demonstrate a software application. ▪ Show the process for a task.
Breakout Rooms	<ul style="list-style-type: none"> ▪ Assign small group activities. ▪ Create a customized workspace for each breakout group to differentiate assignments for each group. ▪ Monitor breakout room discussions using chat pod and provide feedback. ▪ https://seminars.adobe.acrobat.com/breakoutroomsintro/

For additional information on the Adobe Connect features, see www.connectusers.com/tutorials/.

4. Standards for the Adobe Connect Virtual Classroom

The virtual classroom is the location from which the WCT is hosted. The virtual classroom holds all of the files, layouts, and pods needed to facilitate the WCT.

NHI creates an empty virtual classroom on the NHI server and provides the URL for the classroom to the contractor. The contractor then uses this URL to access and set up the virtual classroom.

The virtual classroom includes, at a minimum:

- Audio information.
- Attendee list pod.
- Layouts for presenting course content.
- Pods that contain course materials, such as the following.
 - PowerPoint presentation
 - Participant workbook
 - Discussion questions
 - Video
 - Group activity materials
 - External hyperlinks
 - Resource materials
- Pods that are used to communicate or record information during the course, such as the following.
 - Notes pod
 - Chat pod
 - White board overlay
- Course evaluation link.

5. Standards for Visual Aids

For each lesson, develop the most suitable type of visual aid (or combination of aids) to support and reinforce the subject material or interactive components. Aids include PowerPoint presentations, computer graphics, photographs, video, animation, poll pods, and graphs or tables.

- Use the most modern technology generally available to generate visuals, including computer-generated graphics.
 - Be aware that any computer software required for the visual aids must be readily available to any facilitator; do not use proprietary software.
 - Be aware of contractual requirements that apply to development of a particular course; consult the contract to ensure compliance with accessibility standards.
- Final deliverables include electronic copies of any slides, software or simulations, or video. Adobes Connect features that are utilized to deliver content should be fully documented in the facilitator guide. Also include access information for any Web pages used to conduct class.
- See *NHI Style and General Standards Guide*, “Style” section for guidance on PowerPoint expectations.
 - When pulling slides into the FG or PW, ensure legibility and quality of graphics.
- Do not rely on color alone to convey information. Note that PWs are likely to be printed in black and white only.
 - Use dotted or dashed lines or different shapes in addition to color.
- Content provided via a share pod must be clearly readable in the virtual classroom.
- Include suggestions and instructions in the facilitator guide for generating notes or chat pod discussions that can be seen on the screen.
 - Notes or chat pod comments can generate discussion, encourage participant interaction, and promote understanding of the material.
- In the virtual classroom, use standard best practices, including using dark color and large font settings for text in note and chat pods and when using the whiteboard overlay.

5.1 WCT PowerPoint Template

NHI has a template for the development of PowerPoint slides that will be used during a Web conference. This template can be viewed in the WCT Developer

Toolkit on the NHI Web site at www.nhi.fhwa.dot.gov/resources/wct_developer.aspx.

5.2 Fonts

The following font sizes should be applied when using the WCT PowerPoint slide template. Remain consistent with font size and type throughout the presentation. NHI prefers use of a sans serif font such as Arial or Verdana.

Content Type	Font Size
Headings on PowerPoint slides (course title, lesson title, screen title)	24-28 pt. bold
Text on PowerPoint slides	24-32 pt.

For other visual elements found in a WCT virtual classroom (pods, screen shots, video, etc.) text sizing should follow NHI general standards on readability and the need to consider participants' viewing capability.

6. Standards for a Facilitator Guide

The facilitator guide (FG) is based on the approved DDP, and guides the facilitator during delivery of a course. The FG must thoroughly describe the procedures for setting up and teaching the course.

A detailed design plan is included before each lesson or module. This can be extracted directly from the design plan document.

The FG helps a facilitator transition from one lesson to another by providing an appropriate segue into a topic, a wrap-up statement, or an introductory statement. Also, it details the ways in which one topic builds upon or ties into another topic; this should occur frequently throughout the material, wherever appropriate.

An FG will provide the facilitator with visual cues for participant activities (WCT icons), script, and possible questions to prompt discussion, answers to those questions, and time allotments for each section.

Supporting material may be incorporated into the FG or cross-referenced to related course materials. Case histories, workshop problems, computer exercises, and other instructional tools must be described in complete detail in the FG and loaded to the virtual classroom.

The FG includes, as a minimum:

- Cover.
- Table of Contents.
- Introduction.
 - Course overview
 - Target audience description
 - Course goal
 - Course learning outcomes
 - FG overview
 - Course schedule
- Course administration.
- Training course checklist.
- Sample pre-event email to participants.
- WCT facilitator icons.
- Course content.

- Detailed design plans
 - Layout, slide, or screen captures and content
 - Interactivities with answers
- List of abbreviations and acronyms.
- Resources.
 - Glossary
 - Bibliography
 - Web sites

6.1 WCT Facilitator Icons

Use the following icons in the facilitator guide. The icons may be inserted on the slides as a cue to the facilitator and learners.

Icon	Pod Name
	Camera and Voice
	Attendee Pod
	Chat Pod
	Note Pod
	Whiteboard Tool
	Share Pod

Icon	Pod Name
	Web Share Pod
	File Share Pod
	Phone
	Demo (via Share Pod)
	Poll Pod
	Breakout Rooms

6.2 Special Requirements: Facilitator Guidance in the FG

Document complete and extensive facilitator guidance for each layout, screen share, or slide to ensure that every facilitator can teach the course as the developers and subject matter experts (SME) intended. Present the guidance in a consistent format throughout the guide. An example format is shown below.

Script: Introduce a new topic or lesson here. Connect previous content to this new content.

State the main points or critical information that participants should recall from this layout, screen share, or slide. Expand upon the essence of the layout, screen share, or slide content; do not repeat layout or slide titles or bullet points.

State questions that will be posed over the phone or posted in chat or poll pod. Notate the estimated amount of time the facilitator should pause to allow for participant response prior to returning to script.

Preparation: Provide specific guidance to the facilitator on the actions that need to be taken to facilitate activities.

Include guidance on launching pods, switching layouts, and activating whiteboard tools.

Facilitator Notes: Provide comments or instructions for facilitating engagement opportunities here.

Provide information on animations, responses to polls or questions, and prompts for discussion.

Include directions for using Adobe Connect functions or slides to support the lecture. (Point out build features, explain how often to advance slides if not self-explanatory, indicate how My Status pod is to be used.)

Include recommended duration for completing each step of an activity.

Notes: Describe any factors that might make it difficult for learners to understand or accept parts of the content. Identify typical questions, regional, political or demographic issues, and possible solutions.

Explain any background or related information to support the content.

Keep notes brief and to the point; use bullet format.

7. Standards for a Participant Workbook

The participant workbook (PW) is an instructional support tool. It serves multiple functions during a Web conference.

- The PW provides space for note taking.
- It allows for enhanced views of the visual aids that are used in the virtual classroom.
- It documents directions for activities and any additional resource material required.
- A participant workbook contains lists, course resources, acronyms, and a glossary.

Generally, each page includes copies of screen shots or slides, expanded graphics, or photographs, and any formulae or calculations used in class. It may include background for case studies, directions or information required for in-class exercises, key points, and explanations of visual aids, handouts, and reference materials.

The format of the PW is an instructional design decision; it aligns contractual requirements with the most appropriate presentation of content.

- NHI allows text in the PW.
- The workbook will be more valuable as a job resource if it includes enough detail to provide guidance and clarification of bulleted items on slides.
- The number of slides per page should be determined by the nature of the screen shot—with the intent that the slides are clear to the participants—and the required graphical or textual content for that page.
 - If a PW page contains only screen shots, and they contain only bulleted text, two per page is adequate; if they depict photographs or detailed material, one slide per page may be more appropriate. (The preceding guidance on number of slides per page represents suggested format; this format is not a requirement.)
- Charts and tables should be inserted directly into the PW to maintain clarity. Do not insert the PP slide containing those graphic elements.

Workbook Format

The format of the workbook is an instructional design decision, based upon the type and amount of required technical content, supporting visuals, and adult learning principles.

Discuss the preferred workbook format with the project COTR before

development.

The PW includes, as a minimum:

- Cover.
- Table of contents.
- Course materials.
- Introduction.
 - Course overview
 - Course description
 - Course goal and outcomes
 - Course agenda
- Course material.
 - Content
 - Exercises (if applicable)
- Resources.
 - List of abbreviations and acronyms
 - Glossary
 - List of references and source documents

8. Standards for End-of-Course Assessment Tools

In the Web conference training environment, end of course assessments are created as self-paced Web modules that are loaded to the online curriculum. The facilitator directs participants to complete the exam at the end of the training and provides instructions on how to access the exam via the online curriculum.

The final exam source files must be delivered to NHI in accordance with delivery specifications for electronic submissions.

8.1 Traditional Test Methods

Assessment instruments could include objective measures, e.g., multiple choice questions or matching questions. Other acceptable testing types include performance testing (skill demonstrations) and critical thinking (case studies).

Some acceptable test items are described in the table below.

Test Item Type	Characteristics
Multiple-choice	<ul style="list-style-type: none"> • Useful for testing knowledge and cognitive abilities • Consists of a stem and a selection of possible responses (Answer scan sheets accept up to five possible responses.)
Matching	<ul style="list-style-type: none"> • Useful for testing terms and labels • Consists of two columns of related words, phrases, or symbols to be matched by the student
True/False	<ul style="list-style-type: none"> • Useful for testing knowledge • Consists of a single statement <p>Note: Use no more than 10% true/false questions</p>
Completion or “fill in the blank”	<ul style="list-style-type: none"> • Useful for testing recall of knowledge committed to memory • Consists of a statement from which a word(s) or short phrase has been omitted. The student must supply the missing word(s) or phrase in the blank(s) provided
Performance	<ul style="list-style-type: none"> • Useful for testing job tasks and skills • Consists of a simulated or actual environment with certain conditions of performance and certain expected outcomes

9. Standards for Exercises

Include the most suitable learning opportunities to validate participants' understanding of the course material. Exercises, calculations, skill practice, and other experiential work provide an opportunity for the facilitator and the participant to assess comprehension and relate the training content to work-related scenarios.

- Include a copy of all case studies, exercises, problems, and simulations in both the facilitator guide and the participant workbook. Post information for each exercise to the virtual classroom via the appropriate layouts and pods.

10. Standards for Supplemental Materials

Supplemental materials include any additional material used by the facilitator that is introduced to participants during the Web conference.

- Examples include exercises and skill practice, workshop information, problems and calculations (with solutions), an explanation of roles for group projects, case studies, video, web sites, or other supplementary information.
- Use screen sharing sparingly.
 - Screen shares can be difficult for participants to view.
 - Always allow the maximum viewing size available on the facilitator's end to provide a clearer view for participants.
 - Enable the "full screen" option in the virtual classroom as well.
- Whenever possible, use alternate methods for viewing required content.
 - Use the Web share pod to view Web sites.
 - Convert documents to Flash .pdf format, and post to a share pod.

11. Standards for WCT Facilitation

A WCT development contract might include a task for facilitating one or more sessions of the WCT. If that task is included, the contractor must meet the following minimum standards to support the session(s).

About Two Weeks Before the Session

- Access the Adobe Connect virtual classroom.
- Become familiar with the layout as prescribed by the facilitator guide.
- Read the facilitator guide; then read it again.
- Become familiar with the participant workbook.
- Check with host to see if any participant with a disability needs a special accommodation.
- Contact the NHI Web conference Coordinator to collect:
 - The roster of FHWA-employee-learners **and** external learners for the pilot session.
 - Email addresses for each learner enrolled in the pilot session.
 - The teleconference number, passcode, and host code for the pilot session.
 - The URL for the online Level 1 evaluation for the pilot session.
- Ensure that the participant workbook is in the appropriate file share pod and available to learners for downloading.
- Ensure that all independent study assignments are in the appropriate file share pod or loaded properly to the curriculum and available to learners for downloading.
- Communicate with participants via email, providing an introduction and the course schedule. (See sample email at end of this section.)
- Coordinate recording of the session with FHWA Web conferencing if needed (Webconferencing@dot.gov).

At Least One Week Prior to the Training Event

- Access the Adobe Connect virtual classroom.
- Practice conducting the module as prescribed by the facilitator guide.
- Contact the NHI Web conference Coordinator to request the final roster of names for the session.
- Ensure that the employer of any participant with a disability has arranged special accommodations for that participant.

- If applicable, contact the host agency program lead for specific information about agency practices, strengths, weaknesses, or areas of interest that would enhance the session.

At Least 24 Hours Prior to Training Event

- Ensure that all required pods have been set up in the assigned virtual classroom.
- Update the course schedule in the note pod in the “Welcome Layout.”
- Ensure that the slides, pods, and layouts for the modules are accurate and uploaded to the virtual classroom. Be sure to update the schedule at the end of each slide deck.
- Ensure that all items you want to share are either uploaded or ready to share from your desktop.
- Clear every poll; ensure the broadcast option is not checked.
- Erase all screen highlights that may have been added during a dry run or a previous session.
- Test all Web links. (In particular, test the course evaluation link.)
- Verify the teleconference number, passcode, and host code; post number and passcode in a notes pod.
- Verify the URL for the Level 1 evaluation is posted in a chat pod.
- Check in with the course host for any last-minute instructions or changes.
- Review and provide feedback to participants for independent study assignments.

During the Training Event

- Log in to the virtual classroom using your Adobe User ID (your email address) and password.
- Dial in to the teleconference at least 15 minutes prior to start time.
- Demonstrate desktop sharing and whiteboard drawing if participants are to use those features.
- Always start on time, even if only one participant is in the room. Keep exercises within their time limits. End discussions when they cease to be productive. Lead participants away from digressions and tangents, and back to the lesson.
- Be available for questions for a few minutes after the Web conference session.

- Review learning outcomes at the beginning of each module. Make sure participants are fully aware of the topics to be addressed in the module. Then, at the end of each module, review the outcomes using review questions or an activity to ensure the outcomes were met.
- Review and provide meaningful feedback to participants for independent study assignments.
- Provide direction on accessing the course evaluation and end-of-course assessment.

Two Weeks after the Training Event

- Request from NHI a copy of the Level 1 and Level 2 course evaluation data. Review data and discuss results with the Training Program Manager.
- Send an email to course participants to thank them for their participation and feedback.

12. Delivery Formats

Deliverables for WCT courses are electronic files. Deliver the products required by the contract as final deliverables in the following formats.

- CD-ROM or DVD in .pdf format (marked with “P” on the label)
 - Facilitator guide (provided print-ready as one complete document)
 - Participant workbook (provided print-ready as one complete document)
 - Reference manual (provided print-ready as one complete document)
 - Other materials required for course delivery
- CD-ROM or DVD in Microsoft Word 2007 or later format (marked with “W” on the label)
 - Facilitator guide (may be segmented by module or lesson if files are large)
 - Participant workbook (may be segmented by module or lesson if files are large)
 - Reference manual (may be segmented by module or lesson if files are large)
 - Other materials required for course delivery
- CD-ROM or DVD of presentation and exam in Microsoft PowerPoint 2007 format (may be segmented by module or lesson if files are large)
- Copies of all copyright releases and letters granting permission for use from the authors or artist, if applicable
- Any written approvals for modifications

12.1 Required Details

Format the cover page of the facilitation guide, participant workbook, reference manual, as well as CD-ROM or DVD labels, to include all the information detailed in the sections below.

12.2 Cover Page

- A cover page is provided to the contractor as a modifiable PDF template.
- The publication number specific to each deliverable is provided to the contractor by the NHI TPM or ISD.

12.3 CD-ROM Labels

- Federal Highway Administration logo
- NHI logo
- Publication number
- Date (month and year)
- NHI course number
- NHI course title
- Type of document e.g., facilitator guide, participant workbook, reference manual
- IACET logo (if applicable)

12.4 Use of Logos and Company References

- Company logos will not be included on any deliverable to NHI.
- References to the company and or persons developing, designing, and or delivering the course will not be included in any PW, IG, RM, or visual aids.
 - Exceptions must be documented on Technical Report Documentation Page and can be inserted into the IG and or PW at front). This document can be found on the NHI Web site under the WCT Developer Toolkit.

13. Standards for Electronic File Submissions

The US Department of Transportation (DOT) Standard indicates that all printed materials, including visual aids, must be developed using Microsoft Office 2007 (or later) format. This requirement allows NHI to edit all documents delivered by the contractor.

- Note that NHI currently accepts Microsoft Office 2007 version.
- Documents should not be delivered in read only, presentation-only, or password-protected format.
- The use of macros and other complex formatting should be kept to a minimum.

Use the requirements below to create folders for files delivered to NHI.

13.1 Source Files Folder

- Facilitator guide
- Participant Workbook
- Presentation and test materials
- Reference manual
- Supplemental materials

13.2 PDF Files folder

- Facilitator guide
- Participant workbook
- Reference manual
- Supplemental materials

13.3 Readme File

- If a course shares materials with another course, document that need in the readme file.
- Additional information on use of materials or printing requirements is included in this file, as well.

13.4 File Naming Convention

Following are file naming conventions for each deliverable. Separate each item in the file name with an underscore (_).

- Course number
- Publication Type

- FG (facilitator guide)
- PW (participant workbook)
- RM (reference manual)
- PP (PowerPoint presentation)
- EX (exam, test, assessment, evaluation instrument, answer key)
- SM (simulation)
- VD (video)
- AU (audio)
- BK (book)
- OM (other materials)
- Publication number (if applicable)
 - Obtain from NHI (XX-XXX)
- Revision date formatted in a two-digit month and year
 - 0910 (September 2010)
 - 1001 (October 2001)
- File Description (short description of the file, if necessary)
 - ExamA
 - ExamB
- Application Extension
 - .pdf (Adobe Acrobat)
 - .doc (Microsoft Word)
 - .ppt (Microsoft PowerPoint)
 - .flv or .avi (Video file)
 - If use of other software has been approved, use standard application extensions

Following are two examples of file names using the convention *Course Number_Type_Pub #_Date_Desc_Ext*

- 130053_PW_09-116_0511_PDF
- 141031_EX_0702_TestA_DOC (an example where no publication number will be assigned)

References

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