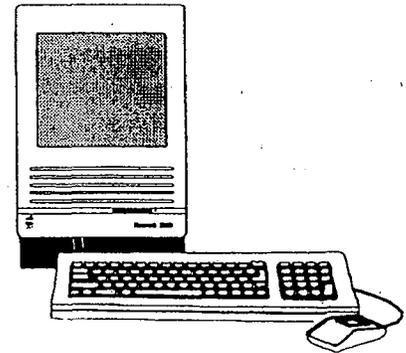
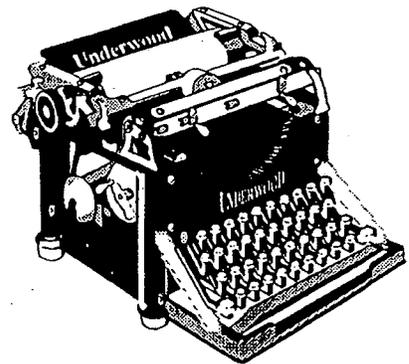
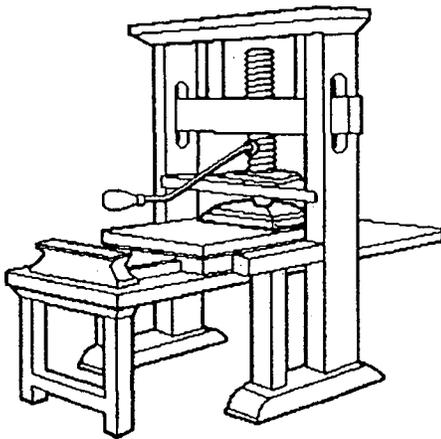

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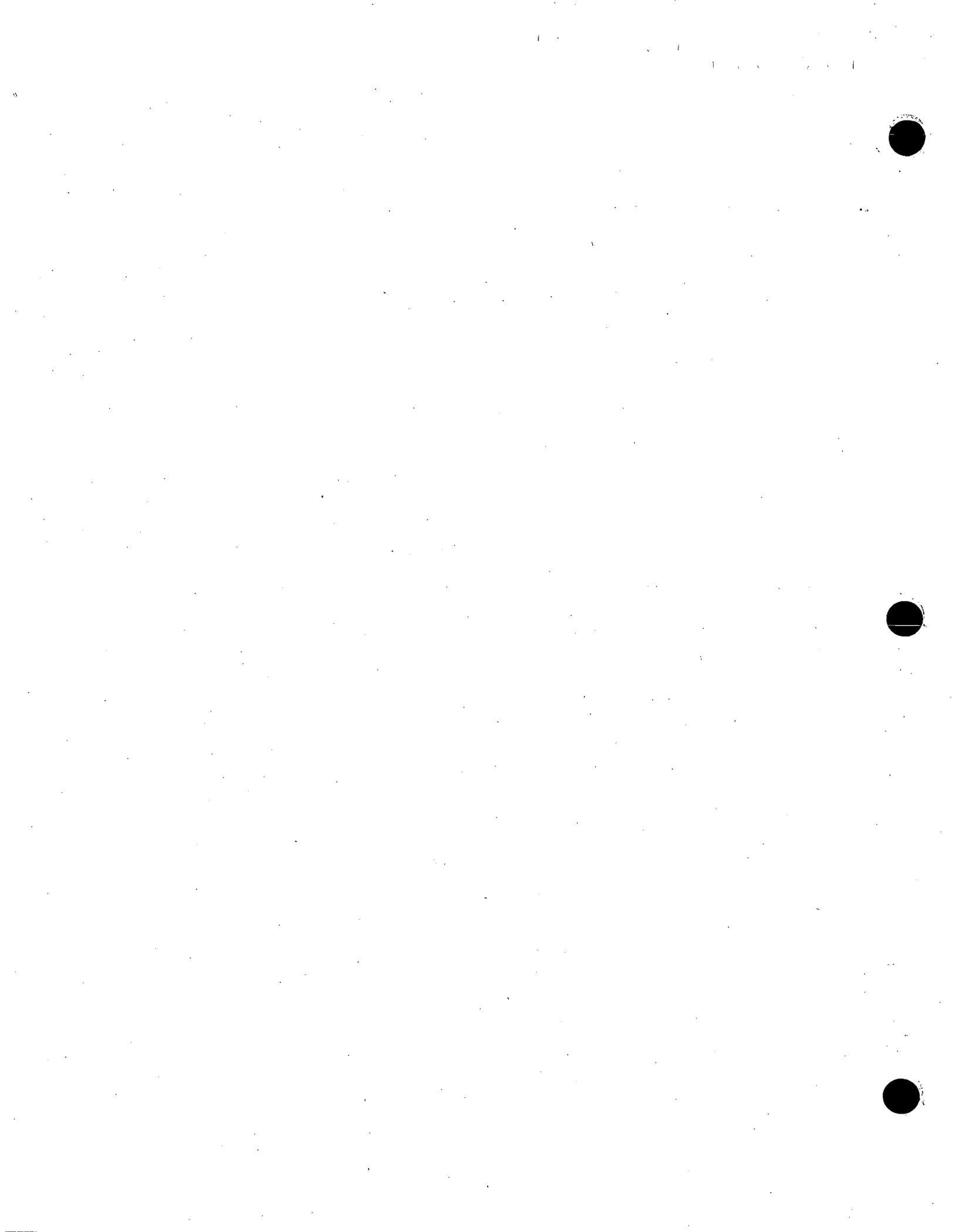
United States
Department of Interior

National Association of
State Foresters

Course Development and Format Standards



Sixth Edition
2003



PREFACE

The original 1977 Course Development and Format Guidelines was created by the (then) Boise Interagency Fire Center Division of Training for the National Wildfire Coordinating Group Training Working Team to provide course developers with guidance in the design and publication of wildland fire suppression training course materials. Since the original document was created, there have been four revisions: the first in 1987, the second in 1990, the third in 1995, and the fourth in 2002, thereby updating the document and providing course developers and contractors a more definite direction. The title has also been changed from "Guidelines" to "Standards." The training course development process has also been applied to the additional curricula of Incident Command System, prescribed fire, dispatching, prevention, fire investigation, leadership, and management. This sixth updated edition of the CD&FS is the result of a continuing process of refinement and expansion.

The National Interagency Fire Center (NIFC), Fire Training Standards Unit is responsible for the revision and publication of the CD&FS. The following personnel were assigned the lead in preparing this sixth edition:

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COURSE DEVELOPMENT AND FORMAT STANDARDS

NATIONAL WILDFIRE COORDINATING GROUP

I. PURPOSE OF STANDARDS

These standards are for use in the design and publication of those courses within the Interagency Fire Curricula established by the National Wildfire Coordinating Group (NWCG).

The principal purpose of the standards is to provide uniform procedures to be followed in the development and publication of interagency courses.

II. INTERAGENCY FIRE TRAINING PROCESS

A. Scope

The NWCG is responsible for the coordination of interagency fire training. The NWCG Incident Operations Standards (IOS) Working Team establishes job performance requirements for fire positions identified as common among agencies. The Team also establishes standards of experience, training, physical fitness, and other qualifications necessary for certification in these positions.

Through the Training Working Team (TWT) and its member agencies, the NWCG identifies interagency training needs, establishes training priorities and standards, and coordinates the development and implementation of courses for the interagency fire curricula. This approved NWCG process is intended to improve and clarify procedures between the field, working teams, and NWCG in the identified areas.

The NIFC Fire Training organization is a principal resource of the NWCG Training and IOS Working Teams in providing a central management and coordination point for the development of interagency fire qualifications courses and materials. NIFC provides services that include: planning, recommending, and developing interagency fire training curricula and systems; conducting reviews and application of new educational techniques; assisting in training and task analysis; developing instructional and performance

objectives; instructional design and format guidance; instructional media development; and course development coordination, evaluation and validation.

- B. The Wildland and Prescribed Fire Qualification System Guide, Publication Management System (PMS) number 310-1, was developed for use by member agencies of the NWCG. It incorporates the minimum level of formal training, experience, and physical fitness requirements for each fire suppression position in the Incident Command System (ICS).

C. Coordination

Development of courses for certification in the interagency fire training curricula requires extensive coordination at the national level to ensure that the best in technical expertise is obtained and that all agencies and geographic areas are fully represented.

Steering Groups or Project Leaders will be designated by the sponsoring working team to ensure that standards are met throughout the development process. They will be monitored at the discretion of the NWCG TWT.

1. Steering Groups, when required, manage the development of a particular course or courses in a curriculum.
 - a. The steering groups' responsibility is to provide the direction and guidance to those agencies or offices performing the actual development to ensure that NWCG standards are achieved.
 - b. Steering groups are assigned or formed before any formal development begins and play an active role in the management of the development process and the coordination of reviews, evaluations, and certification of the course product.
2. Project Leaders. In cases where interagency systems for course development are established and in operation, such as NIFC, the development of a course may be assigned to a Project

Leader. It is the responsibility of the Project Leader to manage the development process and coordinate all reviews, evaluations, and certification for the course product.

3. The Editorial Assistant is a significant member of the development team and is crucial to the speedy and accurate preparation of training materials. It is imperative that this person be fully acquainted with the CD&FS before any word processing is begun.
4. Checklists outlining the duties of Project Leaders, Steering Group Chairpersons and Editorial Assistants are located in Appendix E.

D. Course Numbering System

The NWCG has an established alphanumeric course numbering system. Each alphanumeric combination designates a meaning unique to the specified curriculum.

The current NWCG endorsed curricula are:

- “D” Courses developed for the Dispatcher Curriculum
- “FI” Courses developed for the Fire Investigation Curriculum
- “I” Courses developed for the all-risk application of the Incident Command System
- “J” “How to” documents that contain skill related material to the specific position. They are not formal courses and not controlled by an instructor or coordinator.
- “L” Courses developed for the Leadership Curriculum
- “M” Courses developed outside a specific curriculum but determined to be supporting more than one, such as Managerial type courses.
- “P” Courses developed for the Fire Prevention Curriculum

“RX” Courses developed for the Prescribed Fire Curriculum

“S” Courses are developed for the Wildfire Suppression Skills Curriculum

“TS” Courses and job aids developed for technical specialist positions that are not part of the NWCG curricula

The first digit of a course number designates the complexity level at which the course is designed to be presented and also indicates the organizational level at which the course is to be given.

Entry Level

100 = Local entry level skills development

200 =

Mid-Level

300 = Mid level and/or geographic area level management skills

400 =

Advanced Level

500 = Advanced/national level management skills

600 =

The NWCG Development Unit assigns the appropriate complexity/organizational level designation to the course. Assignments are based on the formula listed above, the analysis of the project development team, the target group, the recommendations from the project team leader and input from other NWCG Teams that may be involved.

The second digit of a course number designates the subject area of the course.

000 = Command and General Staff

010 = Skills

020 = Organization

030 = Operations

040 = Planning

050 = Logistics

- 060 = Finance/Administration
- 070 = Air Operations
- 080 = General
- 090 = Fire Behavior and Fire Danger Rating System

The third digit of a course number is assigned sequentially, or as appropriate to maintain continuity, as courses are certified within a particular subject area.

- S = This is in the Suppression Skills Curriculum.
- 2 = This is an entry or introductory level course given at the BLM or Forest Service district, NPS park, BIA reservation, County Forester level or FWS area.
- 3 = This is an Operations subject.
- 0 = This is the first course in the sequence.

E. Development Schedules

Schedules are established by the steering group or project leader to meet the objectives of the NWCG TWT.

Depending on the scope, complexity, and medium of delivery of a particular course, the length of time required for development, review, and certification may vary. An estimated time of one to two years is necessary for the completion of a high quality course package. But in the case of a course designed to be interactively delivered, such as on the Internet, the time required could vary significantly.

Schedules must be established to allow adequate time for the technical input, instructional design and reviews necessary to achieve NWCG certification.

F. Contracts

Contracts for development of interagency courses or training systems will be administered to meet objectives set by the NWCG TWT.

The agency handling contract administration will ensure that thorough work statements and technical proposal evaluation criteria are carefully prepared. The NIFC Fire Training Standards Unit and the project leader must be involved in this process to prevent problems at a later date. Adequate plans must be made for proper monitoring of the contractor's work.

Because of time and legal considerations in contracting procedures, bids are to be solicited well in advance of development deadlines.

Agencies should carefully review basic procurement laws, regulations, and policy manuals governing contracting prior to any work with potential contractors. All Federal agencies are subject to Federal Procurement Regulations and, in addition, Interior agencies are subject to the Interior Procurement Regulations.

Contractors will be provided with technical materials and guidance including this CD&FS publication.

A steering group or project leader shall be designated to coordinate assistance to the contractor. The project leader or steering group chairperson must be officially designated to act as the Contracting Officer's Representative.

Courses developed under contract require the same review and certification process as shown under Section III to be accepted into the interagency curriculum. Contractors must be made fully aware of these reviews.

III. DEVELOPMENT OF COURSE MATERIALS, REVIEWS, CERTIFICATION, AND EVALUATION PROCESS

This section briefly explains the development process. It does not attempt to describe in detail all the aspects of developing a course. Developers should rely on educational texts and obtain the services of a qualified training specialist. The NIFC Fire Training organization is a source of training specialists with experience in the development of interagency fire training materials.

A. Review and Certification of Interagency Courses

Training materials to be certified by the NWCG at criterion Level I and Level II are reviewed by the NIFC Fire Training Standards Unit for conformance with the development and format standards in this publication. The unit also prepares and transmits the certification statement for these materials to the TWT to be signed by the appropriate personnel.

Training materials to be certified at NWCG criterion Level III are sent to the NIFC Fire Training Standards Unit which prepares the certification statement and then transmits all training materials to the TWT for signing by the appropriate personnel.

The criteria levels are as follows:

1. Level I – Product is part of an established NWCG curriculum. Meets CD&FS – Sixth Edition, 2003, has received a technical review and a professional edit.
2. Level II – Product is accepted and approved for interagency use, but is not part of an established curriculum. Meets CD&FS – Sixth Edition, 2003, has received a technical review and a professional edit.
3. Level III – Product has been reviewed and determined to be of value for interagency use. May or may not meet the CD&FS – Sixth Edition, 2003, but has been through a professional evaluation process.

B. Instructional Design Process

Every NWCG sponsored course development project goes through a standard process that consists of nine distinct stages. They are:

1. Analysis phase
2. Design phase
3. First (design) review
4. Development phase
5. Formative evaluation

6. Field review
7. Second (development) review
8. Summative evaluation
9. Final review and certification

1. Analysis Phase

Prior to requesting the NWCG to sponsor the development of a training course, responsible parties should determine that a job performance deficiency exists (see Analysis Phase of Development flowchart, page 1.9). If so, then a needs analysis is performed and documented that will determine the nature of the performance deficiency and whether it is environmental, managerial, or training related.

If the deficiency is training related, an audience analysis is performed to identify the target group or students needing the training. A search must then be conducted to identify any existing training materials that could satisfy the need.

After these analyses have been completed, the proposal to develop training to overcome the job performance deficiency can be made to the NWCG TWT. If the TWT concurs with the need to develop the materials, they will authorize the project.

ANALYSIS PHASE

(see page 1.8)

Job performance deficiency

Needs analysis.

Audience analysis.

Research existing training that may satisfy the need.

Training solution identified, course of action
itemized and submitted to Training Working Team.

END PRODUCT OF THIS PHASE

Training Working Team authorizes project development to satisfy job performance deficiency, designating production responsibility, establishing finances, and defining the review process considering any special requirements.

Go to page 1.10 for the chart of the next stage.



DESIGN PHASE
(see page 1.11)

Orientation to CD&FS* by Training Standards Unit
(page 1.11)

Job/Task analysis.
(page 1.11)

Develop objectives.
(page 1.13)

Sequence objectives.
(page 1.15)

Determine student prerequisites.
(page 1.13)

Develop course and unit instructional objectives.
(page 1.13)

Develop unit and final tests.
(page 1.17)

END PRODUCT OF THIS PHASE
(to be produced during the first meeting of the development team)
Performance and instructional objectives
and tests ready for First (Design) Review.

Go to page 1.20 for the chart of the next stage.



*CD&FS = Course Development & Format Standards

2. Design Phase

Following authorization by the TWT, the development team holds its first meeting in order to address the following: (See Design Phase of Development flowchart, page 1.20.)

- a. Orientation: An orientation to the CD&FS given by the Training Standards Unit. The orientation provides the development group the opportunity to investigate the STANDARDS and have their questions answered. The development group's primary editorial assistant should be in attendance for this format presentation.
- b. Task Analysis: A Task Analysis is developed which then becomes the foundation where all the components of the training development and testing process are built.

The Task Analysis is a written description of work to be performed. It contains a general description of the Job (course), the Duty (instructional units), the Tasks, and the Steps.

The purpose of the Task Analysis is to identify every step (single action statement) for each task of the job.

A systemic process is used to break the job into duties, the duties into tasks, and the tasks into steps. This process is nothing more than moving from the broad to the specific. In most instances, job position descriptions and existing training materials will provide developers with a starting point. When a course relates to a specific position for which a task book has been created, that task book is incorporated as part of the analysis.

Each task (sometimes called a performance requirement that produces a measurable product or results) is stated in terms of the minimum acceptable level of performance that can be both observed and measured. The task is then broken into steps that describe how the task is accomplished.

The next part of the Task Analysis is to group closely related steps into single statements or sub-tasks for instructional purposes, and then to sequence them into the order of performance. These sub-tasks can be used to identify any errors and omissions in the task analysis. The result is a list of statements or sub-tasks that includes several steps in a logical sequence to accomplish the task on an incident (see Figures 1 and 2).

Duties	Tasks
Unit 1. Bucking and Felling	I. Falling trees or snags II. Bucking downed timber III. Clearing brush IV. Maintaining equipment V. Following safety rules

Figure 1 – Sample Breakdown of Duties and Tasks

Sub-Tasks	Steps
A. Size up the tree or snag	1. Check and describe soundness of tree or snag. 2. Identify overhead hazards in canopy.
B. Size up the surrounding Area	1. Check terrain. 2. Observe weather factors.

Figure 2 – Sample Breakdown of Sub-Tasks and Steps

The students will already have certain skills, knowledge, and attitudes that will enable them to perform some of the tasks of the course. One goal of efficient, effective instruction is to avoid wasting time teaching tasks the

students have already mastered. The performance requirements that can reasonably be expected of the student, such as entry level performance, become prerequisites for the training being developed. The performance requirements that are not identified as prerequisites become tasks that must be taught in the course.

Upon completion of the Task Analysis, a skeleton outline of the course should be complete including the Job (the course), the Duty (the unit), the Tasks (I, II, III, etc.), the Sub-Tasks (A, B, C, etc.), and the Steps (1, 2, 3, etc.). (See Figure 5 – Sample Lesson Outline, page 1.16.)

- c. Objectives: The next step is to develop objectives.

A task is a complete statement of performance that clearly specifies the work that must be performed. When the conditions under which the task is performed and the standards that describe how the performance will be measured are added, the result is an objective.

All objectives must be specific and measurable stating:

- What task(s) the student will perform (action).
- Under what conditions the student will be required to perform the task(s).
- How the performance of the task will be measured (standard).

Instructional objectives (see Figure 3) describe the end result the instruction is intended to produce (action). The objectives state what the student will do after the instruction is completed (condition). For classroom instruction the required performance will usually involve

the successful completion of a test or an exercise (standard).

Instructional Objective:

Upon completion of this unit the student will be able to:

Explain the relationship of the undercut, holding wood, and backcut (action).

Successful completion of this task will be measured (standard) by the student correctly answering the question(s):

1. It takes _____ cuts to fall a tree.
2. What results from the correct relationship of those cuts to each other?
3. What is the function of the holding wood?

Figure 3 – Sample Instructional Objectives

The primary objective of training is to produce individuals who can adequately perform on the job. Therefore, performance objectives (see Figure 4) are developed to measure how well the student performs a given task under job-like conditions. Performance objectives are usually associated with field exercises where the actual task is performed by the student in a realistic environment.

Performance Objective:

Given a sound tree up to 20" diameter at breast height (DBH) in a stand of timber typical of Fuel Model 10, on a 50 percent slope under fireline conditions of dust, smoke, and heat; using a 24" straight bar chainsaw with standard accessories (condition), the student will, using prescribed techniques, safely fell the tree (action) within 20 degrees of the established mark or bed (standard).

Figure 4 – Sample Performance Objective

It is important to note that performance of a job and learning to perform a job are distinctly different. The detail of how a job is performed becomes the performance objectives. The detail of learning how to perform a job becomes the instructional objectives.

Once established, objectives are logically sequenced into each instructional unit or lesson. The condition and action portions of the instructional objective then become part of the lesson outline header (see Figure 5), and the standard portions of the instructional objective provide a skeletal framework for the unit and final tests (see pages 1.17 and 1.18). **(Notice that these test questions are not a repeat of the objective.)** During the development process the project team will discover different questions and/or methods to test each objective and these should also be included as part of the unit and final tests.

DETAILED LESSON OUTLINE

COURSE: S-2XX Powersaw Operator (Job)
 UNIT: 3 - Felling and Bucking (Duty)
 TIME FRAME: 3 Hours
 TRAINING AIDS: (Those aids specifically needed to instruct this unit)
 OBJECTIVES: Upon completion of this unit the student will be able to:

1. Describe the sizeup the operator performs before felling a tree or snag.
2. Illustrate the placement, size, and angle of undercut.
3. Explain the relationship of the undercut, holding wood, and backcut.

OUTLINE	AIDS & CUES
I. Fall a tree or snag. (Task)	03-01-S2XX-EP
A. Size up the tree or snag. (Sub-Task)	03-02-S2XX-EP
1. Check and describe soundness of tree or snag. (Step)	
• loose bark	
• condition of top	
2. Identify overhead hazards in canopy. (Step)	
• hangup potential	
• widowmakers	
B. Size up the surrounding area. (Sub-Task)	03-03-S2XX-EP
1. Check terrain. (Step)	
• slope	
• rock	
• downed timber	
• hazards	

Figure 5 – Sample Lesson Outline

- d. Pre-Course, Unit/Lesson and Final Tests: The unit tests determine if the unit objectives have been met. The final examination determines if all the objectives for the course have been met. These tests measure whether or not the student can perform the job for which the training was designed. Properly developed tests also provide valuable indicators of progress throughout the training and provide feedback for needed revisions or instructional emphasis. Tests must be based on, and fully measure, all training objectives. Performance tests are designed with conditions of the work environment controlled as reflected in the performance requirements (see Figure 4, page 1.15).

There are various types of tests, all of which should be utilized to the fullest extent possible:

- Pre-course Test. A pre-course test may be developed to evaluate the student's ability to meet the prerequisite skills and knowledge and test mastery of pre-course objectives. The pre-course test may serve as a screening device once the training has been validated. The test should also provide estimation, before the training, of the student's ability to meet the performance and instructional objectives. This will provide a comparison of the student's entry-level performance with the performance on the final examination. It will also show the instructor where special emphasis may be needed.
- Unit/lesson Tests. Unit/lesson Tests should be developed to evaluate the student's performance based on each of the performance and instructional objectives for a particular unit/lesson of instruction. Unit/lesson tests should address only the material covered in that particular unit/lesson.

This provides valuable feedback regarding weak areas in the instruction, either content or delivery, and allows the instructor to emphasize or readdress such areas.

Final Examination. The final examination is used to evaluate the student's performance based on all of the objectives. Final examinations may take the form of written test items and problems. They may be performance tests in using simulation exercises or demonstrations of manual skills. The final examination could also be a combination of testing formats. Whatever format is utilized, all performance and instructional objectives must be fully tested.

See Appendix C for detailed information about test construction.

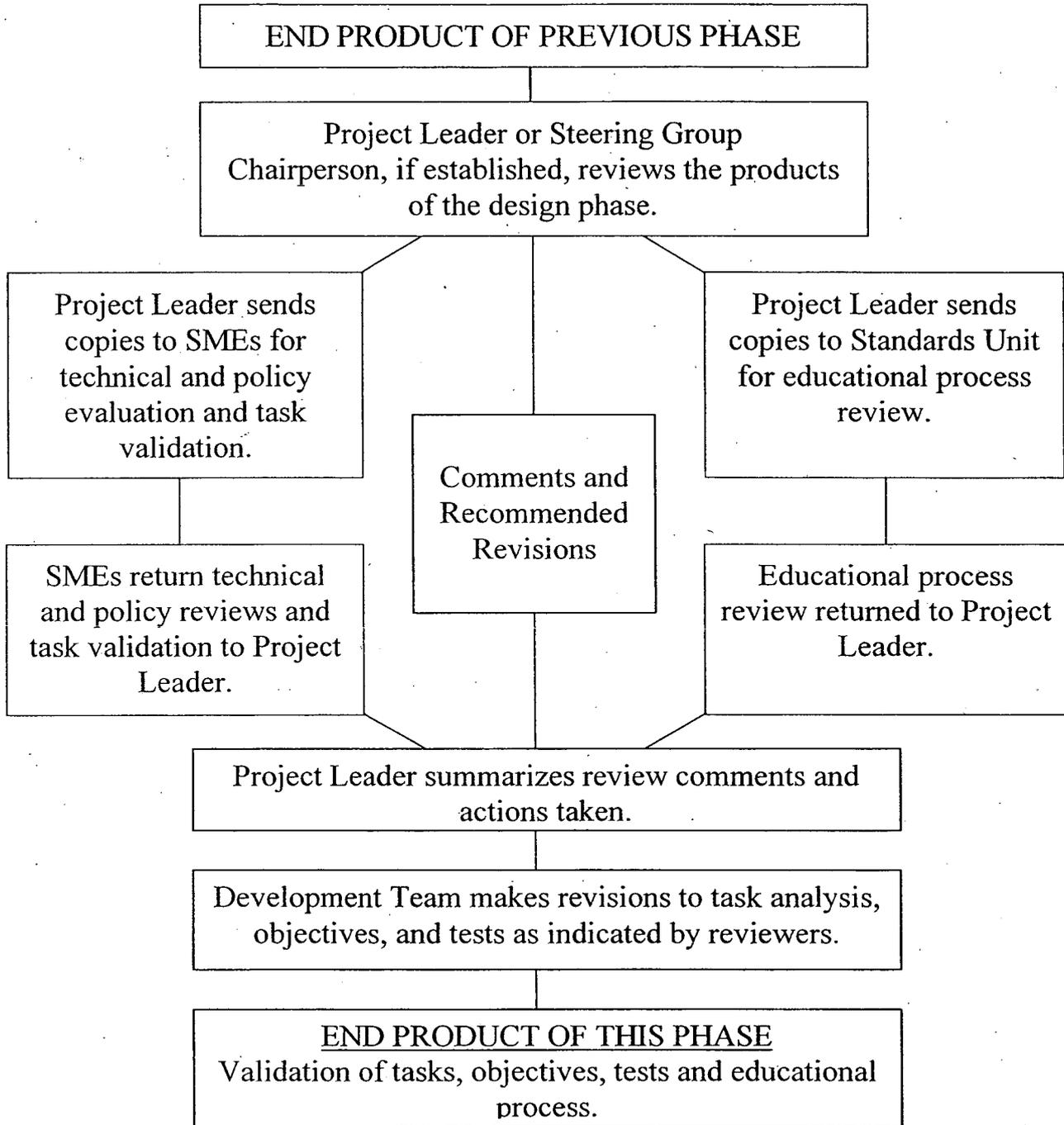
Tests should be validated to ensure that they are clear, accurate, and effective in evaluating each objective. During the validation process the test may be given to a number of groups or persons representing different competency levels from target group to Subject Matter Experts. If the target group individuals can pass the tests without training or if master performers do not score in the highest levels, the test needs to be revised.

3. First (Design) Review

This review has two parts and takes place immediately following the task analysis and development of performance and instructional objectives and tests.

- a. The first part is a technical and policy review and test validation that may be performed by an interagency group of SMEs other than the development group.
- b. The second part is an educational process review of the objectives and tests by the NIFC Fire Training Standards Unit. Review at this stage reduces the chances that policy, technical, or educational process problems may arise later which will require major redesign.

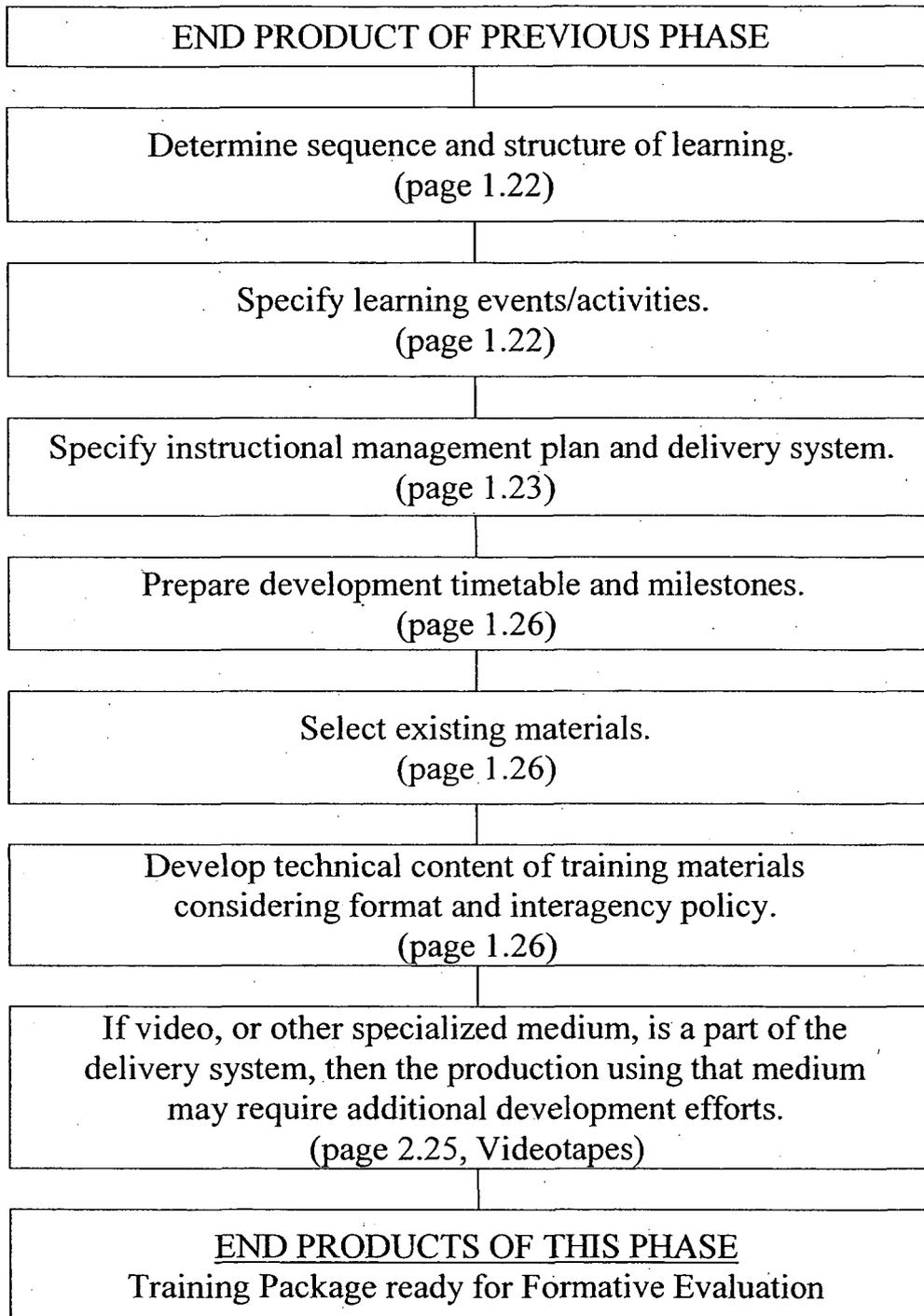
FIRST (DESIGN) REVIEW



Go to page.1.21 for the chart of the next stage.



DEVELOPMENT PHASE
(see Project Leader Checklist page E-3)



Go to page 1.30 for the chart of the next stage.

4. Development Phase

A significant amount of work is necessary to prepare for the actual development of training materials (see flowchart, page 1.21). The following steps must be taken:

- a. Determine Sequence and Structure of Learning. The purpose of sequencing is to assure that when materials are developed, each learning objective is placed in optimum relationship to other learning objectives. Proper sequencing will help produce the most learning in the shortest period of time; will help the student make the transition from one skill or body of knowledge to another; and will assure that the supporting knowledge and skills are acquired before dependent subject matter is introduced. The best sequence is the one that works best for the student.

Characteristics of sequencing are:

- Sequencing affects long-range learning.
 - Sequence is important to low-aptitude students.
 - Sequence is important with unfamiliar materials.
 - Sequence is important to materials that will not be repeated.
- b. Specify Learning Events/Activities. This step determines applicable learning guidelines and specific learning activities that must take place in the learning environment to ensure the instruction is as effective and efficient as possible, and is directly related to task performance. Some general guidelines that are appropriate for learning situations include:

- Inform the student of the learning objectives.
- Provide for active response from the student.
- Provide guidance and prompts for the student.
- Evaluate comprehension and performance.

c. Specify Instructional Management Plan and Delivery System. The instructional management plan is the set of procedures used to assure a smooth flow of students through the training system. It requires provisions for students, instructors, support personnel, courseware, organization, facilities and equipment. Because all of these interact, a decision on scheduling any one may affect how the others must be managed. Such a plan is required to coordinate the efforts of those who will develop and implement the instructional program and is prepared by the project leader.

The instructional management plan is strongly associated with the choice of delivery system (or systems), also called the medium of delivery. Media selection is the major means for determining how the instruction is to be packaged and presented to the student. It should take advantage of interactive teaching techniques suitable for the different kinds of performance desired. The media chosen to deliver the training should provide the most stimulus to the student through participation and practice, while accomplishing the objectives. Training development priorities, time and staffing available, the location and level of training and budget are factors that influence the selection of methods and the ultimate design of the training course.

Interactive instruction can be either self-paced or group-paced:

- Self-paced instruction (individualized or self-study) allows students to progress at a rate of their own choosing through any number of instructional paths (branches) within specific time limits. This method is the most common form of computer delivered instruction. Self-paced instruction requires no formal classroom instruction and is most effective in achieving training objectives that can be attained by the individual without the need for interaction with an instructor or peer group. Self-paced instruction has limited application in attaining objectives that require group interaction or group performance activities.
- Group-paced instruction requires students to progress as a group. Group-paced instruction is required to achieve training objectives that require group interaction or instructor facilitation of group performance.

Management and budget considerations are usually the deciding factors in those areas in which either group-paced or self-paced instruction may meet training objectives. These considerations must include the following:

- COST – while presentation costs of self-paced instruction are greatly reduced due to elimination of instructor and student travel, development costs can be significantly greater. If sufficient funding is made available for development, an overall saving is normally realized after the first two years of course implementation.

- **TIME** – the extensive detail necessary for development of self-paced instruction requires approximately twice the development time of group-paced instruction. On an average, 1 hour of instruction time requires 25 hours of development time for group-paced instruction and 50+ hours for self-paced.
- **STAFFING** – development of self-paced instruction requires SMEs to have specialized instructional development skills such as computer programming, graphic arts, and animation. Group-paced instruction can be developed to a considerable extent by SMEs with guidance and assistance from qualified training specialists. Staff required to administer self-paced instruction would remain fairly constant; i.e., that time now required for classroom instructors would be re-directed to course administration, tutoring, and testing.
- **COMMITMENT OF MANAGEMENT AND THE INDIVIDUAL** –for learning to result from any instructional method, both management and the student must be committed to the training. This is even more important when self-paced methods are used. Management must provide not only instructors, tutors, and course managers, but also the time and the incentive for individuals to complete the training on their own initiative at their home duty station.

If other specialized media are to be a part of the delivery system, then the production of those media must start early in the process for they usually require additional development efforts.

- d. Prepare Development Timetable and Milestones. Once the management plan and delivery system are determined, it then becomes necessary to schedule the development process, identifying those points along the schedule where major decisions or activities will occur.

Those points become milestones – important beginnings and endings – in the development process that management looks at to determine if the project is moving along satisfactorily.

- e. Review/Select Existing Materials. Developing instructional materials is both costly and time-consuming. Therefore, it is essential to consider the usefulness of existing materials before committing resources to new development. The review and selection procedure consists of evaluating instructional materials to determine if they are beneficial to the objectives, student characteristics, learning guidelines, management plan, and delivery system selected previously. Care should be taken to ensure that the most up-to-date techniques and processes are utilized in the subject matter.
- f. Develop Course Materials. This stage of the development process is the most important. It's where all the preceding analyses and planning will be used to produce the actual instructional products such as printed materials, lectures, or other media.

A published course includes the following components that are necessary for effective training:

- An Instructor Guide (group-paced) or Course Administrator Guide (self-paced) must contain all the information, direction, and elements necessary to make an effective presentation.
- Student Materials that include the relevant information necessary for the student to successfully complete the course.

- Visual aids and other supporting documents.

The development requires the efforts of:

- Subject Matter Experts
- Media Specialists
- Production Staff
- Writers
- Evaluators
- Editors
- Editorial Assistants
- Illustrators

Determine the resources needed and commit them to the development of the materials. This requires management approval and the commitment of funding.

Steps involved in developing course materials include:

- Identifying what technical content is needed to provide the student with the skills and knowledge required to meet each objective and perform the total job.
- Identifying how the subject matter will be formatted, and how policy considerations will be addressed.
- Ensuring that adequate interagency and interregional relationships are maintained. In the event of conflicts in policy or technique between agencies, each policy or technique will be included and the differences will be explained.

Care must be taken to ensure that the training materials do not offend the users. Be certain that words and statements do not ever suggest any kind of slight in the areas of gender, race, creed, religion, or national origin.

Instructional content will be designed in units that will proceed from the simple to the complex and from the general to the specific.

Customizing by local agencies is encouraged only when course objectives can be maintained. Agency specific policies, slides of local areas, and area specific procedures are examples of customization that may be required.

5. Formative Evaluation

The course will be evaluated in various instructional settings in which the target group and instructor are carefully selected to provide an accurate evaluation of the course.

A sufficient number of formative evaluations should be scheduled to insure that the course development is valid and reliable. The Training Standards Unit will have a person evaluate the course materials. These evaluations also provide the first opportunity to ascertain if the graphics that have been designed for the training are appropriate, effective, and conform to acceptable graphic design standards. Such a determination is best made by an experienced graphic designer.

Formative evaluations can be accomplished on a small scale using one or more subject matter experts or target group individuals.

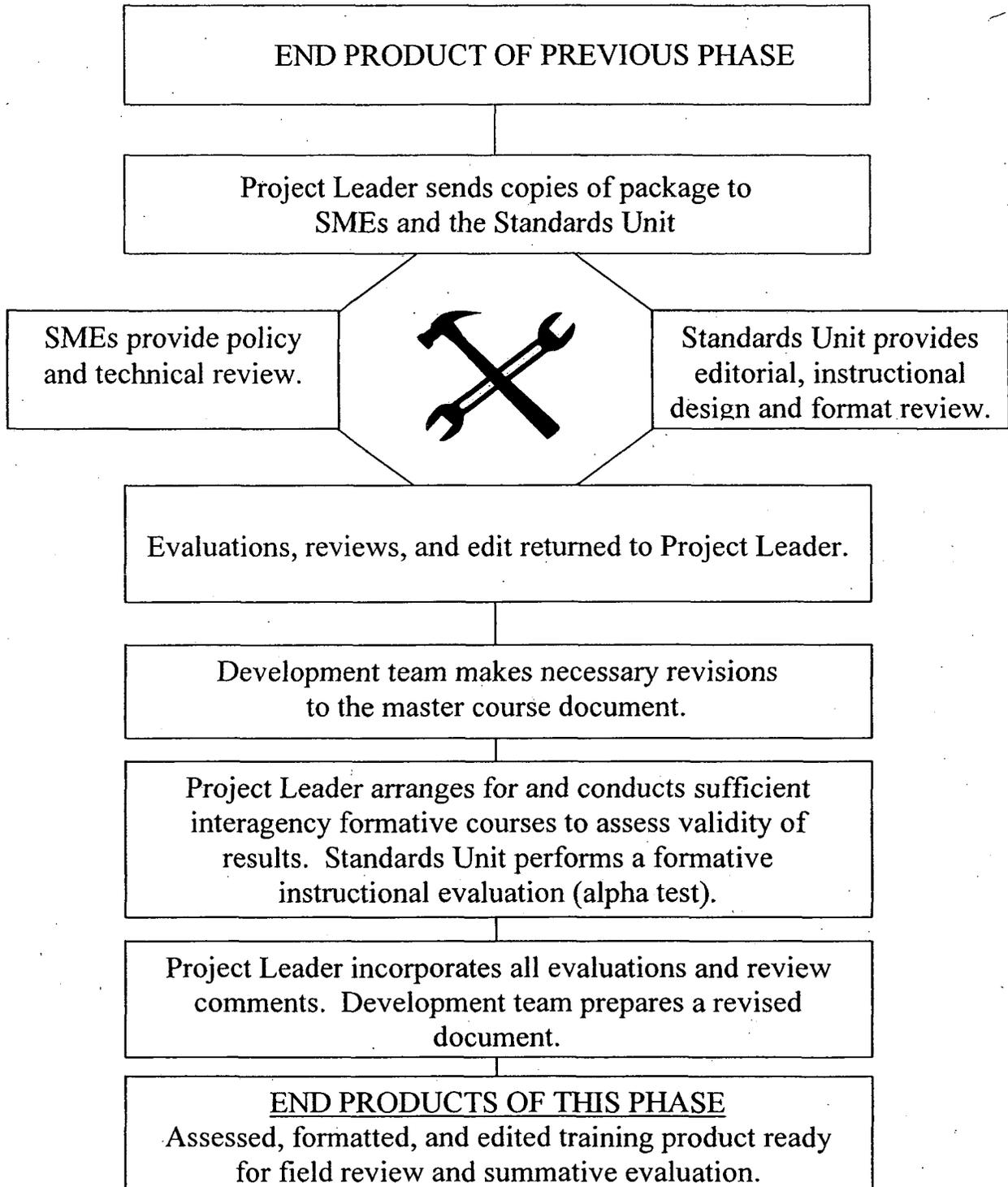
See page 1.30 for a chart describing the formative evaluation process.

Major design changes needed as a result of formative evaluations will cause revisions generated by those changes to be re-evaluated.

6. Field Review

The course is ready for a field review. A sufficient number of copies of the revised course materials is sent to SMEs in each of the geographical areas. The SMEs send their comments to the course project leader who will make necessary revisions to the master materials. Eight weeks are to be allocated for this review process. Following revision, the reviews and comments will be sent to the Standards Unit for archiving.

FORMATIVE EVALUATION



Go to page 1.32 for the chart of the next stage.

7. Second (Development) Review and Evaluation

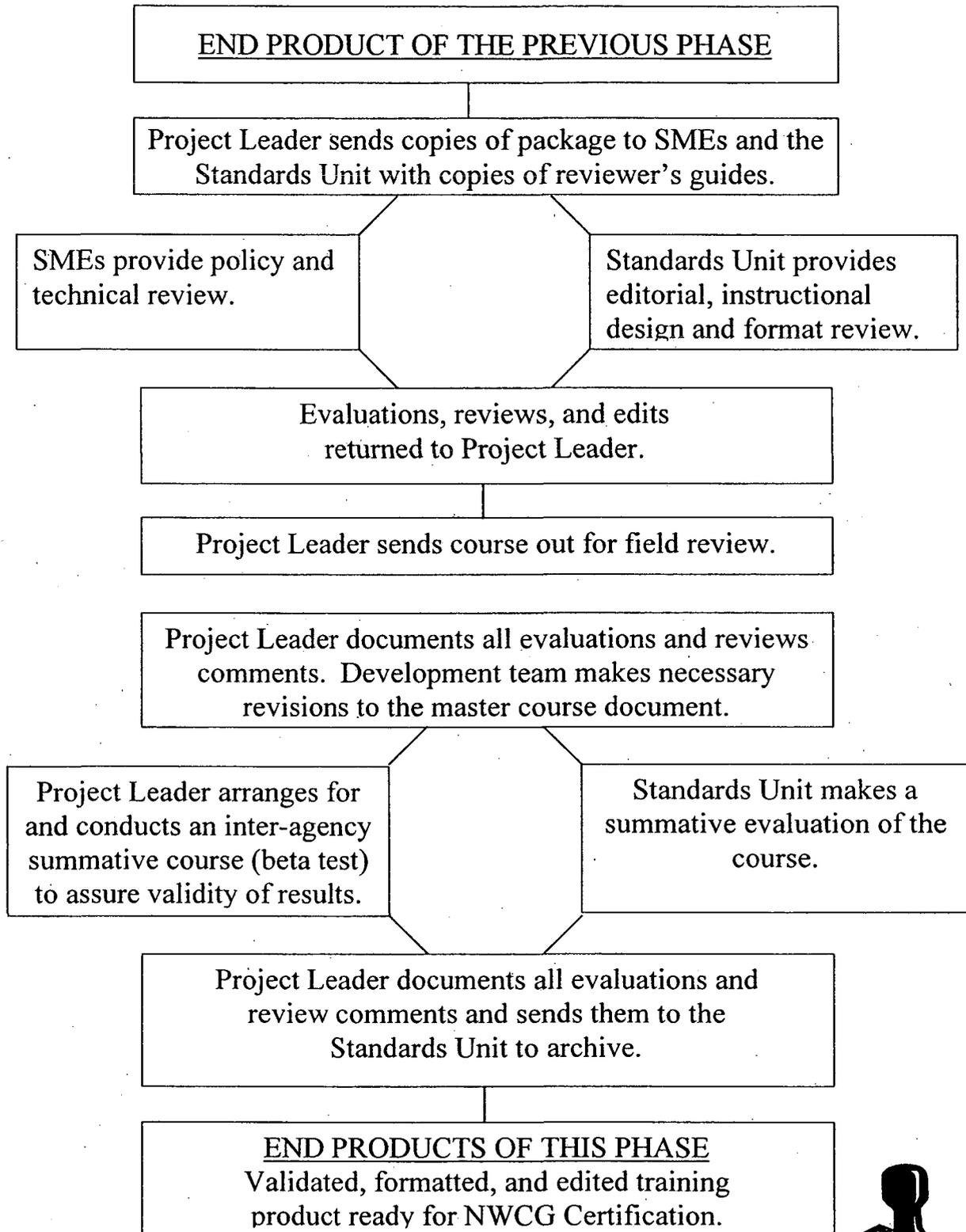
The second review is a detailed analysis of the policy, interagency, intergeographical, and technical content aspects of the course by an interagency group of SMEs, and an instructional design, format, and editorial review by the Training Standards Unit.

Review copies should be complete enough to be presented by a qualified instructor at the appropriate organizational level and be designed in accordance with the CD&FS. Sufficient copies of teaching aids should be included in each course package to support field tests.

The Project Leader or Steering Group Chairperson should plan this review and coordinate scheduling a minimum of one year in advance. This will allow sufficient leadtime to schedule test courses and designate reviewing SMEs. Reviewing SMEs are identified during the initial request for SMEs to develop/rework the course. Steering groups or project leaders are responsible for collecting and documenting all comments based on the Second Review and making necessary changes to the course.

A flow chart depicting the Second (Development) Review Process can be found on page 1.32.

FIELD REVIEW AND SUMMATIVE EVALUATION



Go to page 1.35 for the chart of the next stage.

8. Summative Evaluation

At least one formal interagency summative evaluation of the course using a carefully selected target group, qualified instructors, and designated evaluators is required. The instructors should be carefully selected, non-development team personnel. The Training Standards Unit will attend this presentation to evaluate the effectiveness of the training materials.

9. Final Review and Certification

This review, performed by the Training Standards Unit, ensures that all necessary revisions have been made and that the course is acceptable within the interagency curriculum. A request for certification follows the final review.

A flow chart depicting the Final Review and Certification Process can be found on page 1.34.

FINAL REVIEW AND CERTIFICATION PROCESS

FINAL REVIEW PROCESS

- 1) Project Leader/Steering Group Committee:
 - Prepares and submits one mockup for the PMS Editor to obtain NFES numbers.
 - Prepares and submits one mockup to the Training Standards Unit, along with the documentation from the formative test course and the field review.
- 2) PMS Editor:
 - Ensures publication readiness, assigns NFES numbers, and returns course to Project Leader.
- 3) Training Standards Unit:
 - Assures all appropriate revisions have been made, performs final edit and returns course to Project Leader if edits need to be incorporated.
 - Files the documentation from the summative test course and the field review.
- 4) Project Leader:
 - Makes appropriate edits and resubmits one mockup and one CD to Training Standards Unit for certification process.

CERTIFICATION PROCESS

- 1) Training Standards Unit:
 - Prepares Certification Statement
 - Sends Certification Statement and the CD to the involved NWCG Working Teams.
- 2) Working Teams (other than the Training Working Team) involved in the project:
 - Assure their Subject Matter Experts made a thorough review.
 - Sign Certification Statement and forward it to the Training Working Team Chair.
- 3) NWCG Training Working Team Chair:
 - Assures a thorough interagency review was obtained, other involved working teams have signed, and major issues have been resolved.
 - Signs Certification Statement and returns it to the Training Standards Unit.
- 4) Training Standards Unit:
 - Forwards mockup and Certification Statement to NWCG Liaison Member.
- 5) NWCG Liaison Member:
 - Assures that the certification process has been followed.
 - Signs the Certification Statement and returns it to the Training Standards Unit.
- 6) Training Standards Unit:
 - Returns Certification Statement to Project Leader.
- 7) Project Leader:
 - Submits masters and mockups (one for each component of the course) and 4 CDs (see V. p. 2.31) to the PMS Editor.
 - Submits 1 CD containing all digital media to the Training Standards Unit for archiving.
 - May schedule one or more instructor handoff sessions as appropriate.

C. Publication and Distribution

The NWCG PMS Unit coordinates the publication and stocking of products certified by the NWCG. Most PMS items are available from the Great Basin Cache Supply Office at NIFC. A catalog of these materials is published annually and is available by ordering NFES 0362. There is a charge for this catalog.

Upon completion of all reviews and certification, the course materials are returned by the Training Standards Unit to the project leader for delivery to the PMS unit. The product master must include masters of all associated training aids. The distribution of published course materials will be coordinated by PMS. Storage of the document master and all associated training aids will be the responsibility of the PMS coordinator.

Archiving of digital media, course word processing disks, review documentation, and copyright permissions will be the responsibility of the Training Standards Unit.

NWCG has recognized that due to the complexity and/or technicality of some fire training courses, those courses should be formally handed off to various instructor cadres. This process involves explanation of the instructional design and supplemental content material that may be used with the course. This is particularly true of course content that has heavy regional adaptations.

The following criteria and procedures are adopted outlining the NWCG "Train the Trainer" process.

1. It is the responsibility of the course development group to identify whether a course requires a handoff. Exhibit A provides decision criteria to facilitate this process.
2. Three screening levels are identified to ensure that national interagency interests are met. These three levels are:
 - a. Initial Determination: Individual course development group.

- b. Second Level: National training representatives.
 - c. Final Decision: NWCG Training Working Team.
3. The target audience for this process is the Lead Instructor.
 4. The “Train the Trainer” course will be announced by the project leader and nominations taken in a timely fashion (Sample Course Announcement, Exhibit B).
 5. To make the instructional process effective, adequate time must be allowed to cover content and process.
 6. The handoff process involves practice by the attendees on presentation of material.
 7. A formalized evaluation will be made by the handoff cadre (a Recommended Evaluation Checklist can be found in the Course Coordinator’s Guide). The results should be provided to the attendee and the attendee’s nominating agency.
 8. Handoff goals and objectives are stated in quantifiable terms:

- a. “Train the Trainer” goals

Attendees will be walked through the course content and instructional design. They will then present portions of assigned units to the instructor cadre and their peers. A formal evaluation will be made of the course content selected and used as well as of facilitative instructor skills.

- b. “Train the Trainer” objectives

At the completion of the training, the potential lead instructor will:

- Demonstrate knowledge of all content areas and idiosyncrasies of the course through assigned classroom presentations.

- Apply appropriate agency policies using accepted operational procedures based on the geographic location of the course.
- Describe the preparation process utilized to customize presentations for each course presentation.
- Utilize interactive adult instructional techniques maximizing student participation.
- Utilize facilitative skills to enhance classroom learning and/or behavior.
- Explain the evaluation process used to measure performance.

Through this instructor “Train the Trainer” process, NWCG encourages improvement in the quality of complex training course presentations.

Exhibit A: Determining the Need for Course Handoffs

Decision criteria for courseware developers.

1. More than 50% of the content is conceptually difficult (theoretical vs. practical). There may be a range of complexities involved.
2. The instructional design is complex due to variations in selected presentation schemes (exercises, simulation). These processes are used frequently by the cadre, requiring considerable coordination operationally with detailed evaluative processes.
3. Emerging technology is being transferred to the field.
4. Greater than 50% of the content is subject to regional adaptations.

Examples of courses that do/do not meet the criteria by item number.

DO		DO NOT	
S-215	(Fire Operations in the Urban Interface) Criteria #2, 3, & 4	S-130	(Firefighter Training)
S-490	(Advanced Fire Behavior Calculations) Criteria #1 and 2	S-230	(Single Resource Boss-Crew)
RX-340	(Introduction to Fire Effects) Criteria #1 and 4	S-270	(Basic Air Operations)

Exhibit B: Sample Training Announcement

Note: This is an Instructor Handoff for the "Introduction to Fire Effects, RX340" training course.

Course Date(s): January 23-25, XXXX

Location: Tucson, Arizona

Nominations Due: Close of business Date: November 26, XXXX
(submit nominations on NWCG Interagency Training Form, PMS 921-2 NFES 2131)

Notification of selection date: December 3, XXXX

Target Group: Potential lead instructors and instructors who will be expected to instruct the "Introduction to Fire Effects" course in local training areas.

Prerequisites: Completed the "Facilitative Instructor, M-410" course or an equivalent instructor training course.

Be a Subject Matter Expert (SME) in the material being presented.

Description: This session will be limited to 20-25 targeted instructors. Attendees will be walked through the course content and instructional design. They will then present portions of the units to their peers and be formally evaluated on content knowledge of the course and facilitative instructor skills.

Other information: Attendees will leave the session with a complete instructor guide and information on obtaining visual aids.

Course Coordinator: _____

Sponsoring Agency: _____

Address: _____

Phone: _____

FAX: _____

E-mail: _____

D. Revisions

The Training Standards Unit will be the repository for identified changes or revisions to a particular certified course. Revision assignments will be made by the TWT to a Project Leader or Steering Group.

When revisions are made, the review and certification process will be reinstated.



IV. FORMAT

A. General

1. Considerations

When designing course materials for classroom delivery, the following guidelines are to be considered. These instructions provide direction to course development project leaders and editorial assistants.

Make the materials as simple and functional as possible. Generally, the simpler and more functional the materials, the easier it is to use them and the less expensive they are to produce.

The purpose of format is to ensure that whatever is created is presented in a consistent and orderly manner. This principle of “consistency” must be followed in regard to all terms, formats, and schemes that are used more than once in the document(s).

Try not to reproduce documents already in existence. For instance, if pages of the Fireline Handbook are referred to, the instructor should notify the students to bring a copy to class. Alternatively, the instructor could order handbooks separately and provide them to the students. Hence, a twofold-learning project is accomplished: first, pertinent material is covered that is already published; and second, the student is learning to properly use field reference materials.

While the project team is determining the needs for materials in the course, they need to be certain these materials are available. If there were materials that are needed that may not be readily available to the instructor, then it would be simplest just to print that information with pertinent REFERENCES in the instructor guide. NOTE: If the material is copyrighted, a written permission to use it MUST be obtained by the Project Leader and in the possession of the Standards Unit. If this alternative is used, then the project team needs to supply the NWCG Publications Management System with an original, a Photo-Mechanical-Transfer (PMT), or a digital file of the material. Copies of originals are not acceptable for printing purposes.

The use of forms in a course can create problems in three areas:

- Forms are dated and frequently revised. Including forms in the text as opposed to providing them separately will date the entire course and will make revision of the course necessary when the forms are revised.
- When forms are duplicated within the text they may have to be reduced in size to meet the format standards for one-inch margins. This results in the forms being too small for entries. Additionally, many forms are found in sets with carbons, however, when these forms are printed as part of the course material, they are just single sheets. They are no longer “real world” and may mislead the students in what to expect in the field.
- Some courses such as S-390 require the use of many sets of forms. Rather than include all of them in the course materials, the instructor should order a sufficient quantity from the appropriate source of supply.

Black ink on white paper is the standard for most course materials. Colored pages are hard to copy (for the instructor) and are slightly more expensive to print. Tabs add to the cost but can help organize the material and make the instruction more efficient.

Every instructor guide must have one section at the beginning of the guide that clearly states instructor space, classroom requirements, and all other physical materials that are to be provided to the students. It should be specific as to how many of each item is needed and where they can be obtained. This information should be sufficient to put on the course and should not be duplicated within the instructional units. The PMS catalog contains much information about many of the items but should not be expected to list every item needed by the instructor.

2. Layout Requirements (text materials)

- a. Editorial Assistant. The person performing this task is **CRUCIAL** to the speedy and accurate completion of the development process and must be a member of the development team. Such a person must have competence in both the hardware and software used by NIFC Fire Training. Additionally, that person must be fully acquainted with the CD&FS. A list of major activities and coordination concerns for editorial assistants is found in Appendix E.
- b. Margins. Pages are to be typed on 8½ in. x 11 in. paper with a 1 in. margin on both sides (to allow room for binding) and 1 in. at the top and bottom of the page.
- c. Amount of copy per page. The standard page may be intermixed with figures, illustrations, and breaks for ease of reading and instructional purposes, therefore, no set number of lines per page is established.

Written material will be left justified only. This permits the text to be more easily read.

- d. Table, Figure, and Illustration Identification. Tables, figures, and illustrations will be provided with a number and title, e.g., "Table 3-2 MILITARY TIME," or "Illustration 4-1 FUEL MODEL 8." The first number in the designation will be that of the unit in which it is contained. If lessons are used within units, the first number (the unit) will be immediately followed by the letter of the lesson. The number following the hyphen will be the sequence within the unit/lesson. If the component is contained in reference material created by the developer, and the scheme of the reference work uses chapters instead of units, then the first number will indicate the chapter number. Each component must have a title as well as a number designation.

e. Page Numbers

Using the same font and size as the text (see 2.g., p. 2.5), each page will be numbered sequentially by course or component, ½ inch from the bottom of the page, with the exception of the cover, certification statement, and title sheets, which will not be numbered.

The preface and contents pages will be numbered using lower case Roman numerals (i, ii, iii, etc.). Arabic numerals will be used from the introduction through the index.

The appendixes (if present) will be numbered beginning with the first sheet, using the letter of the appendix plus the sequential page number within the appendix (e.g., A-1, A-2, B-1, etc.). However, if the material in the appendix is previously published material, use the existing page numbers and place a sheet in front of it as the first page of the appendix and number it using the letter of the appendix and the number 1.

Handouts, overhead transparencies, etc., designed for removal and reproduction are numbered using a different system (see Specifications for Aids, paragraph B.6.h. page 2.19).

Each unit and/or lesson, test, or exercise will begin on a new, odd-numbered page. Odd-numbered pages are always on the right side of the document (this is standard printing convention).

f. Line Spacing

Narrative materials such as introduction, preface, handouts, etc., will be single spaced, unless a specific reason is determined for double spacing.

g. Type Style

A type style should be selected that is easy to read. Printed material that is too small or too large tends to flow together and creates problems for the reader thereby reducing comprehension. Word processing should use a font with serifs that is a minimum of 10 points in size. Selection of font is critical to size. This document is printed in TIMES NEW ROMAN 14-point font. Other serif fonts may be used as long as they can be easily read, however, materials created in PowerPoint™ must use sans serif fonts.

h. Quotations and Reprints

The copyright Act of 1976, which became effective on January 1, 1978, is designed to protect the competitive advantage developed by an individual or organization as a result of their creativity. Infringements may result in litigation and can carry stiff penalties.

If quotations are used in course material, the source of that material must receive credit in a footnote or endnote and in the references.

NOTE: COPYRIGHTED MATERIAL REQUIRES WRITTEN PERMISSION FROM THE ORIGINAL SOURCE FOR REPRODUCTION. IT IS THE RESPONSIBILITY OF THE PROJECT LEADER OR STEERING GROUP TO ENSURE THAT SUCH PERMISSION IS SECURED PRIOR TO CERTIFICATION AND IS PLACED ON RECORD WITH THE NIFC FIRE TRAINING STANDARDS UNIT. SEE PAGES A-8 AND A-9 OF APPENDIX A FOR A SAMPLE "REQUEST TO USE COPYRIGHTED MATERIAL" LETTER.

3. Binding

The book used to describe binder standards is:

d'Agenais, Jean and Carruthers, John, 1985, *Creating Effective Manuals*, Chapter 7, South Western Publishing Co., Cincinnati, Ohio.

This reference provides ample diversity to meet the creative needs of most developers.

- a. The Instructor's/Course Administrator's Guide will be bound in a sturdy three-ring binder.
- b. A saddle-stitched, perfect (glued), or comb binding should be used for student materials and other course materials that are bound separately. A three-ring binder may be used if a saddle-stitched or perfect binding is impractical; cost factors involved in large-scale distribution should be given strong consideration (a three-ring binder costs considerably more than a saddle-stitch binding).
- c. The outer cover of the Instructor/Administrator Guide binder will be no lighter than 100-point stiff board covered with 20 mil or thicker black vinyl.
 - The front and spine of the binder must be covered on the outside by a clear vinyl overlay sealed along all edges but the top to form a pocket.
 - The front pocket on the binder will hold a full sheet cover and the spine pocket on the binder will hold a sheet of suitable dimensions. Master identification to include artwork of the binder will be produced on those sheets.

- d. A heavy cover stock, suitably color coded, will be used for Student Workbooks and other separately bound materials.
- e. NWCG certified course covers and spine insert sheets will be printed in black ink on 65-pound Vellum stock color-coded as follows:

<u>Curriculum</u>	<u>Color</u>
Dispatch	Pastel Blue
Fire Investigation	Orange
Incident Command Subsystem	Tan
Leadership	Yellow
Management	Teal
Prescribed Fire	Dark Green
Prevention	Light Gray
Suppression/Skills	Red

- f. Front (See Appendix A, page A-3)
 - Course title and number
 - Document designation (self-study text, programmed text, field guide, course administrator's guide, etc.)
 - Imposed illustration or design
 - NWCG logo (applied only upon certification)

- Month and year of certification (determined by the date of the most recent signature on the certification sheet)

Spine (See Appendix A, page A-4)

- NWCG Logo (applied only upon certification)
- Course Number
- Course Title

- B. Instructor Guide – for courses delivered by an instructor.
Course Administrator Guide – for self-paced courses.

Instructor guides are usually the most expensive of the components of any given course. This is because they contain all components of the course.

Instructor guides should contain a copy of all the student materials with the exception of separate publications such as the Fireline Handbook, etc. Pre-course materials should be produced and published separately so they can be ordered as a component to the other course materials.

In order to make packaging easier and less expensive, mixed media should not be included in the guide, e.g., slides and videos will not be put into the guide, but can be ordered separately. The guide will be published, if possible, in a single volume. All instructions and information required for course presentation and administration will be contained in it. This guide must be easily accessible and applicable for the purpose intended.

1. Certification Statement and Title Sheet

The signed NWCG Certification Statement, with a statement about the performance based qualifications system on its reverse, will be inserted as the first page of the document followed by the title sheet, which will contain the same information as the cover, excluding illustration and logo(s).

The reverse of the Title Sheet will contain information on how to order the publication. This is normally added by PMS when the material is sent to them for printing.

2. Preface

Information pertaining to how the course was developed, by whom, acknowledgments, and source (address) of further information about the package will appear in the preface. Acknowledgments will be limited to members of the Project Development Team (see page i).

3. Contents

This will include a listing of each topic in the guide (unit, glossary, bibliography, appendix), plus the title of each course component, if any, published under separate cover (such as student workbook, reference text, video, etc.).

4. Introduction

This section will include a general description of the course, its purpose, and the organizational level at which it should be implemented.

5. Course Instructions

It shall contain the following specific information on course presentation: student prerequisites; instructor, monitor, tutor, etc. prerequisites and responsibilities; space and classroom requirements; equipment needs; course and unit objectives;

testing and evaluation procedures; administrative requirements; time elements; discussion of presentation methods; and any other items on the presentation and administration of the course.

The NWCG Course Coordinator's Guide, PMS 907, NFES 2226, should be referenced for general information that applies to the coordination and presentation of all NWCG courses. Information contained in that guide should not be repeated in the instructor guide.

6. Lesson Outlines

If an instructor led presentation is to be included in any phase of the instruction, the guide will contain a lesson outline within that instructional unit.

Instructional units within the course will be organized as separate blocks that may be taught independently if necessary. Instructions unique to the unit will appear at the beginning of that unit.

- a. The first unit in the course will be the introductory unit (numbered 0) that will contain, as a minimum, the following:

An introduction of the instructor to the students.

An introduction of the students.

The purpose of the course.

The development background (optional) and method of presentation of the course.

Course objectives (also to be in student materials or available to students in handout form).

- b. Instructional units will be numbered with an Arabic numeral in the sequence in which they appear in the Instructor/Administrator Guide and will contain, as a minimum, the following:
- Any instructions required for presentation of the unit. Such instructions should not duplicate the course instructions for the entire course (see B5, p. 2.10) unless the unit is a totally separate package, but should be complete in regard to covering and emphasizing any instructions or points pertinent to that unit.
 - Unit objectives. These should be stated for the instructor's/administrator's benefit at the beginning of the unit and for presentation and discussion with the students. The student materials or other aids may be used for this purpose with page references.
 - An instructor's/administrator's copy of all exercises, problems, handouts, etc. (unless contained in instructor's/administrator's copy of the student materials). Each of these items, with the exception of tests and other evaluations, will be numbered using the same scheme as specified in B.6.h. on page 2.19, and will be placed at the end of the unit. Tests and other evaluations should be placed together in a separate appendix entitled "Evaluations."
 - Lessons (by title). It may be necessary to subdivide a unit into lessons for ease in scheduling, presenting material, and breaking out of material on specific topics. Lessons will be constructed in the same manner as units and will be identified with the unit designation (1, 2 ...etc. [Arabic, not Roman] and further with a capital letter, beginning with the capital letter "A" e.g., "Lesson 2A")

- A final examination. The final examination for each course will be separate. The exam and a separate answer key will be placed in the evaluations appendix.
- Scoring procedures and pass/fail recommendations shall be included for each evaluation.
- Detailed lesson outlines. The actual instructional material in a course, unit, or lesson is set forth in the detailed lesson outline (see pp. A-5 through A-7 for lesson outline format and an example). Lesson outlines will be in outline form identifying essential subjects that are to be presented. Instructors MUST be fully competent to deliver the material using the outline. They must also be able to enhance the outline by adding personal comments, amplifying minimal statements, and tailoring the information to local conditions and criteria. This is especially true for exercises and simulations. Instructor lesson outlines are not designed for use by instructors who are not SMEs in the subject material. The narrative form of the lesson is not to be used, as it will encourage the instructors to read from the lesson outline, which is very poor instructional process.

List in order at the top of the first page of the outline the following:

- COURSE – title and number.
- UNIT – number designation and title.
- LESSON (only if needed) – letter designation and title.
- TIME FRAME – for presenting the unit or lesson. This should be determined during the formative and summative evaluations.
- TRAINING AIDS NEEDED
- OBJECTIVE(S) – of the unit (lesson). This is a statement of the performance objective(s) being addressed by this unit (lesson) of instruction.

The outline is structured with two columns, one containing the presentation outline with space for notes required for presentation of various items, and the other for key AIDS & CUES.

It must begin by stating the instructional objectives addressed by that lesson and contain the basic technical content required by the instructor in outline form. See page A-5 for an outline structure.

It will also include all information and directions to the instructor describing or supporting instructor presentation techniques; e.g., “Present...,” “Discuss...,” “Exercise...,” “Question...” Directions to the instructor should be set off in large and small caps, and run the full width of the presentation column (but not into the AIDS & CUES column) as opposed to the technical

content, which appears in the regular case and outline form. Such directions are not to be presented to the students and are not to be included in student materials. They are for instructor use only. See page A-7 for an example of a lesson plan.

An alternate format would be to insert a page with these items just before the unit outline begins. Any additional Instructor References "IR" are to be added at the end of each unit (lesson).

Detailed technical information that may be required by the Instructor/Administrator for reference, further research, or broadening his/her own background will be included in the appendixes and/or listed in the references.

All references to handouts, electronic presentations, slides, student reference texts, job aids, videos, workbook exercises, etc., are to be located in the AIDS & CUES column at the point in the outline where they are to be used (see p. A-7).

- c. Tests. Testing devices are to be built into the course at various points where feedback is required and should occur at least once within each unit/lesson.
- These devices must be in a form that provides results quantifiable by individual students; i.e., the degree of learning for each student can be measured against the objectives for each particular segment of the course. (Although group exercises can be used for this purpose if they meet this standard, most exercises of this type are better suited as part of the learning experience than as part of the testing process.)

- Unit (lesson) tests with answers will be included in the Instructor/Administrator Guide.
 - The final examination and other final performance assessment instruments will be placed in an Evaluation appendix (Appendix B). Sufficient narration is to be provided so the instructor will be able to administer this test. The correct answers will be provided. The student version will be a handout designated "Final Examination."
- d. Course evaluations. Instructors will gather course evaluation data. Each course will contain an appropriate form for students to complete after the final examination. It will be included in the Evaluation appendix. Appendix B, pages B-15 and B-16, provides examples of such documents. Evaluative documents should be submitted in accordance with instructions in the Administrative Requirements section.

Instructors and administrators should document problems or recommendations regarding the presentation of NWCG courses. See the Training Course Evaluation on pages B-17 and B-18. **THIS FORM IS TO BE INCLUDED IN ALL COURSES.** The problems or recommendations may pertain to:

- Accuracy or inaccuracy of student responses based on a comparison of objectives with course performance test results.
- Technical inaccuracy or inadequacy (policy, procedures, state-of-the-art).
- Instructional inaccuracy or inadequacy (aids, testing devices, methods, etc.)

Problems or recommendations should be submitted to:

NIFC – Fire Training
Training Standards Unit
3833 South Development Avenue
Boise, Idaho 83705-5354

Email: nwcg_standards@nifc.blm.gov

The Training Standards Unit will keep all submissions of the Training Course Evaluation in an evaluation database for use by course developers at a later date. Issues that are identified as very important will be immediately addressed by the NWCG Development Unit Leader.

- e. References. All references utilized in developing the course plus sources for additional information should be listed.

In order to provide consistency and simplicity, references used in NWCG training course materials will be formatted and organized as shown below.

Book citations:

Author (last name first); date of publication; title of the book in italics (the principal words are capitalized); the page numbers referenced; publisher; publisher location. A book citation example would read:

Muhn, James and Hanson, R. Stuart, 1988,
Opportunity and Challenge, the Story of BLM, pp.
29-31, U.S. Department of the Interior, Bureau of
Land Management, Washington, D.C.

Periodical citations:

Author (last name first); date of publication; title of the articles in italics (the principal words are capitalized); the page numbers referenced, periodical title (with correct references to volume, number, and series); publisher; publisher location. A periodical example would read:

Reese, Herbert Harshman, 1917, *How to Select a Sound Horse*, pp. 1-26, Farmers' Bulletin, No. 779, U.S. Department of Agriculture, Washington, D.C.

Web citations:

An Internet example would read:

<http://www.doi.gov/>

- f. Appendixes. Lettered appendixes (A, B, C, etc.) will contain any information required but not found in other sections of the guide. Each type of aid (handout, 35mm slide, tape, etc.) will be included as a separate appendix together with a listing of the contents. Appendixes will appear in the following order:

Appendix A – Ordering Information

Appendix B – 35 mm Slide Thumbnails, Electronic Presentation Thumbnails, or Overhead Transparency Masters.

Appendix C – Student Workbook

Appendix D – Handout Masters

Appendix E – Evaluations

- g. Glossary. Do not repeat terms found in NFES 1832, "Glossary of Wildland Fire Terminology." If needed, a glossary appears following the appendixes, and will also be included in some section of the student materials.
- h. Specifications for aids used in the course.

All aids except items mass produced by private industry will be coded to facilitate handling and future reference. The number designation for each overhead transparency will appear in the lower right hand corner of the page as it is viewed by the observer. It will be placed $\frac{3}{4}$ in. up from the bottom edge and one in. in from the right edge of the paper. This location is good for easy reference, is out of the way, easy to file, and provides continuity.

If two or more lines are needed to designate multiple pages, the last line of the designation will be placed $\frac{3}{4}$ in. up from the bottom edge of the paper. Material will be coded as follows:

02-06-S270-SL

The first two characters refer to the unit number (i.e., from 01 through 99). The introductory unit would be designated with double zeroes (i.e., 00 – for courses). If lessons are used there will be three characters - the first two identifying the unit and the third the lesson within a unit. Lesson characters will be capital letters.

Example: 02B-06-S270-SL describes slide number six of Lesson B (the second lesson) of Unit 2 of course S-270.

For self-paced materials, the first two characters of the label should apply to the Section, Chapter, or other designation used to organize the instruction.

The next two digits refer to the sequential number of one type of aid within an instructional unit (lesson) of the course (i.e., 01 through 99).

The next letter and number combination refers to the course (S270). NOTE: There is no hyphen between the letter designator and the course number.

The next letters designate the type of aid and will be one of the following combinations:

CD	Compact Disc	IR	Instructor Reference
CP	Computer Disk	JA	Job Aid
DVD	Digital Video Disc	OT	Overhead Transparency
EP	Electronic Presentation	PB	Poster Board
EX	Exhibit	PTB	Position Task Book
FC	Flip Chart	RT	Reference Text
FG	Figure	SL	Slide (35 mm)
FR	Field Reference Guide	SR	Student Reference
HB	Handbook	SW	Student Workbook
HO	Handout	TB	Table
IL	Illustration	VT	Videotape

NOTE: If there is more than one page of an aid, such as an exhibit, flip chart, handout, or electronic presentation, then the designator will have an additional line that states "page X of Y pages." In this case the bottom line will be the specified distance up from the bottom edge of the page (see page 2.19).

- (1) Electronic presentation images such as PowerPoint™ or SlideShow™.

When electronic presentations are used instead of overhead transparencies, conform to the following criteria:

ELECTRONIC PRESENTATIONS MUST NOT BE USED AS A SUBSTITUTE FOR THE INSTRUCTOR'S LESSON PLAN!

- Numbering of electronic presentations is the same as described on page 2.19.
- Horizontal format usable space should not exceed 6 in. x 9 in. on an 8.5 in. x 11 in. page (slide equivalent area is 600 x 800 pixels).
- Length-to-width ratio should be 3:2.
- All information must be easily read from the back of a large classroom.
- Following are Recommended and Minimum sizes for text used in electronic presentations:

	<u>Recommended</u>	<u>Minimum</u>
Main Title	40-50 point	36 point
Body	Ave. 36 point	30 point
Bullets	30 point	26 point

There should be no more than eight lines of text per visual. Below is a good test of readability of a visual.

Create your text visual then print it on an 8½ in. x 11 in. sheet of paper. Tape it to the wall or hold it up and have a friend read it from eight feet away. If it can be read easily, then it can be read when it is projected.

- Use upper and lower case text (it's easier to read than CAPS).
- Use san-serif fonts like Arial and Helvetica.
- Be consistent with titles, text fonts, graphics, and the overall look of each unit.
 - Limit font usage to no more than three fonts per unit.
 - Limit special effects like animation, sound, or text art to one or two styles per unit (excessive use can distract from or trivialize your message).
 - Contrast text and background colors. (Colors should be extreme opposites of each other.)
 - Break up large blocks of text with graphics and white space for better readability.

- Get subject matter experts to review and approve the materials.
- Set up fonts and page numbering.
- Keep any graphic(s) under 1.5 MB per electronic presentation slide. Otherwise you will be waiting many seconds for your image to come into your presentation. Avoid inserting many graphics on one visual. If you have to group images, combine them in photo software first and save under 1.5 MB in size.
- Scan forms at 300 dpi and photos at 72 dpi then save as a TIFF or JPEG for best clarity in projection.
- Limit the contrast in background textures or patterns so they do not compete with your text message.

2) Overhead Transparencies

Overhead transparencies are not required to be a part of the course package if a CD with electronic presentation visuals is included as part of the course. Overhead transparencies can be printed from the electronic presentation file on the CD.

- Design of overhead transparencies should follow the criteria used for design of electronic presentation visuals.

- Overhead transparency masters will be printed one side only on 8½ in. x 11 in. bond paper. Copier produced materials are not acceptable as masters.
- Overhead transparencies will be in landscape (horizontal) format, except when the material being illustrated, such as a form, is in vertical format.
- Lettering on overhead transparency masters will conform to the same standards as the electronic presentation visuals. See (1) above.
- Because such material is generally designed for reproduction it will not be bound into the main document but will be inserted in separate appendix pockets at the end of the guide. The pockets will be 10 in. x 11 in. letter size, and vinyl plastic of medium weight.

(3) Handouts

Masters for handout material will be prepared in the same manner as overhead transparencies (See 2 above.) for insertion into an appropriately designated appendix pocket of the guide. Handouts will be designed for printing double-sided.

The number designation will follow the instructions outlined in “h. Specifications for aids used in the course” (page 2.19). Handouts with multiple pages will be so designated.

(4) 35mm Slides

- If slides are to be used, there should be a minimum of 10 per presentation.
- 35mm color slides of medium density are the standard required for reproduction of visuals to be produced in slide form.
- Only landscape (horizontal) format is acceptable.
- Slides will be packaged as a separate component of the course.
- Slides are to be numbered on the front and in the upper left hand corner of the slide mount when the image is inverted. This allows the slide number to be visible when used in a Carousel slide tray. Emulsion side must face the screen.

(5) Videotapes

Identification of need.

The need for videos is normally identified by the project leader and/or the development group. When this identification is made, the project leader will:

- Initiate the Media Project Request identifying the purpose of the video, its content, and how it will be used to support the course. A copy of the request can be found on pages A-10 and A-11 of Appendix A.

- Provide a copy of the plan to the Instructional Media Unit for assignment of a media specialist, obtain their input, and identify the scheduling for production.
- The project leader and the designated media specialist will work together to develop the storyboard, shot lists, proposed dates, or other information required for production. During production, the video will be reviewed and tested in the same manner as other visuals associated with the course, i.e., internal reviews, field reviews and test courses. Approval of the video will be inherent with the certification of the course.

When developing and/or evaluating a video training product, these items should be considered:

- Does the training video product state and meet the objectives as outlined in the storyboard?
- Does the storyboard accurately reflect policies and procedures of the task or position for which the training material is being developed?
- Does it meet safety, health, and E.E.O. considerations?
- Does the development and review committee have a good mix of interagency and geographical representation?

- Does it have appropriate representation of east-west-north-south fuel types, equipment, personnel, tactics, etc.?
- Does the videotape stand alone as a training product or is it a part of a course package? If it is part of a training package, it should be reviewed with the entire package. All information, rules, and procedures are sometimes impractical or impossible to incorporate into the videotape.
- Brand names of equipment, supplies, etc., should not be used. If unavoidable, a disclaimer should be included at the beginning of the product.
- **COPYRIGHTED MATERIAL NEEDS WRITTEN PERMISSION FROM THE ORIGINAL SOURCE FOR REPRODUCTION.** (See A.2.h, p. 2.5 for complete instructions.)

(6) Job Aid

A job aid is a storage place for information, other than memory, which is accessed in real time, on-the-job. It is written at a level of detail to minimize trial and error and reduce amounts of recall necessary. It can also give direction on when and how to perform a given job.

- i. Index. An index may be prepared for reference documents. Instructor/administrator guides and student workbooks do not require indexing.

C. Student Materials

1. Self-paced Instruction

a. The controlling medium (usually in text form) will include, at a minimum, the following:

- Certification Statement, title sheet, and preface. These contain the same basic information as the Instructor/Administrator Guide.
- Contents page. This is a listing of each significant component of the course and indicates the location of each.
- Introduction. This will contain the same basic information as the introduction found in the Instructor/Administrator Guide.
- Instructions to the student. These must thoroughly cover the use of each course component, sources of assistance, and administrative information. Training prerequisites, performance and instructional objectives, testing and evaluation procedures, equipment and materials needs, time elements, and related information should be contained in this section.
- Instructional information. This contains questions, exercises, and tests appropriate to the course design.
- References, glossary, and appendixes. This is the same basic information as found in the Instructor/Administrator Guide.

b. Supporting media should be identified as to course title and number and their use within the instruction.

2. Classroom Instruction

Student materials will be designed to include appropriate job aids, exercises, problems, etc., and any introductory material and course instructions. The intent and design of these materials may be to provide the student with an operational tool for both in-class and on-the-job use.

- Course, Unit and Lesson objectives will be included in the student materials or be available in handout form.
- All exercises and pages in the student materials must be numbered and keyed in the Instructor/Administrator Guide in the detailed lesson plan outline with directions to the instructor for presenting the material.
- Student materials should follow the layout and binding standards as established in A.2, on page 2.3 and be sequenced to follow the Instructor/Administrator Guide.
- An empty vinyl pocket should be bound into the inside back cover for insertion of handouts, notes, or other unpunched material by the student.

D. Pre-course Material

Some information may be organized into pre-course materials and be made available on the Internet or sent to students well in advance of course attendance. Appropriate criterion testing material should be included to assure mastery of the pre-course units. If a pre-course package is utilized, it should be packaged similar to handouts in an appropriate envelope, as an additional appendix or bound separately.

E. Other Materials

Textbooks, Fireline Handbooks, and other materials such as chart paper, markers, etc., that must be procured by the Instructor/Administrator will be discussed in the Course Instructions portion of the Instructor/Administrator Guide.

Information on how to order materials and sources for those materials, must be provided in that same section.

V. ELECTRONIC PUBLISHING

All NWCG training materials must be exportable to the Internet and transferable via compact disk (CD) to a printing contractor. Accordingly, when training materials are completed and ready for publishing, all files must be written onto a CD.

Four CDs must be created for publishing the final course materials. They include:

Instructor Files Publisher Files Cover CD Archive

- A. The Instructor Files CD will contain all **FINAL** course files prepared for publication in Acrobat PDF format.

Create a folder labeled “**instructor_files**” for the following files:

- READ_1st file
- Acrobat PDF file for the Instructor Guide (S355_ig.pdf)
- Acrobat PDF file for the Student Workbook (S355_sw.pdf)
- Acrobat PDF file for any reference guide(s) (S355_ref.pdf)
- ar405eng.exe – Adobe Acrobat 4.5 Freeware Reader file

Create a second folder on the Instructor Files CD labeled “**ep_files**” for all electronic presentation files. Include the following:

- PPT 2000 PowerPoint presentations named by unit number (S355_ep2.ppt)
- PowerPoint 97/2000 Freeware Viewer file (Pptview97.exe)

The Instructor Guide, Student Workbook, and Reference guides must be “Booked” in PageMaker prior to creating the Acrobat PDF files. Assembling multiple publications into a book associates them so you can work with them as a whole. Creating a book helps keep publication file sizes relatively small. This will also allow you to make one Acrobat PDF file for the Instructor Guide, Student Workbook, and any references. If any of these files are edited to include a change in file name, the book will also have to be edited. **The Acrobat PDF files will not be made until the course is in final format, certified, and ready for publication.**

The "READ_1st" file is the very first file that the user sees when opening the CD. It is located on the root (opening) directory of the CD. The READ_1st document will have instructions on how to use the files included on the CD. It should be prepared in a text editor (Notepad), or in a word processor (WordPerfect, MS Word) and then saved as ASCII DOS Text format. Attachment 1. (page 2.33) is an example of a READ_1st.txt file. *Be sure to modify the example to match the current course and file names.*

- B. The Publisher Files CD will consist of all the course PageMaker files and electronic presentation files. The publisher will print directly from these files.

Create a folder labeled "publisher_files." This folder will contain the following folders:

ig_files
sw_files
ref_guide

The Project Leader is responsible for verifying that ALL files can be successfully opened with no file corruption before the course materials are forwarded to the Technical Publications Editor.

- C. A separate Cover CD will consist of the following two artwork files. The Illustrator will create the cover and copy the files to this CD.

Jewel case art file in Adobe Illustrator (jewelart.ai)

CD label art file in Adobe Illustrator (cdlabel.ai)

NOTE: The CD cover, Instructor Guide, and Student Workbook should be similar in design.

- D. The Archive CD should include all the files included on the FINAL CDs for publishing (Instructor Files, Publisher Files, and CD Cover). It may also include all the workshop and test course files. The project leader will give the CDs to the Standards Unit for archiving.

Attachment 1: READ_1st File Example

USING THE CD-ROM

The CD-ROM contains the minimum materials needed to present S-355, Ground Support Unit Leader. This includes:

- S-355 Instructor's Guide (S355_ig.pdf)
- S-355 Student Workbook (S355_sw.pdf)
- All appendices including PowerPoint® presentation Files (ep_files)
- Adobe Acrobat 4.5 Freeware Reader file (ar405eng.exe)
- ArcExplorer freeware viewer file (for courses where maps are in ArcView format, ArcExplorer 1.1)
- Microsoft Freeware Viewer for PowerPoint 97/2000 (Ppview97.exe)

The files for the S-355 Instructor Guide and Student Workbook are in Adobe Acrobat format, and require the Adobe Acrobat Reader for viewing.

The S-355 Electronic Presentation Files (ep_files) are individual files by unit, and are named according to the convention "S355_ep(unit #).ppt. Therefore, Unit 1 PowerPoint slides are in the file named "S355_ep1.ppt." Unit 2 slides are in the file named "S355ep2.ppt" and so on. To view, display, or print these files, you must have at least the Microsoft freeware viewer for PowerPoint 97/2000.

If you have no way to project the PowerPoint files from the computer, you can use the freeware viewer to print the slides onto transparency material so that you can use a common overhead transparency projector. Run the viewer software and select the "Print" option.

As mentioned above, the CD-ROM includes Adobe Acrobat Reader for viewing the .pdf files, and the Microsoft freeware viewer for viewing, presenting, and printing the S-355 PowerPoint Presentation Files. (If you wish to add effects or otherwise edit the PowerPoint files, you will have to use the full version PowerPoint 97, or higher, software.) Both of these files are in compressed, self-exploding format; the Acrobat file is named "ar405eng.exe", and the PowerPoint viewer is "Ppview97.exe". These are also available for free download from the respective company's Internet home page, www.adobe.com and www.microsoft.com. For those courses including maps in ArcView format, the freeware viewer ArcExplorer is also included, "aeclient.exe". This is also available for free download from ESRI's web site, www.esri.com.

SOME HOME UNITS RESTRICT THEIR COMPUTER USERS' PRIVILEGES TO DOWNLOAD AND INSTALL SOFTWARE. BE SURE TO CHECK WITH YOUR LOCAL IRM USER SUPPORT PERSONNEL BEFORE INSTALLING VIEWERS!!!

To use any of the viewer programs:

1. Copy the appropriate file from the CD-ROM to your local hard drive, into the folder of your choice;
2. Place the mouse arrow on the file name (or icon) and double-click the left mouse button;
3. Follow the instructions as they come up in the Install Wizard.
4. After installation is complete, run the program as you would any other software, by double-clicking on the shortcut icon, or on the .exe file in My Computer or Windows Explorer.

Additional copies of course materials may be ordered by NFES number from the National Interagency Fire Center, Great Basin Cache Supply Office, 3833 S. Development Ave., Boise, ID 83705. Publications catalog can be accessed at www.nwccg.gov/pms/pubs/pubs.htm

VI. FILE NAMING AND DIRECTORY STRUCTURE

The first four characters shall be the course letter and number; e.g., S355, M410, D311.

The fifth character shall be an underscore (_). The following characters shall be as indicated.

INSTRUCTOR GUIDE

The *ig_files* folder will contain all the course and appendix PageMaker files. Files will be named as follows:
(We are using S355 for illustration purposes):

S355_igcover – Instructor Guide Cover
S355_igcert – NWCG Certification Statement
S355_igpref – Instructor Guide Preface
S355_igcont – Table of Contents
S355_igintro – Instructor Guide Introduction
S355_iginstr – Instructor Guide Course Instructions
S355_ig2 – Instructor Guide Lesson Plan
S355_igAppB – Appendix

The S-355 Instructor Guide Lesson Plan Files (*ig_files*) are individual files by unit and are named according to the convention “S355_ig(unit #)”. Therefore, Unit 1 Lesson Plan is in the file named “S355_ig1.” Unit 2 is in the file named “S355_ig2”, and so on. The same is true for appendixes except that appendixes use capital letters instead of numbers.

Within the *ig_files* folder, handouts will also be included and named as follows:

01-01-S355-HO

01 = (unit number), second 01 = (handout number), S355 = (course number), HO = (abbreviation for handout)

Instructor references can either be included within the unit or as a separate document. These files should remain under the *ig_files* folder and named as follows:

01-01-S355-IR

01 = (unit number), second 01 = (reference number), S355 = (course number), IR = (abbreviation for instructor reference)

STUDENT WORKBOOK

The *sw_files* folder will contain all the course PageMaker files relating to the student workbook. Files will be named as follows:

S355_*swcover* – cover
S355_*swpref* – preface
S355_*sw2* – unit number

REFERENCE GUIDE(S)

The *ref_guide* folder will contain all the course PageMaker files relating to all course references i.e., field guide, job aid, Files will be named as follows:

S355_*ref*

ELECTRONIC PRESENTATION

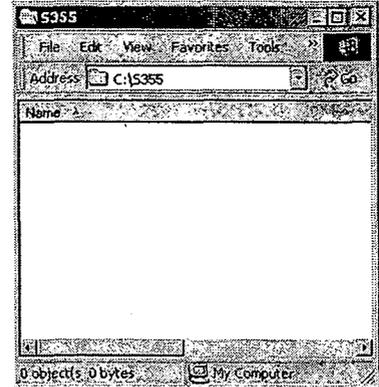
The *ep_files* folder will contain all the course PowerPoint files and be named by unit number:

S355_*ep2*

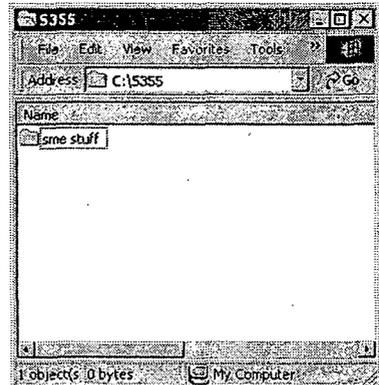
Note: File extensions which are the characters following the period in the filename are automatically added by the software. Usually it is not necessary to include the file extension when naming files within a specific program.

VII. FILE SYSTEM FOR NWCg COURSE DEVELOPMENT

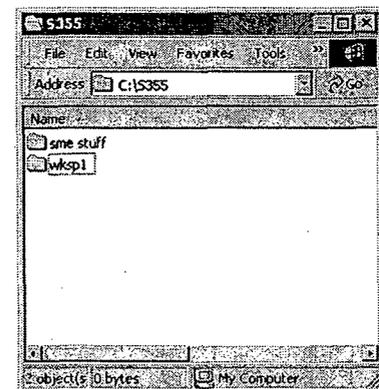
When beginning a new course, first make a folder with the course name. (We are using S-355 as an example in these instructions.)



Under the course folder make another folder to store the initial correspondence and other related materials related to the SMEs. The *sme stuff* will stay in the S355 root folder throughout the course development process.

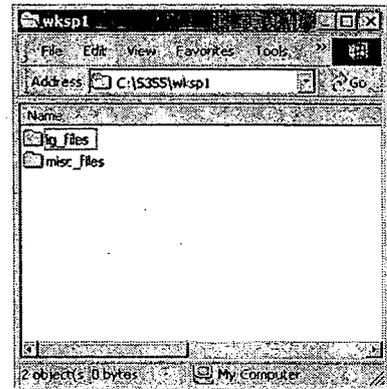


For the first workshop, add a folder and name it *wksp1*.



Then in the *wksp1* folder make two more folders and name them as follows:

- ig_files (instructor files)
- misc_files (original .tifs, tables, etc.)

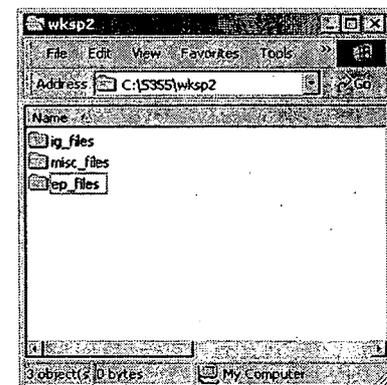


For the second workshop, make a new folder on the s355 root, call it *wksp2*. Before the workshop begins, copy the folders and their contents from *wksp1* into *wksp2*.

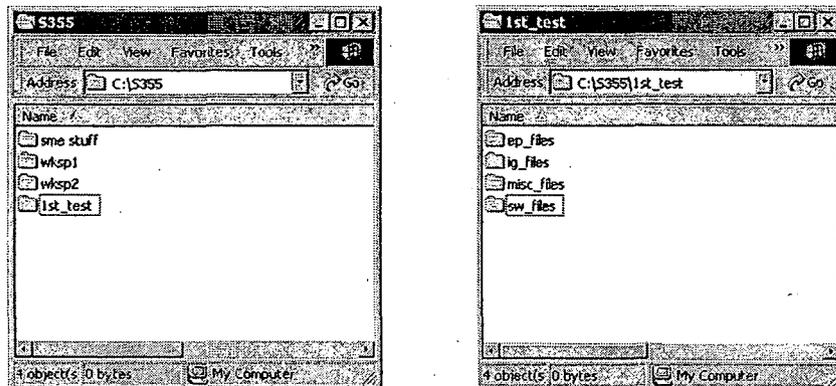


During the workshop, **make the revisions in the *wksp2* folder and do not edit *wksp1* files.** An electronic presentation file folder can be added if needed.

Continue with the same process if a *wksp3* folder is needed.



Next, make a 1st_test folder on the S355 root. Within the 1st_test folder, make the appropriate working folders.



Continue to make new folders for each succeeding revision needed for all workshops and test courses.

Make an *instructor_files* folder to include all the **FINAL** files that will be used to make the CD for publishing. Also make a *publisher_files* folder, which will contain the final PageMaker files, *CD_cover*, and an *Archive* folder. See Electronic Publishing for further instructions.

Copy the folders and files from the last revision into the appropriate *new* folder before making edits to ensure you always have a backup of your original files or access to previous revisions if needed.

A back-up copy of ALL course files can be copied to a CD or your designated folder on the U drive. They will become your archives when the course is completed.



VIII. WRITING STANDARDS

NWCG courses will be published for wide distribution and for purchase by all using agencies: federal, state, and private. As published documents they are subject to a thorough edit. This edit may require major modifications to the course text that can be avoided if developers adhere to standard writing practices. A very good, concise treatment of this subject can be found in *The Gregg Reference Manual* by William A. Sabin.

A. Proper outlining

1. The outline form will be used in the Instructor/Administrator Guide. Proper outlining must be learned and used if the documents are to be effective. See page A-5 for a sample outline structure.
2. The outline is a logical approach to clear thinking and includes three essential steps:
 - Segregation (of thoughts)
 - Coordination (of topics)
 - Subordination (of ideas)

B. Capitalization

All titles are printed in lower case except when they refer to a specific person. However, if the subject of the course is a specific position, that position title can be capitalized throughout the course.

Examples: "A strike team leader is a supervisor."
"Strike Team Leader Jones."

C. Rewriting for economy, clarity, and precision

1. A good writer always rereads written work and ruthlessly omits unnecessary words. Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences. A positive statement is more concise than a negative, and the active voice more concise than the passive.

ACTIVE VOICE – “The staff reviewed the safety plan.”

PASSIVE VOICE – “The safety plan was reviewed by the staff.”

2. Have the course read by others to find any ambiguous or unclear points.
3. **By economizing in writing, the copy will come alive, become clearer, and be of far more value.**

IX. REFERENCES

Mager, Robert F.

1997. *Preparing Instructional Objectives, Third Edition*. 193 pp. The Center for Effective Performance, Inc., Atlanta.

National Wildfire Coordinating Group.

1996. *Glossary of Wildland Fire Terminology*. 162 pp. For sale by the National Interagency Fire Center, Great Basin Cache Supply Office, 3833 S. Development Ave., Boise, ID 83705.

Sabin, William A.

2001. *The Gregg Reference Manual, Ninth Edition*. 610 pp. Glencoe Division, McGraw-Hill Book Company, New York.

Strunk, William, Jr. and E. B. White.

1972. *The Elements of Style, Second Edition*. Macmillan Company, New York.

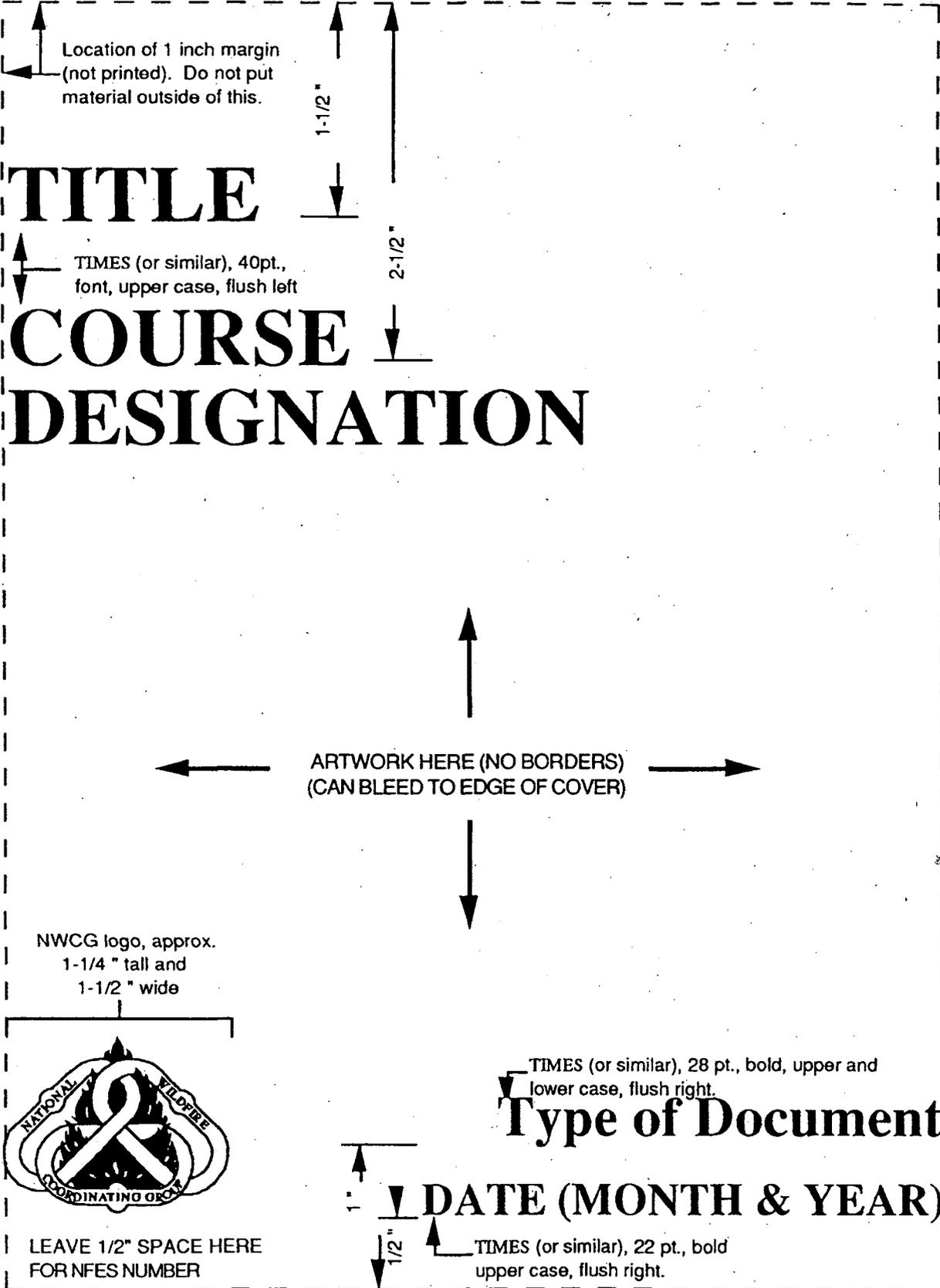
U.S. Government Printing Office.

2000. *U.S. Government Printing Office Style Manual*. 326 pp. For sale by the Superintendent of Documents, Washington, D.C.



APPENDIX A

FORMATS



Location of 1 inch margin
(not printed). Do not put
material outside of this.

TITLE

TIMES (or similar), 40pt.,
font, upper case, flush left

**COURSE
DESIGNATION**

ARTWORK HERE (NO BORDERS)
(CAN BLEED TO EDGE OF COVER)

NWCG logo, approx.
1-1/4 " tall and
1-1/2 " wide



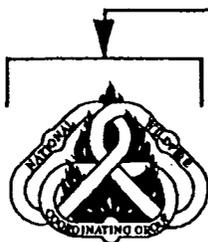
LEAVE 1/2" SPACE HERE
FOR NFES NUMBER

TIMES (or similar), 28 pt., bold, upper and
lower case, flush right.
Type of Document

DATE (MONTH & YEAR)

TIMES (or similar), 22 pt., bold
upper case, flush right.

SPECIFICATIONS FOR PRINTING SPINE



Width of spine insert to accommodate width of binder spine.

S-XXX

← Course designation

TITLE OF COURSE DOCUMENT

TIMES (or similar) font 24 point, bold centered on spine.

DETAILED LESSON OUTLINE

COURSE:

UNIT:

LESSON (Only if within a unit)

SUGGESTED TIME:

TRAINING AIDS:

OBJECTIVE(S):

OUTLINE	AIDS & CUES
<p>DIRECTIONS TO THE INSTRUCTOR ARE TO BE PRINTED IN EITHER ALL CAPITAL, OR LARGE AND SMALL CAPITAL LETTERS AND BLOCKED FROM THE LEFT MARGIN TO THE DIVISION LINE BETWEEN THE "OUTLINE" SECTION OF THE LESSON PLAN AND THE "AIDS & CUES" SECTION AS ILLUSTRATED HERE.</p> <p>The format of the outline will make use of Roman and Arabic numerals for identifying various sections and subdivisions. Most materials will require no more than four subdivisions. The hierarchy for identifying subdivisions is as shown below:</p> <p>I. (Primary division) A. (First subdivision) 1. (Second subdivision) a. (Third subdivision)</p> <p>Items that are to be considered, but the sequence of which is not important, may use bullets "•" as beginning characters. If there is a subdivision of unsequenced items listed under a bullet, then use a dash "-" as the beginning character.</p> <p>Example: • Unsequenced item - Subdivision under unsequenced bullet</p>	<p>See page 2.14 of the main document.</p>

OUTLINE

AIDS & CUES

COURSE: Firefighter Training, S-130
 UNIT: 9 - Scouting, Patrolling, and Communicating
 LESSON: A – Scouting and Patrolling
 SUGGESTED TIME: 30 minutes
 TRAINING AIDS:
 OBJECTIVES:

1. Describe four things to consider when acting as a lookout on a fire.
2. Describe four considerations when patrolling a fire.
3. Describe a systematic method of locating spot fires.

OUTLINE	AIDS & CUES
<p style="text-align: center; font-size: 2em; opacity: 0.5;">SAMPLE</p> <p>PRESENT LESSON OBJECTIVES AND DISCUSS THEM</p> <p>I. Introduction</p> <p>A. As a member of a fire crew, you may be called upon to:</p> <ol style="list-style-type: none"> 1. Be a <u>Lookout</u> for the crew or individuals, to determine hazardous situations. 	<p>9A-01-S130-OT</p> <p>Fireline HB p. 45</p>

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
NATIONAL INTERAGENCY FIRE CENTER
3833 SOUTH DEVELOPMENT AVENUE
BOISE, IDAHO 83705-5354

in reply refer to

Date

Name and address of holder of the copyrighted material

Dear _____:

The National Interagency Fire Center, under charter to the National Wildfire Coordinating Group, is preparing materials to train wildfire personnel.

The materials are entitled:

"Name of training materials and number assigned to them"

You hold the copyright to the publication entitled:

"Name of the publication from which you wish to use material"

We wish permission to use (*insert the description of the materials you wish to have permission to use, including edition number, page, or pages, and/or illustration, figure, table, or chart designation*) in these training materials.

The materials will be duplicated and distributed to those organizations needing them. Those who receive materials will be charged only for the actual cost of duplication.

The National Interagency Fire Center and the National Wildfire Coordinating Group will give specific credit for this information in the training materials in which they are included.

Please advise us of any additional requirements to give us permission to use the information we requested.

Please contact the following individual for further information, or answers to any questions you may have.

Name of project leader, or steering group chairperson

Address

Telephone and/or FAX number(s)

Thank you for your attention to this matter.

Sincerely,

SAMPLE

INSTRUCTIONAL MEDIA
Project Request

Project Name _____ Date _____

Requested by _____ Date _____

Date Required _____ Budget Code _____

Type of Project (please check one)

Graphics _____ Animation _____ Video _____ Still Photo _____

Purpose of the project:

What do you want the audience to know?

What do you want the audience to do?

Project approach (lecture, information, script...)

If this is an unscheduled program, explain how it affects already scheduled programs.

Estimated time required to produce this project.

List staff required to produce this project.

Is a content specialist (SME) available? If so, who is it?

Who will develop the storyboard?

Who will approve the storyboard?

Identify existing resources

Is travel necessary?

Comment:

Please initial:

Instructional Media Team Leader _____

Development Team Leader _____

NIFC Fire Training Leader _____



APPENDIX B
REVIEWER GUIDE AND EVALUATIONS



**NATIONAL INTERAGENCY FIRE CENTER, FIRE TRAINING
NWCG Development Unit
3833 S. Development Avenue
Boise, ID 83705-5354**

Date

Memorandum

To: *Course Name, Reviewers*

From: *Name, Project Leader*

Subject: *Course Name, Review*

I am requesting your assistance with the review of the enclosed course. You have been selected as a field reviewer because of your interest and expertise in the course subject matter.

The field review process is a critical step in the course revision cycle. The review provides additional input by subject matter experts outside the development group, which helps to validate course content for final testing. Please review this course to ensure all relevant topics have been covered and are technically correct. Please focus on content and allow our staff to review the course for editorial format, punctuation, spelling and grammar corrections.

Please review the instructions in the enclosed Reviewer Guide, and use it to document your content related comments. Please return the Reviewer Guide directly to me at the above address **no later than *Date***. Do not return the Instructor Guide; it is draft material and will be invalid upon certification of the course.

If you have any questions I can be reached at *Phone number and email address*.



NATIONAL WILDFIRE COORDINATING GROUP

REVIEWER GUIDE

FOR

REVIEW OF

Course Number and Name

Reviewer:

Name:

Position/Title:

Agency/Address:

Submit reviews to:

**National Interagency Fire Center
Fire Training, NWCG Development Unit
Attn: (Project Leader)
3833 South Development Avenue
Boise, Idaho 83705-5354**

**Telephone number
E-mail address**

Reviews are due by Date



Course Development Background:

Explain the overall course objective. What does this course accomplish?

Example: Smoke Management Techniques is a 32 hour course designed to provide land managers with the knowledge to manage smoke and reduce its impact on public health and welfare.

Describe the Course Design:

Example: The intent of the revision group is to involve students in an interactive learning experience that will help them in their daily jobs. The course consists of lecture, group discussion, hands on exercises and a panel discussion with local experts.

There is flexibility built into the course so instructors can customize lessons to address specific regional issues. For example, specific modeling software is not taught in the section on Smoke Emissions and Dispersion Modeling. An overview of different models and their application is presented. Instructors are encouraged to teach specific software if that is the regional standard.

This version was tested in Grand Rapids, Minnesota in February, 2003. Overall, students had high marks on the material and felt it was a valuable learning experience.

Minor changes have been made that are not reflected here. For example, some PowerPoint slides have been changed and we have added a formal exercise using the "smoke plotter" tool.

Other information that would help a field reviewer...

Example: Identify specific areas of concern such as; is the target audience correct?

Please answer the following questions:

A. Materials design (enter narrative comments identifying problems and state changes required).

1. **Completeness:** Does the course contain all information and materials necessary for presentation or provide a source for obtaining those items necessary?

Yes No

Comments:

2. **Clarity:** Are the materials clear regarding their proper utilization, and are they effective in assisting instructors in presenting the course, and students in learning the materials?

Yes No

Comments:

3. **Other comments:** (To be entered at the discretion of the reviewer).

B. **Overall reaction:** (Enter in narrative form your general feelings and impressions of the course you have reviewed).

C. **Check one of the following statements:**

_____ I recommend that this course, in its present form, be certified as a standard NWCG course.

_____ I recommend that this course be certified; however, minor changes will be required in the next printing.

_____ I recommend that this course not be certified at this time. Major changes are required in the course, and are identified here, and additional review will be necessary prior to certification.

_____ I recommend that this course not be certified. Complete revision would be required before additional reviews would be possible.

D. **Technical accuracy.** (Enter specific comments in the following form identifying where in the material a change is needed; why it is needed; on what source of information the comment is based; and what change should be made.)

Is the technical content of the package accurate and clearly defined? (Add additional copies of comment sheets if necessary.)

Yes No

The form on pages B-15 and B-16 can be used by course coordinators, lead instructors, or unit instructors to have students evaluate instructional process and effectiveness. It is used to evaluate an entire course.

Another form to be used by the course coordinator and/or lead instructor (only) for evaluating a course can be found on pages B-17 and B-18.

STUDENT FINAL COURSE EVALUATION

Course Name and Number: _____

Date: _____ Location: _____

Check the response that best reflects your opinion. If you have specific input on the course's strengths or improvement opportunities, provide comments in the Remarks section.

This Course

Remarks:

- Exceeded my expectations
- Fulfilled my expectations
- Failed to meet my needs

Course Time Allocated

Remarks:

- Appropriate
- Took too much time (should be shorter)
- Insufficient (needed to be longer)

Level of Instruction

Remarks:

- Appropriate
- Too basic
- Too advanced

Instructor Presentations

Remarks:

(Consider objectives met, clarity of instruction, enthusiasm, training aids, exercises, methods used)

- Excellent
- Good
- Satisfactory
- Unsatisfactory

Course Materials

(Consider usefulness of texts, exercises, handouts, and reference materials)

Remarks:

- Excellent
- Good
- Satisfactory
- Unsatisfactory

Classroom and Breakout Room

(Consider lighting, temperature, cleanliness, furnishings, equipment, distractions)

Remarks:

- Excellent
- Good
- Satisfactory
- Unsatisfactory

Correspondence and Guidance

(Consider timing of pre-course materials and information provided concerning travel, lodging, and logistics)

Remarks:

- Excellent
- Good
- Satisfactory
- Unsatisfactory

What did you like MOST about this course?

What did you like LEAST about this course?

Recommendations for improving this course (be specific):

Name (optional):

TRAINING COURSE EVALUATION

(To be completed by the course coordinator and/or lead instructor)

The National Interagency Fire Center (NIFC) Fire Training organization is interested in obtaining your candid evaluation of the various factors of this NWCG course. Your evaluation of the factors listed below and any other constructive suggestions will be valuable guides for improving the course. Comments associated with specific cadres, locations and facilities should be forwarded to the course coordinator, not to NIFC Fire Training.

Course: _____ **Location Presented:** _____

Your Name: _____ **Dates Presented:** _____

Course Related Material (understandability, completeness, technical errors).
Consider any or all of the following:

- | | |
|-----------------------------|---------------------------|
| 1. Pre-course work/pre-test | 7. Quizzes/tests |
| 2. Objectives | 8. Exercises/scenarios |
| 3. Instructor materials | 9. Simulations/field work |
| 4. Student workbook | 10. Group interaction |
| 5. Handouts | 11. Time allotted |
| 6. Audio/video aids | |

Comments:

Please give us your feedback on any or all of the following:

- Did the lecture follow the student workbook?
- What percent of the materials was new to you?
- Were the course materials relevant to the associated position?
- What aspects of the course did you find most valuable?
- What aspects of the course did you feel needed to be strengthened?
- Did the course meet or exceed your expectations?
- Were unit and course objectives met?
- When the course is re-written, would you be interested in participating?

Comments:

Please return this form to:

nwcg_standards@nifc.blm.gov

or

National Interagency Fire Center
Fire Training
Training Standards Unit
3833 South Development Avenue
Boise, Idaho 83705

APPENDIX C

DESIGN AND DEVELOPMENT OF TEST QUESTIONS

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Design and Development of Testing Questions

I. Criteria, Definitions, Purpose and Size

The following information concentrates on the traditional one-best-answer format.

A. Purposes of Testing

- Communicate to students what material is important.
- Motivate students to study.
- Identify areas of deficiency in need of remediation or further learning.
- Determine final grades or make qualification decisions.
- Identify areas where the course/curriculum is weak.

B. What Should Be Tested?

- Exam content should match course objectives.
- Important topics should be weighted more heavily than less important topics.
- The testing time devoted to each topic should reflect the relative importance of the topic.
- The sample of test questions should be representative of the instructional goals.

C. Good Test Questions Must Satisfy Two Basic Criteria.

First, the test question must address important content. Test questions that attempt to assess critically important topics cannot do so unless they are well structured.

Second, the test question must avoid flaws that benefit the testwise student and avoid irrelevant difficulty to generate valid scores.

Test questions should be constructed with a clearly formulated task, so that a correct response indicates that the student has achieved the learning objective and any incorrect response provides information about the student's additional training needs.

D. Components of Test Questions

Test questions are composed of two parts, the "stem" and the "options." The stem provides the essential information and poses a clear and unambiguous question. The options are the choices provided from which the student selects the correct answer.

The options are also composed of two parts; the correct answer and the distracters or incorrect answers.

E. How to Assess the Quality of the Test.

The primary consideration of the course and the test should be to provide direction for student learning. Design test questions, scenarios, and exercises to assess the student's understanding of the subject matter. All test questions should be directly linked to one or more of the course/unit objectives.

The use of a hands-on performance test requires the students to get out of the classroom or library and into the field, where they can obtain experience in a realistic setting and seek help with their skills.

The use of written tests in the classroom is required to assess whether the student has obtained written and oral information for later use in an actual situation.

Tests should be clearly and accurately written so that the grade given to the student is equitable, reliable, and independent of the person grading the exam.

Test results must be reasonably reproducible (precise, reliable) and accurate (valid).

F. How Large (Number of Questions or Exercises) Should a Test Be?

Performance on the test provides a basis for estimating the student's ability for achievement in the broader domain, on a wildland fire or other incident. It's this estimate of performance that is actually of interest.

The amount of attention given to evaluating something should reflect its relative importance. Tests should be constructed to reflect this relative importance.

If the test size (number of questions or exercises) is too small, exam results may not be stable enough to ensure that they reflect true ability.

Students need to be tested across a range of skills, because performance on one skill is not a very good predictor of performance on other skills. Students also need to be tested by a variety of questions and/or exercises to minimize the effects of test difficulty or ease. No one method is likely to assess all the skills of interest.

A "bank" of questions (three to five questions) should be developed for each learning objective and key instructional point. This will provide better security of the exams, provide a variety of question choices to the instructor for assembling exams, and ensure that there is no misunderstanding of the information by the student due to the wording of a particular question.

II. The Basic Rules for One-Best-Answer Questions

- A. Each test question should focus on an important concept or application of knowledge, such as a common or potentially serious problem. Don't waste testing time with questions assessing knowledge of trivial facts. Focus on problems that would be encountered in real life. Focus test questions on key concepts and principles that are essential information for all students to understand. Avoid trivial, "tricky," inappropriate, or overly complex questions.

The same learning objectives that guide problem development and use can also guide test development, but test questions should not be an exact repeat of the objectives.

Questions should focus on specific tasks that the successful student must be able to undertake at the next stage of training. For each topic, the areas in which mistakes are commonly made should be the focus of a question.

It is appropriate to use reference materials to provide information in a test question if, in real life, someone would be likely to refer to a reference source to obtain the information. However, you should not just ask questions that require students to simply look up information in the material provided, unless the objective is to teach how to use the material.

- B. The stem must pose a clear question, and it should be possible to arrive at an answer with the options covered.

An appropriately shaped test question includes as much of the related or critical information as possible in the stem; the stem should be relatively long and the options should be relatively short.

The stem should include all relevant facts; no additional data should be provided in the options.

To determine if the question is focused, cover up the options and see if the question is clear and if the students can pose an answer based only on the stem. Rewrite stem and/or options if they could not.

When writing “true or false” questions, make sure that the options are 100% true or false; no shades of gray are permissible. Stems must be clear and unambiguous. Imprecise phrases such as “is associated with”; “is useful for”; “is important” and words that provide cueing such as “may” or “could be”; and vague terms such as “usually” or “frequently” should be avoided. There should be no need for the student to have to guess what the writer had in mind. The use of true/false questions is not recommended.

“Matching” questions are just “multi-choice” questions organized into sets that use one list of options for all the questions in the set. A well-constructed matching set of questions includes four components:

- a theme
- an option list
- a lead-in statement
- at least two question stems

The stem should focus on important concepts rather than trivial facts, avoiding “tricky” or overly complex information.

The test question stem should contain all necessary information but also be as short as possible, avoiding verbosity (i.e., extra words), “window dressing” (i.e., extraneous material), and “red herrings” (i.e., information designed to mislead the student).

Avoid using absolutes such as “always,” “never,” and “all” in the options. Also avoid vague terms such as “Usually,” “rarely,” and “frequently.”

Avoid using negatively phrased stems and options such as: “Each of the following is correct EXCEPT” or “Which of the following statements is NOT correct?” If you must use a negative stem, use only short (preferably single word) options.

- C. All distracters (i.e., incorrect options) should be homogeneous. Each distracter should be plausible and none should stand out as being obviously incorrect. They should fall into the same category as the correct answer (e.g., all fuel models, resources, forms). Common misconceptions and faulty reasoning provide a good source of plausible distracters. Rewrite any dissimilar distracters.

Distracters directly affect the difficulty of a question. Consider the following question.

Who was the primary author of the Declaration of Independence?

- A. Abraham Lincoln
- B. Thomas Jefferson
- C. Franklin Roosevelt
- D. King George II
- E. Katherine the Great

In the example above, the options are quite divergent and Thomas Jefferson is easily identified as the correct answer. Someone who knows relatively little about American history could answer this correctly. Now consider the same question with a different set of options.

Who was the primary author of the Declaration of Independence?

- A. George Washington
- B. Thomas Jefferson
- C. Alexander Hamilton
- D. Benjamin Franklin
- E. James Madison

In this example, the question becomes more difficult; the options are all plausible answers to someone who has limited knowledge.

All distracters should be:

- incorrect or inferior to the correct answer.
- plausible and attractive to the uninformed.
- grammatically consistent and logically compatible with the stem.
- similar in length and construction to the correct answer.

Avoid using “double options” (e.g., do W and X; do Y because of Z) unless the correct answer and all distracters are double options. Rewrite double options to focus on a single point.

All options should be in logical order (e.g., numeric), or in alphabetical order.

Following tradition, for true/false questions, the options are numbered; for one-best-answer test questions, the options are lettered.

- D. Each test question should require application of knowledge, not just recall of an isolated fact. This allows for the assessment of both the student's information base plus their ability to use that information.

Vignettes (situation outlines/setup, or scenarios) provide a good basis for such questions. They are designed to reflect "real life tasks" by challenging students to first identify the findings that are important and then integrate those findings into a sizeup or management action.

Each should begin by presenting the problem, followed by the history including such information as sizeup, initial attack activities, and fire behavior predictions. These problem based questions test material that is relevant to learning critical concepts and principles. It could even be possible to develop a series of questions based on each vignette.

Such test questions often require multiple steps in the thinking process and tend to have fewer technical flaws.

Use of vignettes (situation outlines/setup, or scenarios) to assess application of knowledge has several benefits.

- First, the "face validity" of the exam is greatly enhanced by using "problem-solving" test questions.
- Second, test questions are more likely to focus on important information, rather than trivia.
- Third, it helps to identify those students who have memorized a substantial body of factual information, but are unable to use that information effectively.

The following pair of item stems illustrates the difference between a question assessing recall of an isolated fact and a question assessing application of knowledge.

Recall Item Stem:

What is the most common cause of fire?

Application of Knowledge Item Stem:

A camper reported a fire that she encountered while hiking. The fire is... (describe characteristics of the fire, the setting, recent weather, and other commonly used fire cause determination factors). What is the most likely cause of this fire?

- E. Avoid technical test question flaws that provide special benefit to test-wise students or that pose irrelevant difficulty. One strategy for coping with this problem is to adopt a “team approach” to preparation of test material.

Issues Related to Testwiseness

Testwiseness is the ability of some students to answer questions correctly, based on their test-taking skills alone.

- Grammatical cues -

Because a test question writer tends to pay more attention to the correct answer than to the distracters, grammatical errors are more likely to occur in the distracters. A test-wise student would eliminate options that do not follow grammatically or logically from the stem.

Careful editing will prevent providing hints, or even complete answers, to some questions in the stems and answers to earlier or later questions.

- Absolute terms - terms such as “always” or “never” are in some options.

The test-wise student will eliminate absolute options because they are less likely to be true than something stated less absolutely. Note that this flaw would not arise if the stem was focused and the options were short; it arises only when verbs are included in the options rather than in the lead-in.

- Long correct answer -

The correct answer is longer, more specific, or more complete than other options.

Test question writers tend to pay more attention to the correct answer than to the distracters, which can make the correct answer a paragraph in length while distracters are single words.

- Word repeats -

A word or phrase is included in the stem and in the correct answer. For example, the test question uses the word “unreal” in the stem, and “derealization” is the correct answer.

- Convergence strategy -

The correct answer includes the most elements in common with the other options. In numeric options, the correct answer is more often the middle than an extreme value. In double options (see example below), the correct answer is more likely to be the option that has the most elements in common with the other distracters.

For example, if the options are “Pencil and pen”, “Pencil and highlighter”, “Pencil and crayon”, “Pen and marker,” the correct answer is likely to be “Pencil and pen” (i.e., by simple count, “Pencil” appeared three times in the options, “Pen” appeared twice, other elements each appeared only once). While this might seem ridiculous, this flaw occurs because test question writers start with the correct answer and write permutations of the correct answer as the distractors. The correct answer is, therefore, more likely to have elements in common with the rest of the options.

Issues Related to Irrelevant Difficulty

- Options are long, complicated, or double.

This can shift what is measured by a test question from content knowledge to reading speed. It should be noted that this flaw relates only to options. There are many well-constructed test questions that include a long stem. Decisions about stem length should be made in accord with the purpose of the test question. The purpose of the question may be to assess whether or not the student can interpret and synthesize information.

- Numeric data are not stated consistently.

When numeric options are used, the options should be listed in numeric order and the options should be listed in a single format (i.e., as single terms or as ranges). Confusion occurs when formats are mixed and when the options are listed in an illogical order or in an inconsistent format.

In the example below, options A, B, and C are expressed as ranges, whereas, options D and E are specific percentages. All options should be expressed as ranges or as specific percentages; mixing them is ill advised. In addition, the range of option C includes options D and E, which almost certainly rules out options D and E as correct answers.

Based on the average voting statistics, how many people are expected to vote in the next presidential election?

- A. Less than 20%
- B. 20 to 30%
- C. Greater than 50%
- D. 90%
- E. 75%

Terms in the options are vague.

Avoid using vague terms such as “usually,” “rarely,” and “frequently.” For example,

Fires occur in Nevada:

- A. frequently
- B. usually
- C. often
- D. commonly

The only way to make this test question more ambiguous would be to use a fifth option “none of the above.”

Language in the options is not parallel. For example,

Which of the following statements concerning these results is correct?

- A. No conclusion can be drawn, since no follow-up was made.
- B. The number of cases is too small for statistically meaningful conclusions.
- C. No conclusions can be drawn because the trial involved only one fuel model.
- D. Coverage is calculated as 85%.

This test question illustrates a common flaw in which the options are long and the language makes it difficult and time-consuming to determine which is the most correct. Generally, this flaw can be corrected by careful editing. In this particular question, the lead-in and the options can be changed to:

For which of the following reasons can no conclusion be drawn from these data?

- A. No follow-up was made.
- B. The number of cases was too small.
- C. The trial involved only one fuel model.
- D. 85% of the fuel type was not treated.

- Options are in a non-logical order.

All options should be in logical order (e.g., numeric), or in alphabetical order.

- “None of the above” is used as an option.

The phrase “none of the above” is problematic in test questions where judgment is involved and where the options are not absolutely true or false, because students can generally construct an option that is more correct than the one you have intended to be correct. Use of “none of the above” essentially turns the question into a true/false question.

If “none of the above” is used in a particular type of question, it should be used in “all” questions of that type.

- Stems are tricky or unnecessarily complicated.

Sometimes, test question writers can take a perfectly easy question and turn it into something so complex that many students may not even read it.

- The answer to a test question is “hinged” to the answer of a related question.

Avoid creating questions where students must know the answer to one question in order to answer other questions, or where the answer to one question helps provide the answer to another question.

III. Summary

Subject each question to the five “tests” implied by the above rules (II, A-E). If a question passes all five, it is probably well phrased and focused on an appropriate topic.

A bank of questions (for each objective) should be created to facilitate random generation of tests.

It seems important to have test questions reviewed by other members of your own department. It is likely to be informative to have test questions reviewed by faculty members outside your department.

Test Application

As mentioned above, the developers are charged with creating a bank of questions, when creating web based training materials, for each objective. Direction given by the NWCG Training Working Team is that there be a minimum of three questions created for each instructional objective and key point.

There are two ways in which this bank of questions can be utilized: 1. By creating three different tests which are used with no set pattern, and 2. By utilizing software that will generate tests randomly using questions from the bank.

Both methods can achieve the developer’s goals, the first being the simplest. The second will require extensive organization of the bank of questions so all objectives, as a minimum, are represented in the generated tests. However, the second method is the more secure of the two.



APPENDIX D
COMMON WRITING ERRORS

COMMON WRITING ERRORS

I. USAGE

- A. Principle, principal. The al ending is always the adjective, unless used in reference to the head of a school. Principle is a noun and is one of those fine things we live by.
- B. Effect, affect. Affect is a verb, meaning to have an influence. Effect can be either a verb meaning to make something happen or a noun describing results of an action.
- C. Presently, currently. The writer must distinguish between his desire to mean now; i.e., the immediate future, or soon; i.e., the near future. Presently means the near future, currently means the immediate, past, and future.
- D. Between, among. Use between when two things are being cited, among when there is interaction of three or more things. "The decision rests among the U.S. Senators." "The argument is between the two agencies."
- E. Oral vs. verbal. Verbal means consisting of words, in either writing or speech. Oral means by mouth out loud. Thus, to give instructions verbally could mean in writing or by speech; to give them orally would mean by speech only.

II. GRAMMAR

- A. Dangling participles. Be aware that any time a participle is used, it must modify something: "After eating our lunch, the bus departed." Eating in this sentence modifies bus, but it's obvious that the bus did not eat each lunch. "After eating our lunch, we departed on the bus" would be correct.
- B. Verb/subject agreement. This error has been far too common among course outlines. Careful writing and clear sentence structure are the only cures.

- C. Run-on sentences. These are nemeses left over from grammar school. The careful writer knows that sentences are complete thoughts, either by themselves or connected by conjunctions. If your thinking is clear and concise, the problem will be self-solving.
- D. Comma faults (and/or comma splices.) A writer can avoid these problems by following some reliable reference. The GPO Style Manual should be used as a guide to comply with standard government rules on use of commas in a series.

A comma is needed before a conjunction introducing an independent clause, but independent clauses should not be joined by a comma (in the latter case, use a semicolon or a period.)

III. SYNTAX

Webster's New Collegiate Dictionary defines syntax as:

"The way in which words are put together to form phrases, clauses, or sentences. A connected or orderly system, harmonious arrangement of parts or elements."

Some common errors of syntax are:

- A. Because of, due to. If due to is used in a sentence, some thing; i.e., noun, not a verb, must be due to. Example: "The dog was barking due to the burglar." Ask: What was due to? The barking, but barking here is part of the verb. The sentence should read, "The dog was barking because of the burglar" or "The dog's barking was due to the burglar." Substituting because of for due to will usually keep the writer out of trouble.
- B. Based on, on the basis of. Again, some thing must be based on. Using on the basis of is the safer course.
- C. Nature of. Webster's defines nature as the essence of inherit character of a person or thing. To say "the nature of the budget" is to ascribe a soulful quality to monetary matters, a characteristic only a CPA might agree with. Usually nature of can be deleted and the meaning remain clear; if not, try substituting type, characteristic, or kind.

- D. Parallel Structure. William Strunk, Jr. in his book *Elements of Style* refers to this problem and advises:

“Express Coordinate Ideas in Similar Form.”

The principle of parallel construction requires that expressions similar in content and function be outwardly similar. The likeness of form enables the reader to recognize more readily the likeness of content and function. The Beatitudes, familiar to many, exemplify the virtue of parallel construction.

IV. SPELLING

- A. -ible, -able endings. If not sure of adjectival endings, use a dictionary. Feasible, not feasable; accessible, not accessable.
- B. -ur, -er endings. Check a dictionary to determine whether or not the r is doubled. Preferred; insured.
- C. -iar endings. If not sure of endings, check a dictionary. Familiar. Similar not similiar.

V. LATIN ABBREVIATIONS

e.g., i.e. i.e. means id est, or that is, and would refer to something specific, the one and only. E.g. means exempli gratia, or for example, and is used when one or more examples are used. These abbreviations are not interchangeable and should be used correctly in order not to confuse the reader.



APPENDIX E
CHECKLISTS

PROJECT LEADER/STEERING GROUP CHAIRPERSON

CHECKLIST OF ACTIVITIES

Steering groups and project leaders are designated positions to ensure that standards are met throughout the development process. For some development projects there will be a steering group and a project leader designated. For other projects there will be a project leader designated (see I.C.2. page 1.2).

The items on this checklist must be accomplished by one or both of these positions. The specific duties of each position should be specifically addressed in the project development charter.

Project Development Charter:

Each development project should have a written charter. The Project Leader/Steering Group Chairperson (PL/SGC) should ensure that a charter is developed before accepting responsibility for the development project. Items set forth in the charter should include:

- Name of organization authorizing the development of the project.
- Name of organization (unit or agency) responsible for development.
- What group or person has approval authority for video storyboards, videotapes, and other specialized presentation media.
- Identification or affirmation of the goals of the project.
- Identification of criteria affecting successful completion of the project. Such criteria include, but are not limited to:
 - Distribution
 - Review responsibilities
 - Deadlines
 - Restrictions

- Determination of available resources
 - Personnel
 - Finances
 - Facilities
 - Supplies
- Establishment of target dates (time frames) for completion.

PL/SGC activities associated with project development

When preparing to brief the development team, develop an overall project management plan that includes:

- A timeline.
- A budget.
- Interagency links.
- A representation of all required geographical areas.
- A method of keeping track of the progress.
- A procedure for revising the plan to accommodate necessary changes.
- Equipment and facility requirements.
- Selection of a software package for use by all editorial assistants on the development team for word-processing.
- A set of standards (that include the Course Development and Format Standards) to which products will be compared.

Brief the development team on the project, providing members with copies of the management plan.

Oversee the development team to ensure that obstacles are overcome, goals are met, and adequate support is given.

Provide coordination with the Training Working Team (TWT).

Provide coordination with the Standards Unit.

Provide coordination with the Instructional Media Unit that will produce presentation media products (if such products are required). These will become new projects requiring a charter. The complete development process applies to these products.

Provide coordination with the illustrator (if not a member of the development team).

Schedule development team meetings.

Ensure that the Course Development and Format Standards are met.

Provide for meeting TWT requirements for technical, policy, editorial and educational process reviews.

Arrange for the presentation of sufficient test courses for evaluation of the materials.

Ensure that appropriate revisions, with documentation, are made to the materials following field reviews and test course evaluations.

Ensure that all copyright permissions are transferred to the Standards Unit for archiving.

Provide coordination with the Publications Management System for distribution of certified materials.

EDITORIAL ASSISTANT
CHECKLIST OF ACTIVITIES

When receiving the assignment to do word processing for the development team:

Make certain that your work supervisor will commit the necessary work time to your efforts in this development project.

Obtain a copy of the COURSE DEVELOPMENT AND FORMAT STANDARDS and become familiar with all format aspects of it.

Be in attendance at the first development team meeting when the COURSE DEVELOPMENT AND FORMAT STANDARDS are discussed.

Determine which word processing software package will be used for the entire project.

If not already familiar with the software, learn how to use it, especially such features as spelling checking, and index and contents creation.

Determine who will be reviewing your work.

Determine deadlines and review dates.

Determine if additional editorial assistants will be supporting this course development effort. If so, working with the project leader or steering group chairperson, coordinate with them and standardize on a software package to be used by all.

During the development of the course materials:

Have frequent contacts with other editorial assistants.

Check often with the course developers to see if the formatting you are doing is producing the results they expected. Use tabs in listing items within a document, not two spaces. Proportional spacing of letters in most fonts causes uneven spacing that is undesirable.

Be prepared to advise the course developers of the special capabilities of the word processing software so that the best appearing course materials possible are produced.

Monitor the sequence of pages, sections and lessons so there are no inadvertent gaps.

ALWAYS BACK UP YOUR WORK.

SAVE your work approximately every 20 minutes.

When preparing to submit materials for review, consult the REVIEW PREPARATION CHECKLIST found in this appendix on page E-9.

REVIEW PREPARATION CHECKLIST

Have you answered the questions on this list with a “yes” before sending any materials to the Standards Unit for review? If not, make the necessary adjustment prior to sending the materials to the Standards Unit.

I. ORGANIZATION

- Do segments of the material flow in logical order?
- Is the order in the Instructor/Administrator Guide the same as the order in the Student Text?
- Are the student materials shown in the Instructor/Administrator Guide identical to the ones in the Student Workbook? (Exception: Exercises and student tests with school answers indicated.)
- Are the page references in the Contents correct?

II. TEXT

- Is the spelling, including use within context, correct?
- Is the grammar correct?
- Is the capitalization correct?
- Are sequential numbers correct (none skipped or duplicated)?

III. VISUALS

- Are visuals in every location where needed?
- Are the visuals in the Instructor/Administrator Guide the same as the ones in the Student Workbook?
- Are visuals in the same sequence in all documents?

IV. FORMAT

Does the format meet the NWCG Course Development and Format Standards?

- Are there 1" margins on all pages?
- Are page numbers correct?
- Are quotations and reprints properly credited?
- Did you use the Lesson Outline?

V. REVISIONS

- Did you compare the most recent revision with the original material?
- Were all the corrections and changes incorporated?
- Were other things modified (on purpose, or accidentally) when the changes were made?
- If following the Second Review, have you documented all revisions?
- When changes were made did you check the Contents (and Index, if included) to make certain that the page references were correct?

VI. APPENDIXES

- Have you included as a separate section:
 - Bibliography?
 - Glossary (only if needed)?
 - Electronic presentations, overhead transparencies, handouts, slides, and tapes?
 - Indexes (if used)?
- Are they lettered and numbered properly?
- Are they properly referenced in lesson plan and student materials?

TEST COURSE EVALUATION CONSIDERATIONS

1. Was there some process used to screen students prior to the presentation of the training?
 - If so, were students selected based upon their performance in the process?
 - If not, what criteria were used to select students to attend the training?
 - Do the criteria agree with the description of the student analysis made during the development of the training?
2. If pre-course exercises are required, and the results of them are to be used in the training presentation, did the students receive feedback in time to actually use them during the training presentation?
3. If pre-course materials incorporating exercises and/or pre-course tests are used, are all student responses to them evaluated prior to the beginning of class? Are students notified of their evaluations?
4. If pre-course material was used and evaluations of student responses were made during the training period, were the students advised of their evaluations?
5. Are course and unit objectives written in the training materials and discussed with the students, and are copies given to the students?
6. Are all objectives taught?
7. Are students notified of the process used to determine successful completion of the training?
8. Do evaluations (tests, exercises, performance) test to see that the objectives were met?
9. Are the time frames stated in the lesson material accurate?
10. Is the student record keeping system appropriate for the method of instruction?

11. Is there a provision for remedial instruction in the training material?
12. Is instruction/information presentation in evening sessions provided? If so, are the sessions mandatory or optional? If optional, will the student be able to successfully complete the training without attending the evening sessions?
13. Do segments of the material follow in logical order?
14. Is the order in the Instructor/Administrator Guide the same as the order in the Student Workbook?
15. Are the student materials shown in the Instructor/Administrator Guide identical to the ones in the Student Workbook? (Exception: Exercises and student tests with school answers indicated.)
16. Are the page references in the Contents correct?
17. Are visuals in every location where needed?
18. Are the visuals in the Instructor/Administrator Guide the same as the ones in the Student Workbook?
19. Are visuals in the same sequence in all documents?
20. Do students receive, or have in their student materials, all handouts that the Instructor/Administrator Guide uses?
 - Are they punched for insertion in binders?
 - Are they identified?
21. Are there enough copies of all student materials to supply every student with one?
22. Do the instructors follow the lesson plan faithfully, or do they take liberties to restructure the lesson outline according to their own wishes?
23. Do the lesson materials use instructional media and processes that ensure achievement of the objectives?

24. Is the training presented in the setting most nearly duplicating the setting of on-the-job performance?
25. Do the instructional materials provide interactivity with the students?
26. Is there a clear-cut method of evaluating student achievement? Do the students know what it is? Is it accurate?

