FIRE COMMAND 1B

Approved by the Statewide Training and Education Advisory Committee

Adopted by the State Board of Fire Services

RETIRED CURRICULUM

INSTRUCTOR GUIDE

1998 Edition

California Department of Forestry and Fire Protection

State Fire Training

FIRE COMMAND 1B

INCIDENT MANAGEMENT FOR COMPANY OFFICERS

INSTRUCTOR GUIDE

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published by

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CALIFORNIA STATE BOARD OF FIRE SERVICES

The California Fire Service Training and Education System (CFSTES) was established to provide a single statewide focus for fire service training in California. CFSTES is a composite of all the elements that contribute to the development, delivery, and administration of training for the California Fire Service. The authority for the central coordination of this effort is vested in the Training Division of the California State Fire Marshal's Office with oversight provided by the State Board of Fire Services.

The role of CFSTES is one of facilitating, coordinating, and assisting in the development and implementation of standards and certification for the California fire service. CFSTES manages the California Fire Academy System by providing standardized curriculum and tests; accredited courses leading to certification; approved standardized training programs for local and regional delivery; administering the certification system; and publishing Career Development Guides, Instructors Guides, Student Manuals, Student Supplements, and other related support materials.

This system is as successful and effective as the people involved in it. It is a fire service system developed by the fire service, for the fire service . . . and we believe it is the best one in the country.

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ACKNOWLEDGMENTS

The CDF/State Fire Training Curriculum Development Division coordinated the development of the material contained in this guide. Prior to its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) approved this curriculum. This curriculum is appropriate for fire service personnel and for personnel in related occupations who are pursuing State Fire Marshal certification.

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Special acknowledgement and thanks are extended to the following members of CDF/State Fire Training Curriculum Development Division for their diligent efforts and contributions that made the final publication of this document possible.

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The material contained in this document was compiled and organized through the cooperative effort of numerous professionals within, and associated with, the California fire service. Deputy Chief Ronny J. Coleman was the originator of the manual. His book, "Management of Fire Service Operations" was the basis from which this concept was originally drawn.

We gratefully acknowledge the following individuals who served as the principal developers for this document.

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The September 1998 edition of Fire Command 1B instructor guide was developed under a new type of "living" system. Unlike past curriculum, this instructor guide will become a viable document within the system. Here's how it works.

Each registered Command 1B instructor has the ability to critique this document on a continual basis. At the conclusion of each course taught, the instructor should comment on the material presented. The Fire Command 1B Curriculum Team will meet on an as-needed basis and review each instructor's comments and suggestions.

At the conclusion of each meeting, approved revisions will be submitted to the CDF/State Fire Training Curriculum Development Division for inclusion into the master document. Pages are numbered for easy replacement. This system allows newer information and concepts to continually replace older, outdated ones and the curriculum will evolve as technology grows and changes. Fire Command 1B will not become obsolete as time passes.

Dennis Childress, Team Leader
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INTRODUCTION TO THE MANUAL

This publication is intended to serve as an instructor guide and includes lesson plans, overhead transparency masters, student activities, and quizzes. Suggested application methods have been identified throughout the lessons for you to use during your presentation.

The success of your students depends greatly on your conformance to the student behavioral objective prescribed at the start of each lesson. The remaining portion of the lesson plan is only a guide; and as such, should not preclude you from adapting the lesson plans to best meet the needs of your students. Group activities and direct application of the skills addressed in this curriculum are essential to the overall success of the course.

INSTRUCTOR GUIDE

Material on these pages is intended to serve as an outline of instruction in lesson plan form. For each topic identified in the course outline, a lesson plan has been developed that contains: a time frame, level of instruction, behavioral objective, materials needed, references, preparation statement, and lesson content.

- TIME FRAME: The minimum, estimated duration required for "in class" presentation based on a 36-40 hour, five-day course.

- LEVEL OF INSTRUCTION: Identifies the instructional level which the material was designed to fulfill. Obviously, you have the latitude to increase the level based on available time, local conditions, and the students' apperceptive base.

- BEHAVIORAL OBJECTIVE: The behavioral objective is a statement of the student's performance desired at the end of instruction. You must ensure that enough information is given in the presentation and/or activities to enable the student to perform according to the goal.

- MATERIALS NEEDED: This should be a complete list of everything you will need to present the lesson, including handout materials, visual aids, quizzes, and so on.

- REFERENCES: These are the specific references the curriculum development team utilized when developing the lesson plan. In addition, references may be listed as additional study aids for instructors to enhance the lesson – books, manuals, bulletins, scripts, visual aid utilization plans and the like.

- PREPARATION: The motivational statements in this section connect the student with the lesson plan topic through examples or illustrations relating to their

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occupation, injury, and even mortality. You may modify this section to better fit your students' environment.

- LESSON CONTENT: Includes information utilized in the four-step method of instruction.

TECHNICAL LESSON PLAN

Presentation	Application
Everything you say or display	Everything the student participates in
Content	Questions
Notes	Classroom Exercise
Distribution of Activity Sheets Study Sheets Information Sheets	Audio/Visual Cues

APPENDIX A

- Course outline and calendar of events.

APPENDIX B

- Overhead transparency masters. Each of these visuals will be included (printed three to a page) in the student manual or student supplement. These visuals are also available as a PowerPoint presentation on CD-ROM from State Fire Training

- The information within the course is designed for presentation with minimal use of commercially or locally developed films, slides, and videos. This does not mean you are prohibited from using audio/visual aids during the course. You are encouraged to use any audio/visual that will assist in the presentation of material and attainment of performance goals.

APPENDIX C

- Activity sheets for any individual or group activities required for successful course completion. These activity sheets are also included in the student manual or student supplement.

APPENDIX D

- Course quizzes with answer keys.

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APPENDIX E

- Course quiz masters to copy for your students. Keep in good condition to use for future classes. Collect these quizzes after they have been graded and discussed in class. Do not let the students keep them since you will be using the same quizzes for your next class.

Additional appendices may be added as necessary to meet minimum course requirements.

CDF/State Fire Training gladly accepts your comments and suggestions for future enhancements or revisions to this document. Please forward to:

CDF/State Fire Training
Curriculum Development Division
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TOPIC: ORIENTATION AND ADMINISTRATION

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given an oral evaluation

Behavior: The student will confirm a knowledge of the course expectations by completing an oral evaluation

Standard: To the instructor's satisfaction according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ###

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan

REFERENCES:

- State Fire Training Policies and Procedures, SFT, 1997

PREPARATION: As with any course of instruction, there are certain expectations anticipated. The expectations are not always the same for all participants. Oftentimes, simply identifying the expectations will provide mutual benefit to all the students and the instructor. This brief lesson will attempt to address expectations from three different perspectives.

PRESENTATION	APPLICATION
I. INTRODUCTIONS	
A. Introduce self and other staff	
B. Cite background	
1. Fire department experience	
2. Education	
3. Training	
4. Teaching history	
5. Phone number(s) where the instructor can be reached	
	CLASS ACTIVITY: Have the students introduce themselves
C. Student introductions	
	OHT 1-1-1
NOTE: Use transparency to remind the students what information to include in the self introduction.	
1. Name	
2. Department	
3. Rank	
4. Years of experience	
5. Reason(s) for taking Fire Command 1B	

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PRESENTATION	APPLICATION
	Why do we have you introduce yourselves in this manner at the beginning of a class?
D. Reasons for student introductions	
1. Introduce self to class	
NOTE: In a diverse class, it helps to know what departments are represented so student responses to questions and simulation exercises are better understood.	
2. Become accustomed to speaking in front of a group	
3. Get more at ease and relaxed with new and unfamiliar atmosphere	
II. COURSE DESCRIPTION	
A. 40-hour class	
1. Considerable work	
2. Numerous activities	
3. Homework	
a) All homework must be completed to pass	
B. Facilities orientation	
	OHT 1-1-2
1. Classroom location(s)	
2. Restrooms	
3. Food locations	

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PRESENTATION	APPLICATION
4. Smoking	
5. Breaks	
6. Telephones	
7. Parking	
NOTE: Refer to student manual, page ###. Have students fill in specific information on their calendar of events.	
C. Calendar of events	
	What does the calendar of events for this course tell you about your activities?
1. Indicates a good deal of work ahead	
2. The second part of a two-part course	
3. Class sessions are intensive	
4. Meeting dates	
5. Meeting times	
6. Initial session are all classroom participation	
7. Throughout entire course there will be group discussions and group interactions	
8. Questions are welcome at any time	
9. Each student is required to complete all student activities	
10. Each student is required to participate in all simulation exercises	

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PRESENTATION	APPLICATION

III. COURSE REQUIREMENTS

A. Activities

1. Classroom activities
2. Quizzes
3. Simulations

B. Absences

1. Excused absence of 4 hours only is permitted
2. Special considerations and additional homework for absences more than 4 hours

C. Classroom and group participation are required

IV. STUDENT EVALUATION

A. There will be four module quizzes

1. Each will be followed by a group discussion and review

   a) Quizzes must be returned to the instructor after the review

2. Quiz scores will count toward your final grade
3. Must take all quizzes

B. Grades issued on point system

1. Minimum 80% required on quizzes and student activities
2. Minimum 80% required to take certification exam

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PRESENTATION	APPLICATION
C. Progress chart	
1. Uses student identification numbers instead of names	
2. Federal law prohibits publication of identifiable student grades	
3. Student's last four digits of social security number is often used	
D. State certification exam	
1. Is not related to the final course grade	
2. Must first pass the course before taking this exam	
3. 50 question multiple choice test	
4. Minimum 70% required to pass certification exam	
V. CFSTES CERTIFICATE TRAINING TRACKS	
	OHT 1-1-3
A. Course completion certificate issued as partial fulfillment for certified Fire Officer	
	Are there any questions regarding the course requirements of the requirements for successful completion?

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SUMMARY:

If these course requirements seem involved and the material that has to be covered appears like a lot in a short period, you are right. Careful attention is necessary. In addition, you should participate in the classroom exercises and group activities to the fullest extent so you will obtain a greater understanding of the underlying principles being taught, and to be better prepared for the assignments.

EVALUATION:

The students will be evaluated by their responses to oral questions.

ASSIGNMENT:

Review your notes and study for our next session.

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TOPIC: COURSE OVERVIEW

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given an oral evaluation

Behavior: The student will confirm a knowledge of the course objectives by completing an oral evaluation.

Standard: To the instructor's satisfaction according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ###

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan (instructor developed)

REFERENCES:

- NFPA Standard 1021, 1997 Edition

PREPARATION: This course was first offered on a regional basis in 1978. In 1981, the course became part of the Fire Officer certification track. Course content was rewritten in 1983 and 1998. This latest revision completely changes the scope of the course and addresses those operations prevalent in today's emergency scene management systems.

PRESENTATION	APPLICATION
I. COURSE OBJECTIVES	
A. Satisfy the command portions of the NFPA standard for Fire Officer I, II, and III	What is the NFPA standard for Fire Officer?
1. NFPA 1021	
B. Satisfy one of the educational requirements for Certified Fire Officer	
C. Satisfy the prerequisites for State Fire Training's Level 2 Command series	
1. Not all of the Level 2 Command classes will be prestudied here	
D. To be compatible with other courses offered in State Fire Training's Fire Officer track	
1. Developed as a continuation of Fire Command 1A	
E. Prerequisites	
1. Students should have the skills, knowledge, and abilities equal to Certified Fire Fighter II	
a) Specific methods of performing evolutions	
b) Hose lays, ladders, and other tools and equipment	
2. Students who lack basic skill levels may want to review/self-study outside of the class	

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PRESENTATION	APPLICATION
II. COURSE CONTENT	
A. Designed for those who serve as the "first-in" officer at an emergency	Have students identify who serves as "first-in" officers for their department
1. Captain	
2. Lieutenant	
3. Shift officer	
4. Senior engineer	
5. Senior fire fighter	
B. Emphasizes the managerial and decision-making skills required for command	
1. Basic fire behavior, building construction, and other areas are addressed	
a) But not in-depth	
2. Review of material covered in Fire Command 1A	
C. Course emphasis is centered on ICS, hazardous materials, multi-victim, wildland fires, and major disasters	
1. Other courses are available that concentrate on the specifics of each area covered	
a) Your training officer can supply details	

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PRESENTATION	APPLICATION
D. Managerial concepts of this course are applicable to all types and sizes of incidents 1. Single company response up to statewide mutual aid plans	

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SUMMARY:

This course will take the information and knowledge obtained in Fire Command 1A and apply the common principles to more complex situations. This course will utilize the skills and abilities set forth in NFPA 1021 as well as State Fire Training's certifications to prepare the fire officer for emergency operation command.

EVALUATION:

Students will be evaluated by their responses to oral questions.

ASSIGNMENT:

Review your notes and study for our next session.

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TOPIC: FIRE COMMAND 1A REVIEW

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the divisions of fire fighting and size-up parameters by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Firefighting Tactics, Lloyd Layman

PREPARATION: All levels of emergencies require numerous activities or operations to be performed by the fire department. The size and complexity of these operations will be based upon the size and complexity of the emergency. Utilizing the basic division of fire fighting as a guide, the fire officer can make decisions regarding operations in a systematic, prioritized manner. This lesson will cover the information required to assist the command officer.

PRESENTATION	APPLICATION
NOTE: During the review, have the students discuss and define size-up.	
I. SIZE-UP	
	OHT 1-3-1
A. Defined	
1. The mental evaluation made by the officer in charge of a fire or other emergency which enables him or her to determine the best course of action	
B. Basic concepts of size-up	
1. It is a mental evaluation	
a) Not a physical activity	
2. It is a constant, ongoing process	
a) Not conducted once, but constantly	
b) Begins with receipt of alarm	
c) Continues throughout the duration of the emergency	
3. Responsibility not limited to overall fireground commander	
a) First-in officer begins process of size-up	
b) Process continues when/if a superior officer arrives on scene and assumes command	
c) Division or group supervisors perform size-up within their area of operation	

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PRESENTATION	APPLICATION
4. Success requires systematic process	
a) Must be thorough and well thought out	
b) Cannot be hasty or reactionary	
5. Size-up is the basis for all strategy, tactics, and methods employed on the fire ground	
C. Several techniques have been developed for conducting the size-up process	
1. Most recognized is Layman's fire fighting size-up process	
II. LAYMAN'S SYSTEM OF SIZE-UP	
A. Consists of five sequential components or steps	
	What are the five steps?
	OHT 1-3-2
1. Facts	
2. Probabilities	
3. Own situation (resources)	
4. Decisions	
5. Plan of operation	
B. Mental discipline	
1. Knowledge of the steps and factors alone will not insure that an adequate size-up will be conducted	

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PRESENTATION	APPLICATION
2. Mental discipline must be exercised within each step of the process	
	OHT 1-3-3
C. Facts	
1. Number of facts can be enormous	
2. Not all facts are relevant or immediately important	
3. Facts must be filtered and screened	
4. Concentrate on those most relevant	
5. Individual facts must be converted into an overall picture or problem	
	What are some facts pertinent to an emergency?
6. Consider	
a) Time of emergency	
b) Location	
c) Type or nature of the emergency	
d) Others?	
	OHT 1-3-4
D. Probabilities	
1. Large number may exist	
2. Filtering is required	

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PRESENTATION	APPLICATION
3. Distinction must be made between probabilities and remote possibilities	
4. Initial attention must be devoted to probabilities	
	In a structure fire, what are some of the probabilities that should be considered?
5. Considerations	
a) Life hazards	
b) Construction type and reaction to fire	
c) Rate of fire growth	
d) Others?	
	OHT 1-3-5
E. Own situation (resources)	
1. Do not hesitate to think big	
2. Resources extend beyond initial companies and entire fire department	
3. Utilize reference resources such as prefire plans, maps, and building guides	
	What are some of the resource considerations that must be made during an emergency?

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PRESENTATION	APPLICATION
4. Considerations	
a) Immediate needs	
b) Eventual resources available	
c) Water supply	
d) Others?	
	OHT 1-3-6
F. Decisions	
1. Avoid decisions prior to obtaining all pertinent facts	
2. Decisions are not cast in concrete	
3. Corrections and modifications may be necessary	
4. Maintain flexibility	
5. Constant review and assessment for effectiveness of decisions	
	What are some types of decisions that must be made during an emergency?
6. Considerations	
a) Strategic mode	
b) Initial	
c) Supplemental	
d) Others?	

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PRESENTATION	APPLICATION
	OHT 1-3-7
G. Plan of operation	
1. Plans may require modification or change	
2. Constantly monitor and evaluate for effectiveness	
3. Initiating the plan requires the issuance of orders and instruction	
4. Management and supervision must be exercised	
III. SIZE-UP AND THE DIVISIONS OF FIRE FIGHTING	
A. Lloyd Layman coined the acronym RECEO	
	Who can tell us what RECEO stands for?
	OHT 1-3-8
1. Rescue	
2. Exposures	
3. Confinement	
4. Extinguishment	
5. Overhaul	
	Does anyone recall any other letters or terms that go with this acronym?
6. Salvage	

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PRESENTATION	APPLICATION
7. Ventilation	
B. As soon as practical, the steps of size-up should be focused onto the divisions of fire fighting	
1. Will assist the officer in identifying both problems and objectives	
a) Example: Rescue questions	
1) What are the facts concerning rescue?	
2) What is the possibility of rescue being required?	
3) What resources are available to conduct rescue operations?	
4) What decisions must be reached regarding rescue?	
5) What will the rescue operation plan entail?	
C. This process can be repeated for each of the divisions	
D. Process will be modified or interrupted as the situation dictates	
	OHT 1-3-9
E. Tactical priorities (RECEO)	
1. Listed in order of their general importance	
a) May be accomplished in a different order depending on the situation and the resources	

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PRESENTATION	APPLICATION
2. Rescue a) First priority at all emergencies 3. Exposure protection a) Keeping the fire from extending within buildings or areas not yet involved in the fire 4. Confinement a) Confining the fire to the smallest possible area 5. Extinguishment a) Attacking the seat of the fire b) Halting combustion 6. Overhaul a) Checking the fire area to make sure that everything is completely extinguished b) After the fire department has left the scene c) Conducting an investigation to determine the cause of the fire and making the structure as safe as possible 7. Ventilation a) Includes those operations aimed at removing heat, smoke, and fire gases from the structure	

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PRESENTATION	APPLICATION
8. Salvage	
a) Minimizes the damage from the fire, smoke, and water or other extinguishing agents used	
IV. STRATEGY, TACTICS, AND METHODS	
	OHT 1-3-10
A. Strategy	
1. A basic plan which identifies major goals and prioritizes objectives	
2. Based on mode of attack	
a) Offensive	
1) Resource adequacy	
b) Defensive	
1) Resource inadequacy	
B. Tactics	
1. Specific individual objectives that must be completed to accomplish the overall goal or strategy	
a) Search, rescue, or exposure protection	
C. Methods	
1. Individual evolutions conducted to accomplish the tactical objectives	
a) Hose evolution or ladder raise or medical treatment	

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PRESENTATION	APPLICATION
V. COMMAND OVERVIEW	
A. Fire command	
1. The term "fire command" implies different things to each fire fighter	
	What does the term "fire command" mean to you?
	OHT 1-3-11
2. Definition	
a) The systematic management of resources to reduce the impact of an emergency	
3. This definition provides us with the primary function of command	
a) The management of resources	
	OHT 1-3-12
B. Command activities	
1. To successfully discharge the primary function of command, the fire officer must engage in five general activities at every emergency	
a) Collecting and analyzing of facts	
b) Identifying and assessing probabilities	
c) Determining resource capabilities	
d) Making of decisions	
e) Implementing a plan	

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PRESENTATION	APPLICATION
	Who is familiar with any of these activities? Where did they come from?
2. These activities were formalized into a process known as "size-up" by Lloyd Layman a) Occasionally expressed in different terms, they remain the basic activities of command	
3. The primary function and basic activities of command do not change with the type of emergency or the rank of the officer in command a) An engineer in charge of a single engine suppressing an illegal burn is managing resources and performing command activities b) A deputy chief commanding a multiple alarm fire is managing resources and performing command activities	
4. The scores of topics and exercises within this course will address the primary responsibilities and basic activities of command at various types of incidents	
	OHT 1-3-13
C. The human element of command 1. Defining command and identifying common functions and activities is necessary but is narrow in scope	

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PRESENTATION	APPLICATION
2. Command is an endeavor involving human behavior a) Subject to all the variables and flaws typical of the human animal b) This human element results in two givens 1) Given identical emergencies, no two individuals are likely to handle them in an identical manner • Perceptions differ • Variances exist in their levels of experience and training • Priorities may vary **NOTE:** Inform the students that this will become very apparent when the course offers exercises that require the setting of strategies and objectives. Emphasize that rarely is there only one right answer. 3. The "perfect" fire ground commander does not exist a) Fried, in his text, Fireground Tactics, reminds us of our imperfections b) He states that at one time or another, all commanders will 1) Get excited, yell, make mistakes 2) Lose buildings, develop 20/20 hindsight, and at times, doubt their own abilities	

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PRESENTATION	APPLICATION
NOTE: Have students complete Activity Sheet 1-3-1 in Appendix C. Have students complete it individually. Allow 20 minutes for exercise, including class discussion.	

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SUMMARY:

Many years ago, Lloyd Layman laid a framework for fire command that we still work with today. His size-up and divisions of fire fighting are standards that we hold and teach to as they are the building blocks of fireground organization. Strategy, tactics, and methods feed off of those building blocks.

Even with all of these fundamentals, we must also realize that we are dealing with human beings with emotions and differing points of view. These is not "perfect fireground commander." Everyone will make mistakes and learn from them.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

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TOPIC: CONCEPTS OF ICS ORGANIZATION

TIME FRAME: 3:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the positions and responsibilities recognized in the ICS organizational chart by completing the written quiz.

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Wildland Firefighting, Clayton, Day, and McFadden, 1987
- ICS 200, NWCG, 1994

PREPARATION: Fighting fire is a very dangerous occupation. Fighting a large fire compounds the dangers. The success or failure of fire fighters combating large fires is based on the development and utilization of an appropriate command system or organization. This lesson will identify the basic concepts and principles for developing an organizational system for managing resources on major incidents. These principles are the foundation for coping with and managing "all risk" type incidents, no matter what classification, size or type.

PRESENTATION	APPLICATION
I. CONCEPTS OF THE INCIDENT COMMAND SYSTEM	
A. History	
1. Early battles and army configurations	
2. Our enemies are fire and other emergencies	
	Has anyone heard the term "FIRESCOPE?"
B. FIRESCOPE	
1. The Incident Command System was developed through a cooperative effort of local, state, and federal agencies known as FIRESCOPE	
	What does FIRESCOPE stand for?
a) ***Fl***refighting	
b) ***RE***sources of	
c) ***S***outhern	
d) ***C***alifornia	
e) ***O***rganized for	
f) ***P***otential	
g) ***E***mergencies	
C. Found to not only be effective on fires but to any all-risk emergency application	

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PRESENTATION	APPLICATION
D. Parallel systems	
1. Fire command	
a) Chief Alan Brunacini of Phoenix Fire Department	
b) Very similar to FIRESCOPE except for a few terminology changes	
2. NIIMS	
a) National Interagency Incident Management System	
b) Federal government creation	
c) Very similar to FIRESCOPE	
1) More than to Phoenix Fire Department command system	
II. PURPOSE OF ICS	
A. Systematic development of a complete, functional command organization	
	OHT 1-4-1
B. Increases the effectiveness of command and fire fighter safety	
C. Designed for single resource to nearly unlimited resources	
D. Key elements	
1. Functional organization of command, operations, planning, logistics, and finance/administration	

RETIRED CURRICULUM

PRESENTATION	APPLICATION

2. Will allow multi-agency adoption of federal, state, and local agencies

3. Terminology is designed for all levels of government

4. Designed to be the basic everyday operating system for all incidents

   a) Transition to large and/or multi-agency operations requires minimal adjustment

5. Organization builds from the ground up

6. Designed so that jurisdictional authority of the involved agency will not be compromised

   a) Assisting agencies will operate under the direction of one Incident Commander

7. Multi-jurisdictional incidents will normally be managed under a unified command with a single command post and a single action plan

8. Can be staffed and operated by any qualified personnel from any agency

   a) Personnel from a variety of agencies can end up managing a single incident

9. The system expands and contracts organizationally

   a) Based upon the needs of the incident

III. COMMAND STRUCTURE - BASIC ORGANIZATION

A. Organization chart

1. Person most responsible is on top

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 1-4-2
2. Expanding incident will require that management of span of control is maintained	
a) Between 5 and 7 is the optimum controllable number	
3. Grouping	
a) If span of control grows beyond management capability of the IC, then grouping must begin	
1) Divisions or groups are created	
	OHT 1-4-3
	OHT 1-4-4
4. Divisions/Groups	
a) Divisions are geographical areas of work or assigned work	
1) Roof division	
2) Interior division	
3) Floor divisions in a multi-story building	
	OHT 1-4-5
b) Groups are organized as functional units	
1) Ventilation group	
2) Rescue group	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Considerations for assigning divisions or groups	
1) When situation will eventually involve a number of units beyond the span of control or command	
2) When command can no longer effectively manage the number of companies assigned to the incident	
3) When companies are involved in very complex operations	
4) When companies are operating from tactical positions a great distance from command	
5) When special hazards exist and close control is required	
d) When assigning a division or group, the IC must give them an assignment	
1) Tactical objectives	
2) Radio designation	
3) Identify resources assigned to the division or group	
IV. COMMAND STRUCTURE	
A. Responsibility areas expand as the situation grows	
1. The expanding organization	
	OHT 1-4-6
NOTE: Note how a pyramid is beginning to take shape.	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
a) IC carries out all functions until span of control grows beyond basic manageable numbers	
b) Functions must be broken out and managed independently as the situation grows	
B. Functional areas	
1. Five major functional areas of the ICS	
a) Command	
b) Operations	
c) Planning	
d) Logistics	
e) Finance	
2. Potential configurations of the command function	
a) Single command	
b) Unified command	
C. Command staff	
	OHT 1-4-7
1. Incident Commander (IC)	
a) Provides direction, advice, and guidance to the Command Staff	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Primary roles and responsibilities	
1) Review and evaluate the action plan and initiate any needed changes	
2) Provide on-going review of the overall incident	
3) Select priorities	
4) Provide direction to General Staff	
5) Review the organizational structure, initiate change or expansion to meet incident needs	
6) Stage Command and General Staff functions as necessary	
7) Establish liaison with other internal agencies and officials, external agencies, property owners and/or tenants	
2. Information Officer	
a) Develops accurate and complete information regarding incident size, current situations, resources committed, and other matters	
3. Safety Officer	
a) Assesses hazardous and unsafe situations	
b) Develops measures for assuring personnel safety	
c) Should have authority to stop and/or prevent unsafe acts	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Liaison Officer	
a) Is the point of contact for representatives from other agencies	
b) Within a unified command, the Liaison Officer would be for representatives not involved with the incident	
D. General staff	
	OHT 1-4-8
1. Operations Section Chief	
2. Planning Section Chief	
3. Logistics Chief	
4. Finance Section Chief	
E. Operations section	
	OHT 1-4-9
1. Operations Section Chief is responsible for the management of all incident tactical operations	
a) Reports to the IC	
b) Responsible for the direct management of all incident tactical activities	
c) Should have direct involvement in the preparation of the action plan for the period of responsibility	
d) May expand the organization to include staging, divisions, groups, branches, air operations, air attack, and others	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Staging Area a) Used to stage resources which are available for assignment within three (3) minutes b) The location of staging areas are determined by the Operations Section Chief c) Should be strategically identified d) Moved as the situation dictates 3. Branches, Groups or Divisions, and Single Units a) Based on resource needs 1) These can be few or many 4. Air Operations Director a) Established by Operations Chief b) Complexity requires additional support and effort c) Incident requires mix of aircraft for tactical and logistical use 5. Air Attack Supervisor a) Separate position whenever both helicopters and fixed-wing aircraft will be used simultaneously within the incident air space (airborne aircraft)	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
6. Air Support Supervisor	
a) Responsible for establishing and operating helibases and helispots	
b) Maintains the required liaison with the fixed-wing air attack bases of the incident	
F. Planning Section	
	OHT 1-4-10
1. Responsible for	
a) Collection of tactical information about the incident	
b) Evaluation of tactical information about the incident	
c) Dissemination of tactical information about the incident	
d) Maintains information on the current and forecast situation	
e) Maintains status of resources assigned to the incident	
2. Resources Unit	
a) Confirms all assigned personnel and resources have checked in at incident	
b) Maintains systems showing current status and current location of all assigned resources	
c) Maintains master list of all resources	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Situation Unit a) Collects, processes, organizes and displays situation information b) Prepares situation summaries c) Develops projections and forecasts of future events related to incident d) Prepares maps and intelligence information for use in the action plan 1) May require the use of Technical Specialist 4. Documentation Unit a) Maintains accurate and complete incident files b) Provides duplication services to incident personnel (photocopies) c) Files, maintains and stores incident files for legal, analytical and historical purposes 5. Demobilization Unit a) Develops the Incident Demobilization Plan b) Plans to be distributed both at the incident and off-incident locations c) Should begin early in the incident to develop rosters of personnel and resources and thus obtain missing information from the incident check-in process	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
6. Technical Specialists might provide a) Fire Behavior Specialists b) Meteorologist c) Training Specialists d) Environmental Impact Specialists e) Flood Control Specialist f) Resource Use and Cost Specialist g) Water Use Specialist h) Toxic Substance Specialist(s) i) Structural Specialist j) Fuels and Flammable Specialist k) Nuclear Radiation Fallout Specialist	
	Within the ICS, where are Technical Specialists assigned?
l) Assignments 1) May be called upon depending upon the needs of the incident 2) When assigned to Planning, they report directly to the Planning Section Chief 3) May function in an existing unit or other parts of the organization either within the command staff or the general staff	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4) May form a separate unit depending upon the requirements of the incident needs	
G. Logistics Section	
	OHT 1-4-11
1. Responsible for	
a) Provides all support needs to the incident (except air support)	
b) Orders all incident resources	
c) Provides facilities	
d) Provides transportation	
e) Provides supplies and feeding	
f) Equipment maintenance and fueling	
g) Provides communications and medical services	
2. Support Branch	
a) Supply Unit	
1) Responsible for all ordering to support incident activities	
2) Orders, receives, stores and processes all incident-related supplies	
3) Responsible for the receiving, processing, storing and distribution of all supply orders	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4) Handles disbursement and servicing of all tools	
b) Facilities Unit	
1) Establishes, sets up, maintains and demobilized all facilities (except staging areas) in support of the incident	
2) Provides facility maintenance required	
3) Provides security services	
4) Responsible for setting up and providing sleeping, feeding, and sanitation for the incident command post, incident base, and camps	
c) Ground Support Unit	
1) Maintains and repairs primary tactical equipment, vehicles and mobile ground support equipment	
2) Maintains time reporting of all incident assigned equipment (including contract equipment)	
3) Provides fueling of all mobile equipment	
4) Provides necessary transportation services (except air)	
5) Implements an Incident Traffic Plan	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Service Branch	
a) Communications Unit	
1) Develops plans for the most effective use of incident-assigned communications equipment and facilities	
2) Installs and tests communication equipment	
3) Controls supervision and operation of the Incident Communications Center	
4) Distributes and recovers communication equipment assigned	
5) Maintains and provides on-site repair of communications equipment	
b) Food Unit	
1) Determines food and water requirements, menu planning, food ordering, cooking facilities, cooking, serving and maintenance of food areas	
2) Responsible for providing food for all personnel on the incident including remote locations and operations personnel unable to leave tactical assignments	
c) Medical Unit	
1) Develops the Incident Medical Plan	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2) Develops procedures for handling any major medical emergency involving incident personnel	
3) May assist with civilian casualties at the incident	
4) Provides medical aid and transportation for incident assigned injured and ill personnel	
5) Assists in processing of all paperwork related to injuries or death of incident assigned personnel	
H. Finance Section	
	OHT 1-4-12
1. Established on incidents when the agency or agencies who are involved have a specific need for finance services	
a) Position can be established as a Technical Specialist in the Plans Section when only one specific function is required	
2. Time Unit	
a) Ensures that daily personnel time recording documents are prepared	
b) Confirms that agency/agencies time policy is being met	
c) Documents "commissary" expenditures for personnel records	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
d) Ensures that equipment time reporting is accomplished in the Logistics Section for Ground Support Unit and in Operations Section for Air Support Unit	
3. Procurement Unit	
a) Administers all financial matters pertaining to vendor contracts	
b) Coordinates with local jurisdictions to utilize local resources	
c) Processes all administrative paperwork associated with equipment rental and supply contracts	
4. Compensation/Claims Unit	
a) Includes Compensation-for-Injury and Claims to maintain logs on claims, obtain witness statements, document investigations and agency follow-up requirements	
b) Compensation-for-Injury or Claims completes all forms required by Workers' Compensation programs	
c) Claims handles the investigation into all civil tort claims associated with or involved in the incident	
5. Cost Unit	
a) Obtains and records assorted cost data	
b) Analyzes and prepares estimates of incident costs and maintains accurate records of incident costs	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Provides cost analysis data for the incident	
d) Ensures that all pieces of equipment and personnel which require payment are properly identified	
	OHT 1-4-13
	OHT 1-4-14

RETIRED CURRICULUM

SUMMARY:

The Incident Command System (ICS) is the basic foundation for the safe, logical, successful mitigation of most of our emergency situations. From the simple to the complex, it grows and shrinks depending on the needs of the Incident Commander.

It is a basic organizational tool designed to manage resources, keeping track of their location as well as their functions in an orderly manner.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: COMPONENTS OF TRIAGE AND START

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of a triage system and the reasons for the patient's priority rating by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz
- Triage tags for each student

REFERENCES:

- Fire Fighter I, State Fire Training, 1992
- Fire Fighter II, State Fire Training, 1992
- "START - The Race Against Time" video, Newport Beach Fire Department and Hoag Memorial Hospital, 1994

PREPARATION: Every fire department has the potential to be the first responder to a multiple casualty incident. Rapid and appropriate sorting of the victims is necessary to establish priorities for care and the scope of the Incident Command System. First response triage should be instituted quickly and follow a simple system easily utilized without the need for a high level medical knowledge or authority.

PRESENTATION	APPLICATION
NOTE: This lesson plan is designed for the START system of triage in conjunction with the triage tag. This system is designed specifically for first responders. Although this plan is designed around one type of triage system, the instructor must be able to substitute and present the local system of triage where applicable	
I. DEFINITIONS	
	What is a "disaster?"
	OHT 2-1-1
A. Disaster	
1. Any event that occurs and overtaxes the resources of the responding agency	
	What is "triage?"
	OHT 2-1-2
B. Triage	
1. A French term meaning to sort; assign medical priorities	
II. TRIAGE	
A. Goals of triage	
1. Efficient use of personnel, equipment, and facilities	
2. Not to relocate the disaster to the hospitals	
B. Philosophy of triage	
1. To provide organized care of the victims within the disaster (chaotic) setting	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Planning and training is a must	
3. Establishment of an Incident Command System for scene control and organization as soon as possible	
III. TRIAGE TAG	
NOTE: Distribute triage tags for discussion	
	OHT 2-1-3
A. A medical tag that can be placed on the victim that identifies severity of injury	
B. Four tiers to the tag	
1. Bottom strip	
a) Color: Green	
b) Referred as: Minor injury	
c) No hospital care needed	
d) Injuries managed by first aid only	
e) May include walking wounded	
2. Second strip from bottom	
a) Color: Yellow	
b) Referred as: Delayed injury	
c) Needs hospital care	
d) Delayed transportation will suffice	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Third strip from bottom	
a) Color: Red	
b) Referred as: Immediate injury	
c) Immediate care needed	
d) Should receive attention before all others	
4. Fourth strip from bottom	
a) Color: Black	
b) Referred as: Deceased	
c) Dead or nonsalvagable	
d) No CPR initiated	
IV. SIMPLE TRIAGE AND RAPID TREATMENT	
NOTE: Show "START" video.	
A. Initial steps at a mass casualty incident	
1. Start where you stand	
a) Quick overview	
b) Determine number and severity of victims	
2. Identify the walking wounded	
a) Direct to a designated area away from the danger zone or chaotic area	
B. Begin assessment on the remaining victims	
	OHT 2-1-4

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Step 1 - Ventilation	
a) None	
1) Open airway and reassess	
2) If still none, attached deceased tag (black)	
b) Greater than 30 per minute	
1) Tag immediate (red)	
c) Less than 30 per minute	
1) Continue evaluation	
2) Go to Step 2	
2. Step 2 - Perfusion	
	How would you assess a patient's perfusion?
a) Capillary blanch test	
1) Lip or nail beds should regain color within two seconds	
2) Greater than two seconds	
• Tag immediate (red)	
3) If less than 2 seconds	
• Continue evaluation	
• Go to Step 3	
b) Radial pulse test	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1) Useful with reduced lighting	
2) Not palpable if blood pressure below 80 systolic	
• Tag immediate (red)	
3) If palpable	
• Continue evaluation	
• Go to Step 3	
3. Step 3 - Mental Status	
a) Altered mental status	
1) Inability to follow simple commands	
2) Tag immediate (red)	
b) Normal mental status	
1) Tag delayed (yellow)	
	How long should it take to assess a victim?
C. Total assessment time should not exceed 60 seconds per patient	
D. Rapid treatment procedures may be applied	
1. Ventilations	
a) Open airway	
b) Remove dentures or foreign objects	
c) Reposition head	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1) Usual spine precautions may have to be ignored due to complexity and number of victims	
2. Perfusion - if bleeding is present	
	What are two ways to manage a bleeding problem while performing triage?
a) Have the victim apply direct pressure to the wound	
b) Raise feet to maximize perfusion to the head, heart, and lungs	
NOTE: Handout and discuss Activity Sheet 2-1-1	

RETIRED CURRICULUM

SUMMARY:

Emergency response personnel frequently encounter situations where it becomes necessary to triage multiple victims and determine priorities for treatment. The goal of triage is to do the greatest good for the greatest number of victims while making efficient use of personnel, equipment and facilities. The START system provides a simple method which can be implemented quickly by first responders. Triage tags are used to identify victims as "Immediate," "Delayed," "Minor," or "Deceased" based on respiration, perfusion, and mental status. With the exception of opening an airway or implementing simple measures to control bleeding, treatment is not started until after all victims have been triaged.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: ICS AND EMS MULTI-CASUALTY

TIME FRAME: 1:30

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the ICS procedures for a multi-casualty incident by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Field Operations Guide ICS 420-1, FIRESCOPE, 1994

PREPARATION: In the near future, there may be an incident of a medical nature involving multi-casualties in your jurisdiction. Your department will be expected to respond and handle the incident. Are you prepared? Do you have an operational guideline that will provide you with the information to respond to the incident and handle the emergency? This lesson will provide you with concepts and principles that will assist you with developing these guidelines.

PRESENTATION	APPLICATION
I. KEY FACTORS TO CONSIDER FOR AN ORGANIZED FIRE DEPARTMENT RESPONSE	
A. The majority of emergency medical incidents involve between one and five patients	
1. Normally handled by initial responding units	
B. Large multi-casualty incidents will most likely overwhelm the initial responding resources	
1. The Incident Commander must have operational guidelines to assure proper handling of the incident	
C. The predetermined emergency medical guidelines must provide for the effective treatment and transportation of multi-casualties using current existing principles of emergency scene management	
1. The medical organization structure should be designed to utilize all aspects of emergency medical service response resources	
II. CONDITIONS WHICH CAUSE MEDICAL EMERGENCY INCIDENTS	
	What are some occasions that may cause large medical emergency incidents?
	OHT 2-2-1
A. Ongoing threats	
1. Earthquakes, floods, acts of nature	
2. Airplane crashes	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Large fires in high rise, wildland incidents	
4. Hazardous material incidents	
III. MUTUAL AID AGREEMENTS	
	OHT 2-2-2
A. Intended to establish systematic sharing of emergency resources by all fire departments within the region or state	
	Have the students discuss the mutual aid provisions in their jurisdictions.
B. Using California as an example, the multi-casualty incident operational procedures consist of the following	
1. Agency recognition that mutual aid agreements are established by	
a) Emergency Services Act of the State	
b) Master Mutual Aid Agreement	
c) California Fire and Rescue Aid Agreement	
2. An emergency medical organization within the fire service's Incident Command System which is consistent in terminology	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
IV. TYPES OF EMERGENCIES DEFINED	
	OHT 2-2-3
A. Expanded medical emergency	
1. Any medical emergency which exceeds the normal response capabilities	
B. Major medical emergency	
1. Any emergency which would require the access of local mutual aid resources	
C. Medical disaster	
1. Any emergency which would require the access of county-wide mutual aid resources	
D. Medical catastrophe	
1. An emergency determined to be a multi-casualty incident beyond the control of the existing resources within a county	
2. The level of response will require additional resources from proximal counties, state, and federal agencies	
V. COMPONENTS OF EMERGENCY TYPES	
	OHT 2-2-4
A. Expanded medical emergency	
1. Five to fifteen patients	
2. Five or more critical	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Resources dependent on the number of patients/victims in a critical state a) Rather than implementing the Medical Group concept	What ICS line positions should be filled for an expanded medical emergency?
4. Line positions should include a) Triage b) Transportation c) Medical communications d) Treatment e) Morgue f) Other key positions	
5. Ideal resource use a) One Advanced Life Support (ALS) and one Emergency Medical Technician (EMT) for each critical patient b) One EMT for each three noncritical patients c) One ALS provider as Medical Communications Leader using a designated disaster tactical radio frequency d) One EMT for triage	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
e) One ALS provider as Treatment Unit Leader	
f) Law enforcement for crowd control and morgue security	
	At what time should we consider calling in equipment for setting up a Medical Group?
	OHT 2-2-5
B. Major medical emergency	
1. Involves 16-50 casualties	
a) Incident Commander should activate a Medical Group	
b) Provide additional resources for support	
2. One ALS provider per three critical patients	
3. One EMT per seven patients	
	OHT 2-2-6
C. Medical disaster	
1. Involves 50 or more casualties	
a) Requires one or more Medical Groups	
b) Strike teams, task forces, groups, branches may be set up for control	
2. Minimum recommendations	
a) One complete medical group	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) One ALS provider per three critical	
	OHT 2-2-7
D. Medical catastrophe	
1. Beyond control of existing county resources	
a) Requires outside resources from proximal counties and/or state and federal assistance	
2. Implementation of Master Mutual Aid Agreement	
a) Who implements?	
b) First assigned company establishes command	
1) Performs size-up	
c) Orders a company to prepare an appropriate area	
1) Company members lay out two salvage covers in front of the apparatus on the left and right sides so wheels will drive along the edges of the covers to anchor them in place	
d) First company continues size-up and initiates the START system	
e) Orders and directs two assisting engines (as available) to drive onto the salvage covers anchoring the outside edges	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
f) Company members may then drape salvage covers from rig to rig with rope tie downs if weather or conditions demand it	
1) This provides environmental protection for the treatment areas	
E. Communications	
	Who establishes medical communications on a multi-casualty incident?
1. The first ALS unit will establish a Medical Communications Unit and initiate/confirm communications with the appropriate coordinating medical agency	
	Do we have a designated disaster tactical radio frequency?
	How do we activate it?
	What frequency is used?
a) Disaster coordinating hospital	
b) Example: Hospital Emergency Administrative Radio (HEAR) system used in California	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. The Medical Communications Unit will set up in a position to see the treatment areas and avoid interfering with patient flow through the transportation area which should be located right next to the Medical Communications Unit	
3. The second member on the ALS unit will assume the Treatment Unit Leader position	
F. Staging equipment	
1. Ambulances, medical supplies, apparatus, morgue, and law enforcement personnel should be contained within the controlled area	
2. Location should not be so close as to pose a problem with safety of continuity to the rescue scene	

RETIRED CURRICULUM

SUMMARY:

One of the critical elements to effective utilization of resources is a plan. The plan must be simple, easy to use, and meet the desired objectives. In the implementation of an MCI plan, it is essential to define the types/levels of emergencies, identify key resources, and provide personnel with the opportunity to practice. It is only with a thorough knowledge of the local system and available resources, that company officers can take advantage of the pre-established plan, and use it to mitigate the incident in a safe and effective manner.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time to be determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: ICS-MCI IMPLEMENTATION

TIME FRAME: 1:30

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the procedures for implementing the components of a multi-casualty incident by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Field Operations Guide ICS 420-1, FIRESCOPE, 1994

PREPARATION: In your agency, there have been situations requiring additional units or additional alarms dispatched to handle an incident. Only you know how those operations turned out. Some may have gone well; others may not have proceeded in the most effective manner. Utilizing the information presented in this lesson will assist you in preparing for the next incident that overtaxes your first alarm assignment.

PRESENTATION	APPLICATION
I. ICS MULTI-CASUALTY BRANCH	
A. Can develop in a simple to complex method	What are some of the benefits of a standardized incident management system? **OHT 2-3-1**
1. Common procedures	
2. Common organization	
3. Common terminology	
NOTE: Company resources have been identified with minimum staffing of three positions. If there are additional resources of personnel, they can be assigned as deemed necessary by the severity of the incident.	
II. FIRST COMPANY	
A. Medical Group Supervisor/Incident Commander	
1. Captain (company officer)	
a) Positions unit near the scene	
1) Available for radio use or public address	
2) Equipment needs	
3) Hose lines for fire protection or safety	
4) Tools and ladders for access	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Performs size-up and requests appropriate resources	
c) Declares a multi-casualty incident when there are five or more significant injuries	
	When does your agency declare an emergency a multi-casualty incident?
1) Normally, a MCI is declared whenever the emergency exceeds normal first response capabilities	
2) Is severe enough to require the use of a streamlined mode of operations to assure proper patient care	
d) Designate Unit Leaders and Treatment Area locations	
1) Immediate	
2) Delayed	
3) Minor Treatment	
4) Morgue area	
5) Morgue and Minor Treatment Areas should be located away from other treatment areas	
e) Medical strip traffic plan	
f) Ambulance traffic plan	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Initial triage	
	OHT 2-3-2
a) Engineer (apparatus operator) as Triage Unit Leader	
1) In performing triage, do not restrict to a management/supervisor position	
b) Immediate estimation of types and number of patients involved	
c) Report to Medical Group Supervisor/Incident Commander	
d) Move walking injured to designated area	
1) Identify civilian with first-aid training to be the initial Minor Treatment Manager	
3. Triage team	
III. FIRST AMBULANCE	
	OHT 2-3-3
	What two ICS positions are best filled by EMT/medic ambulance personnel?
A. Split personnel into two positions	
1. Treatment Unit Leader	
a) Sets up the Treatment Area	

RETIRED CURRICULUM

PRESENTATION	APPLICATION

1) Utilize salvage cover set-up for remote locations

2) Utilize other company personnel for Immediate, Delayed, Minor Treatment, and Morgue Managers

b) Obtains information from Medical Group Supervisor/Incident Commander

c) Coordinates with triage to identify treatment areas for litter bearers

1) To move patients from the impact area or scene vicinity

2. Medical Communications Coordinator

a) Utilizes ambulance for initial medical supply and communications

b) Maintains communications with hospital alert system/hospital facility

c) Assures proper patient transportation and hospital destination

IV. BATTALION CHIEF (INCIDENT COMMANDER)

A. Obtains briefing and assumes Incident Command

B. Establishes Command Post (CP) in advantageous position of operation

C. Coordinates Suppression Branch activities with Medical Branch activities

D. Develops the Incident Command System to meet the needs of the severity of the incident

RETIRED CURRICULUM

PRESENTATION	APPLICATION
E. An Operations Chief may be a priority position for development of the incident organization	
1. Coordinates activities of suppression forces with medical activities	
2. Coordinates Heavy, Moderate, or Light Rescue Groups and disentanglement	
3. Coordinates hazardous materials procedures	
4. Coordinates urban search and rescue	
5. Coordinates volunteer resources and groups	
V. SECOND COMPANY	
A. Patient Transportation Group Supervisor	What function does the Patient Transportation Group Supervisor perform?
1. Coordinates patient transportation	
2. Maintains records relating to patient identification, injuries, and mode of off-incident transportation and destination	
3. Confirms that hospital communications has been established	
4. Directs the transportation of patients as determined by Treatment Unit Leaders	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
VI. THIRD COMPANY	
	OHT 2-3-4
A. Assumes Triage Unit Leader position	
1. After obtaining briefing from current Triage Unit Leader	
2. Notifies Medical Group Supervisor/Incident Commander of change of command	
3. Gives status report	
B. Continues with triage if not complete	
C. If triage is not complete, coordinates and communicates with Treatment Unit Leader for readiness of receiving patients	
VII. FOURTH COMPANY	
A. Treatment Dispatch Manager	
1. Captain establishes position	
	Does this position require a Captain?
a) ICS positions are not sensitive to rank	
2. Crew reports to triage to initiate or assist litter bearers	
B. Confirms or establishes a traffic plan for apparatus or equipment to perform medical strips	
C. Requests additional medical supplies as needed through the Medical Group Supervisor/Incident Commander	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
D. If Logistics Section is established, this position would report to and receive direction form the Supply Unit Leader	
VIII. SECOND AMBULANCE	
	OHT 2-3-5
A. One crew member will be the Ground Ambulance Coordinator	
1. Reports to the Patient Transportation Group Supervisor	
2. Responsible for managing the Ground Ambulance Staging Area	
B. A second crew member is assigned to be the Medical Supply Coordinator	
1. Reports to the Medical Group Supervisor/Incident Commander	
2. Responsible for the acquisition and control of medical supplies and equipment from units assigned to the Medical Group	
IX. THIRD AMBULANCE	
A. Becomes first transporting vehicle to move patients off of incident to identified hospital	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
X. ADDITIONAL COMPANIES/RESOURCES	**OHT 2-3-6** What are some other ICS positions that may be filled?
A. Morgue Manager 1. If not already assigned B. Unit Leaders developed as needed 1. Multi-Casualty Branch Director 2. Operations Section Chief 3. Air Ambulance Coordinator 4. Air Operations Director 5. Helicopter Coordinator 6. Helibase Manager 7. Helispot Manager	

RETIRED CURRICULUM

SUMMARY:

As discussed in Fire Command 1A, the Incident Command System is best identified as an incident management system. Although it is designed to be an "all risk" system, some of the terminology is incident specific. The development of the Multi-Casualty Branch and all its components can be convoluted and require numerous personnel. It is essential that fire fighters and EMS personnel understand the critical positions and their functions. These positions must be utilized in an effective and efficient manner to provide for the orderly and rapid triage and transportation of all injured patients.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: HAZARDOUS MATERIALS OVERVIEW

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the major components of a hazardous materials incident by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- None

PREPARATION: The intent of this brief overview is predicated on the assumption that all students have a basic knowledge of hazardous materials. We will briefly discuss those elements that Incident Commanders must consider in their handling of the incident.

PRESENTATION	APPLICATION

NOTE: The following topics will not be reviewed in this lesson. As fire fighters, the students should have an up-to-date working knowledge in these areas:

Hazardous materials identification
Reference materials
Mitigation Techniques

I. PROPERTIES OF HAZARDOUS MATERIALS

A. All chemicals have more than one hazard

1. Physical
2. Chemical
3. Health
4. Environmental

II. TOXICOLOGY

A. Routes of contamination

B. Target groups

III. SITE CONTROL/WORK ZONES

A. An absolute must for all incidents

B. Three distinct zones

1. Hot or Exclusion Zone
2. Warm or Contamination Reduction Zone
3. Cold or Support Zone

C. Purpose of the zones is to limit translocation

RETIRED CURRICULUM

PRESENTATION	APPLICATION
IV. EVACUATION CONSIDERATIONS	
A. When do we evacuate?	
B. Considerations	
V. DECISION-MAKING PROCESS	
A. D.E.C.I.D.E	
VI. ICS AND THE HAZ MAT INCIDENT	
A. Where do hazardous materials fit in?	
B. Who's who?	
NOTE: Introduce the students to the scenario that will be used throughout this module.	
	OHT 3-1-1

RETIRED CURRICULUM

SUMMARY:

Hazardous materials present a daily challenge to the fire officer. A sound understanding of the principles involving the first-in fire officer's responsibilities must be a part of his/her training. This module is intended to accomplish a large part of that training.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

MODULE 3 SCENARIO:

In an effort to make this information more interesting and more practical for the student, we have included a module scenario. As each lesson in this module is completed, the students will have an opportunity to apply what they were taught. Certain aspects of the scenario are bound to change. We expect the control lines to change as the students learn more about the chemical in the scenario and its characteristics.

At specific points in each lesson plan, you will be prompted to discuss the scenario with the students. The major points will be provided. Don't let this discourage you, however, from introducing angles from your experiences.

To start the scenario:

I. Place OHT 3-1-1 on the overhead projector.

II. Place a clear transparency over it. You will use this clear sheet to write on.

III. On an easel pad, white board, or chalk board, have a student start a "Fact Sheet."

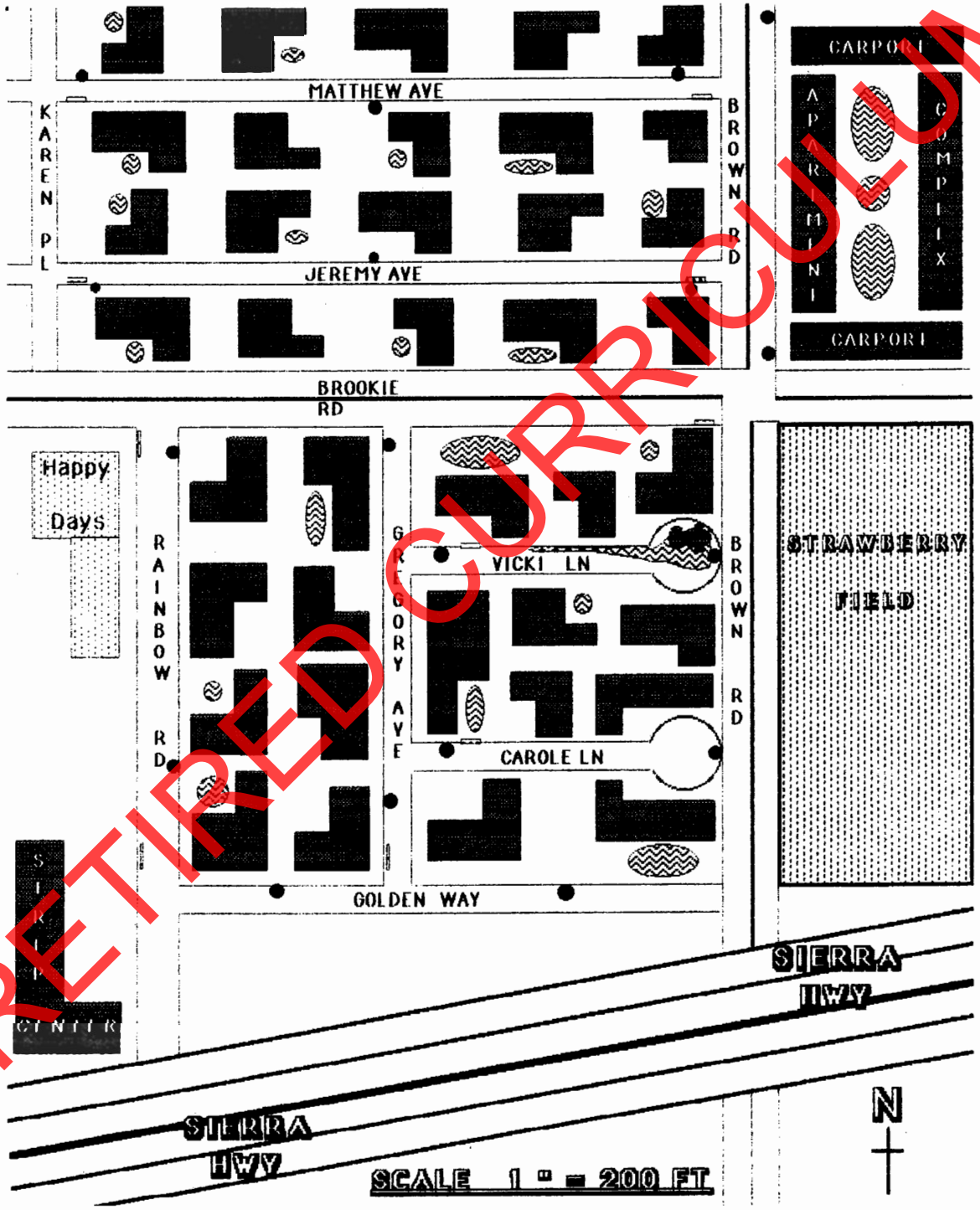
A. This sheet will list all of the clues or details learned about the scenario and will aid in mitigating the incident.

B. Information will be added to the "Fact Sheet" as you progress through the module.

The first part of Module 3 deals primarily with the theoretical properties of hazardous materials and toxicology. Therefore, you won't see much change in your diagram. However, this information is vital for the students. In practice, this information is needed to verify site control lines and determine what to do. Consequently, the information gathered early on will establish the foundation which will allow your incident to grow later.

NOTE: ***Though some of the particulars in the scenario are different, exposure to the chemical portrayed led to the death of two Los Angeles County fire fighters. The facts that will be given are factual to the involved chemical.***

SCENARIO MAP (OHT 3-1-1)



RETIRED CURRICULUM

RETIRED CURRICULUM

MODULE 3 SCENARIO

TIME: Tuesday morning, 11:00 am, middle of August

PLACE: Residential street

SURROUNDING AREA: A major freeway to the south, a strawberry field to the east, residential neighborhood to the north, and Happy Days day care and senior center to the west.

WEATHER: 92°F, 78% RH, fair with a possibility of thunder showers by late afternoon, wind from the southeast at 8 knots, gusts at 13 predicted to increase slightly throughout the afternoon.

CHEMICAL INVOLVED: Do not give the students the chemical name yet. They will need to ask for it and all other related facts. This will help train their thought process to investigate and not to "just jump in."

The chemical is ***dichloropropene***. More information about this chemical will be given throughout each lesson in this module.

AVAILABLE RESOURCES:

- Two Type 1 engine strike teams
- Two Hazardous Materials Response Teams
- One truck company
- Two environmental health officials from the county health department

NOTE: If the students request other responses, such as coast guard strike team, state and federal officials, etc., they may be deployed. Their assistance, however, is hours away.

SCENARIO: You are responding with a single engine company to a reported chemical leak in a middle class neighborhood with single family residences. The location is the end of the cul-de-sac on Vicki Lane, east of Gregory Avenue. The reporting party states that there is a clear liquid coming from a farmer's truck. The reporting party is not sure if the liquid is coming from the truck or the tank on the back of the truck.

Upon your arrival, you note several children playing in the street. Because of the many vehicles parked in the driveways, it appears that there are several families at home.

INSTRUCTOR: If asked, you may advise the students that:

1. The truck has a 2,500 gallon tank.
2. The liquid is coming from the rear of the truck.
3. It can't be determined if the liquid is coming from the tank or some other part of the truck.
4. There is a pool of liquid surrounding most of the truck's cab.
5. The rate of leak is approximately 5 GPM.
6. There is a flammable liquid placard on the truck.
7. Stenciled on the side of the truck is "DICHLOROPROPENE."
8. The truck's driver cannot be found.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: PROPERTIES OF HAZARDOUS MATERIALS

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the properties of hazardous materials by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- None

PREPARATION: The essence of your involvement in a hazardous materials incident will most likely be in the realm of scene management. In this capacity it is not necessary for you to have the extensive background that a Hazardous Materials Technician or a Hazardous Materials Specialist must have, but you must understand basic chemical properties. In this lesson, we will further discuss the four properties that all chemicals possess - physical, chemical, environmental, and health. Furthermore, we will discuss each of the chemical classes defined by the Department of Transportation. It is presumed that you have a working knowledge of the DOT North American Emergency Response Guide.

PRESENTATION	APPLICATION
I. MAIN GROUPINGS	
A. All chemicals have more than one hazard	
1. May be flammable and toxic	
a) Hydrocarbons	
2. May be corrosive and an oxidizer	
a) Nitric acid	
3. May be an extreme environmental concern	
a) DDT	
1) A banned pesticide	
b) Pesticides	
4. May be acutely and/or chronically toxic	
	OHT 3-2-1
B. Hazards are broken into four categories	
1. Physical	
2. Chemical	
3. Health	
4. Environmental	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
II. PHYSICAL HAZARDS	
	What is the physical make-up of a chemical?
A. Solids	
	How will they affect the incident?
1. With the exception of wind, solids usually do not translocate	
2. Solids normally toxic by ingestion only	
B. Liquids	
1. Run-off and off-gassing liquids will cause the size of your incident to increase	
2. Toxic by	
a) Ingestion	
b) Skin absorption	
c) Inhalation of vapors	
C. Gases	
1. Vapors may spread over a large area very rapidly	
2. Hardest of all incidents to control	
3. Toxic by	
a) Inhalation	
1) Greatest toxic hazard	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Skin absorption	
1) In some cases	
III. CHEMICAL HAZARDS	
	OHT 3-2-2
A. Department of Transportation divides all hazardous materials into nine categories	
1. Explosives	
a) Hazard Class 1	
b) Placard color = Orange	
c) May not be dynamite or ammunition	
d) May be a peroxided material	
1) Picric acid	
e) May be a material which has been impinged upon by heat and has become shock sensitive	
1) A particular group which is very sensitive to heat is the organic peroxides	
• ANFO (ammonium nitrate and fuel oil)	
• May not be placarded as "Explosive"	
2. Compressed gases	
a) Hazard Class 2	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Placard color = Varies	
c) Sudden release will result in	
1) Possible rocket effect	
2) Extreme cold	
d) Not knowing what the product is constitutes the most severe hazard	
1) No common color coding	
2) May include other hazard classes	
e) Common types	
1) Oxygen	
• Nonflammable but greatly adds to the burning process	
2) Methyl bromide	
• An extreme inhalation and absorption hazard	
3) Nitrous oxide	
• A CNS depressant	
4) Chlorine	
• Extremely toxic	
• Strong oxidizer	
3. Flammable liquids	
a) Hazard Class 3	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Placard color = Red	
c) Must be organic	
1) Reacts readily with oxidizers	
2) Don't store flammable liquids near oxidizers	
d) Most flammable liquids are toxic by	
1) Ingestion	
2) Inhalation	
3) Absorption	
• To a lesser degree	
e) Mildly corrosive	
f) As with all chemicals, "The Dose Makes the Poison" (M. Alice Ottoboni, 1984)	
1) Alcohol	
2) Malathion	
4. Flammable solids	
a) Hazard Class 4	
b) Placard color = Red and white striped	
c) Red phosphorous, magnesium	
1) Used in manufacturing of illicit drugs	
2) Burns brighter with the addition of water	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3) Sodium, calcium, potassium	
d) Many Group I and II metals	
1) Many are water reactive	
• Sodium	
• Calcium	
• Potassium	
2) Reaction with water produces hydrogen gas	
• May lead to fire or explosion	
• Resulting solution is very caustic	
5. Oxidizers	
a) Hazard Class 5	
b) Placard color = Yellow	
c) One of the most unpredictable hazard classes	
1) Do not mix with organics	
d) Does not need outside source of oxygen in order to burn	
1) Self-accelerating decomposition temperature (SADT)	
e) Treat these incidents in the same way you would treat an explosives incident	
1) Until the incident is stable	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2) May form peroxided crystals which cannot be seen	
f) Consider calling a Hazardous Devices Team	
1) Bomb Squad	
g) Subgroup which can be very sensitive to shock are known as organic peroxides	
NOTE: Discuss the fire triangle.	
	OHT 3-2-3
h) Very sensitive to heat and shock	
1) Reaction with other chemicals may produce sufficient heat (energy) to cause fire or explosion	
i) Improper handling may result in serious injury or death	
j) Examples	
1) Ammonium nitrate and fuel oil (ANFO)	
2) Picric acid (not really an acid)	
3) Methyl ethyl ketone peroxide (MEKP)	
4) Over 70% concentration of hydrogen peroxide	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
6. Poison	
a) Hazard Class 6	
1) Designed to kill	
b) Placard color = Black and white	
1) Skull and crossbones	
c) One of the most stressful and time-consuming of all incidents	
d) Many are pesticides	
1) Diazinon	
2) Metasystox	
3) Lindane	
e) Some are not pesticides, but are very toxic	
1) Acrolein	
2) Acetaldehyde	
3) Cyanogen	
4) Dimethyle sulfate	
7. Radioactives	
a) Hazard Class 7	
b) Placard color = Yellow and white	
1) Propeller	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Incidents are usually beyond the capability of the First Responder	
1) Call for expert assistance	
• HMRT or radiological officer	
d) Key factors to remember for your protection	
1) Time	
2) Distance	
3) Shielding	
e) Monitoring equipment, in the hands of trained experts, will assist in the establishment of a 2Mr Zone	
1) Individual must be trained	
2) This will establish the "hot zone"	
8. Corrosives	
a) Hazard Class 8	
b) Placard color = Black and white	
1) Test tubes and hands	
c) A solid, liquid, or gas that causes the destruction or irreversible alteration in human skin tissue at the site of contact	
d) In the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 3-2-4
e) pH ranges from 0 to 14	
1) 0 to 6 = acid	
2) 8 to 14 = base	
3) 7 = pure water	
	OHT 3-2-5
f) Common strong acids	
1) All are inorganic	
2) Hydrochloric acid = HCl	
• Concentrated pool acid	
3) Sulfuric acid = H_2SO_4	
• Battery acid	
4) Nitric acid = HNO_3	
• Also a strong oxidizer	
5) The word "acid" is always used in its nomenclature	
	OHT 3-2-6
g) Common strong bases	
1) Potassium hydroxide = KOH	
2) Sodium hydroxide = NaOH	
3) Bases = caustics = alkalines	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4) The word "hydroxide" is normally used in naming this group	
5) Never mix strong acids with bases	
• May lead to fire or explosion as well as severe injury or death	
9. Other Regulated Materials (ORM)	
a) Anesthetic	
b) Irritating, noxious, or toxic properties	
c) Capable of causing significant damage to a transport vehicle or vessel	
1) Battery parts	
2) Pesticides	
d) Characteristics that make product unsuitable for shipment unless specifically prepared for transport	
e) Consumer type commodity	
f) Presents a limited hazard during transport	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
IV. HEALTH HAZARDS	
NOTE: This topic is covered in depth in Lesson 3 - Toxicology	
	OHT 3-2-7
A. Paracleus	
1. "What is not a poison?" "All things are poison and nothing is without poison." "It is the dose that make things not a poison."	
NOTE: Intent is not to scare the student, rather to make them aware	
V. ENVIRONMENTAL HAZARDS	
A. Land	
1. Dumping of waste material has contaminated our underground water tables	
a) Military base in Orange County, California	
b) Springfellow Acid Pit, Riverside County, California	
B. Waterways	
1. Remnant pesticides and fertilizers from years gone by still affect and infect our waterways	
a) Dunsmuir, California	
1) Metam sodium	
b) Exxon Valdez	
c) Love Canal	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
d) McCall Dump Site	
C. Air	
1. The burning of carbon (fossil fuels) and the use of chemicals add tons of pollutants to the atmosphere	
a) Chlorofluorocarbons (CFC)	
b) Oxides of sulfur (SOx)	
c) Oxides of nitrogen (NOx)	
NOTE: Continue with Module 3 scenario.	

RETIRED CURRICULUM

SUMMARY:

All chemicals have more than one hazard. Do not key in to only the most obvious hazard!

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

MODULE 3 SCENARIO - LESSON 2:

For this section of the scenario, have a student start a "Chemical Fact Sheet" in addition to the "Fact Sheet" started after Lesson 1.

If the students did not ask all the questions that were answered in Lesson 1, go ahead and provide them the information.

ANALYSIS:

Take the students back to the fact that all chemicals possess more than one hazard. If they've missed this point, you have a lot of work ahead of you. Analyze each hazard area: physical, chemical, health, and environmental.

Physically, dichloropropene is a clear to straw-colored liquid. However, at a given temperature and weather conditions, it readily volatizes. This creates a very complex problem, to say the least. For now, deal with strictly the chemical's liquid characteristic. Later, when evacuations are discussed, the plume dispersion can be dealt with.

If dichloropropene were only a liquid, the scene would be fairly easy to control. Since a liquid is what is encountered now, the concern is to keep it out of the drain systems.

Chemically, dichloropropene is a chlorinated hydrocarbon ($C_3H_4Cl_2$) with the following characteristics:

1. Vapor pressure = 172 mmHg at 92°F
2. Flammable limits of 5.3% to 14.5%
3. Flash point at 95°F
4. Specific gravity = 1.2
5. Vapor density = 1.4
6. Mild corrosive
7. Not soluble in water

These characteristics on page ### in the Fire Command 1B student manual.

RETIRED CURRICULUM

Simply stated, dichloropropene is not good for your health! Details on this issue will be presented later. Right now, tell the students that dichloropropene is a soil fumigant - it's purpose is to kill something. A soil fumigant doesn't care whether that something is weeds or little critters. However, if it can destroy its target species, chances are it can also destroy people. In the case of dichloropropene, this is exceptionally true.

For those students who keyed into the flammability hazard only, they missed the major problem with the chemical. Because dichloropropene is highly flammable under the right conditions, it is classified and placarded as a flammable liquid under the DOT system. This is an extremely important point for the students to remember. Just because the DOT doesn't figure the toxic side of this chemical, that doesn't out weigh its flammability hazard. Nor does it mean that the flammability should be more important to the fire officer or to the public they are sworn to protect. Far too often we don't think of those other hazards which may ruin our day.

It is imperative that you exemplify this point to the students. Jump up and down, dance on the desk, whatever it takes to drive this point home. This is one of the most important points of this module.

By now, the students have probably guessed that this stuff is bad for the environment. Indeed it is! From the liquid standpoint, all must be absorbed or suctioned up. All contaminated surfaces will need to be steam cleaned. Contaminated soil will have to be removed. Since it is a hydrocarbon and not soluble in water, dichloropropene will sink in water. Point out to the students that not all hydrocarbons float on water and some are actually miscible in water... like alcohol. Therefore, if it reaches a waterway overflow, dams might need to be constructed. You could discuss duck eggs, salamanders, and mosquito larvae with the students, but by this point they probably get the idea.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: TOXICOLOGY

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the toxicology of hazardous materials by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- The Dose Makes the Poison, M. Alice Ottoboni, 1984

PREPARATION: In order to make wise decisions in the field, you need to have a basic understanding of how the human body reacts to different chemicals (toxins). Some chemicals may affect you when exposed by one route but not another. Some are toxic after a one-time exposure, others are toxic only after a long period of exposure. There are also those in our society who are more susceptible to certain toxins. In the following lesson, we will present data which will help you make an informed decision in the field.

PRESENTATION	APPLICATION
I. TOXICOLOGY DEFINED	
	OHT 3-3-1
A. The science that investigates the adverse systemic effects of chemicals	
B. "The effects of chemicals on us"	
II. TIME FRAMES	
	OHT 3-3-2
A. Short-term exposures (acute)	
1. Short duration/high dose	
2. Measured in seconds, minutes or hours	
3. Single exposure to toxicant that can result in unconsciousness or death	
4. Usually leads to an emergency situation	
a) Cyanide	
B. Long-term exposure (chronic)	
1. Long duration/small dose	
2. Sublethal quantities over a period of time	
a) Mercury	
b) Residual pesticides	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
III. ACTIONS	
	OHT 3-3-3
A. Two types	
1. Local	
a) Action takes place at site of contact	
1) Burns	
2) Rashes	
3) Necrosis	
2. Systemic	
a) Action occurs at site other than point of contact	
1) Target organs	
IV. FACTORS INFLUENCING TOXICITY	
	OHT 3-3-4
A. Chemical	
1. Physical characteristics	
a) Solid	
1) Normally an ingestion hazard only	
b) Liquid	
1) Can be ingested or absorbed through the skin	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Gas	
1) Vapors may be an inhalation hazard	
2) There are gases which are skin absorbable	
2. Concentrations	
a) The "stronger" or more concentrated, the greater the injury	
	OHT 3-3-5
B. Exposure	
1. Route	
a) Inhalation/respiratory	
1) The greatest of hazards	
2) Lung surface is a very poor barrier to chemicals	
• Skin surface area 20 sq. ft.	
• Lung surface area 750 sq. ft.	
b) Dermal/absorption	
1) Intact skin provides a good barrier to chemicals	
c) Oral/ingestion	
1) Normally occurs as a result of poor hygiene	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
d) Injection	
1) Not normally considered when studying toxicology	
2) Must be aware of this possibility	
• Inadvertent needle sticks	
• Sharp objects at a fire scene	
2. Duration	
a) The longer the contact time, the greater the injury	
3. Dose and concentration	
4. Local or systemic action	
	OHT 3-3-6
C. Individual factors	
1. Sex	
a) Women	
1) Accumulate more fat soluble substances	
2) More susceptible to teratogenic and mutagenic threats due to being child bearers	
2. Age	
a) Metabolic rate	
1) Slows with age	

RETIRED CURRICULUM

PRESENTATION	APPLICATION

b) Respiratory/cardiac diseases

3. Individual susceptibility

a) Allergies

1) Poison oak

b) Physical impairments

1) Pulmonary disfunctions

4. Nutrition/health

a) Physically fit are less susceptible

b) Ill or poor health may mask exposure symptoms

c) Generally, diets high in vitamins and proteins protect against the toxic effects of many chemicals

V. DOSE RESPONSE RELATIONSHIPS

A. Physiological effect is dependent on the chemical, concentration, and contact time

B. General principle

1. The longer contact time, the greater the physiological effect

a) Prompts us to decontaminate potentially exposed individuals early

C. Physiological effect will vary greatly among individuals in an exposed population

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Not all folks will react the same way a) Individual susceptibilities b) Ethyl alcohol	OHT 3-3-7
2. Dose-response curve	
3. Basic reaction groups a) Highly sensitive 1) Elderly, infirmed, very young b) Least sensitive 1) "Super humans" 2) Very healthy adults 3) Little or no reaction c) Mid-range 1) Most of us 2) Moderate reaction 3) Where the numbers are taken from • TLV-TWAs • STELs	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
VI. DOSE RESPONSE TERMS	
A. Three basic ranges	
1. Lethal dose/concentration	
2. Occupational exposure levels	
3. Life-threatening concentrations	
	OHT 3-3-8
B. Lethal dose/concentration	
1. Described in terms of what level of exposure was required to produce a lethal effect in a given percentage of a test population	
a) Lethal dose	
1) LD50 = death of 50% of test population	
2) LD1o = first death in population	
3) Refers to either oral or dermal exposure	
b) Lethal concentration	
1) LC = lethal concentration	
2) Refers to an inhalation exposure	
	OHT 3-3-9

RETIRED CURRICULUM

PRESENTATION	APPLICATION
C. Occupational exposure limits	
1. Threshold limit value	
a) Based on the concept that there is a threshold dose or concentration below which there is no adverse effect	
b) Refers to airborne concentrations of substances and represents conditions in which it is believed, that nearly all workers may be repeatedly exposed day after day without adverse effect	
1) This is a clearly defined indication that the "safe" numbers are	
• Not for certain and without discussion	
• There are exceptions to the rule	
c) Subject to change as more data is developed	
1) Examples	
• Ethylene Oxide	
• TLV 10 yrs ago = 100 ppm	
• TLV later changed to 10 ppm	
• TLV today = 1 ppm	
d) To be used as guidelines only	
	OHT 3-3-10

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Threshold limit value-time weighted average (TLV-TWA) a) Average exposure to a chemical workers can be exposed to during a 40-hour week/8 hours a day without showing any toxic effects b) End of work day exposure must average out to be at or below the TLV 3. TLV - short-term exposure limit (TLV-STEL) a) Fifteen minute time weighted average exposure 1) Example: having to take the lid off a vat in order to add more chemical which will lead to a higher dose than allowed by TLV but permitted by STEL b) Excursions above TLV-TWA would be at least 60 minutes apart and not repeated more than four time per day 4. TLV - ceiling (TLV-C) a) Values exist for substances to which exposure results in a rapid and particular type of response b) Should not be exceeded even instantaneously 5. Permissible exposure limit (PEL) a) TWA enforced by OSHA	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Nearly identical to TWAs published by ACGIH	
1) Even similar organizations can't agree exactly on what is safe	
	OHT 3-3-11
D. Life-threatening concentrations	
1. Immediately Dangerous to Life and Health (IDLH)	
a) Maximum level from which a worker could escape without any escape impairing symptoms or any irreversible health effects	
	OHT 3-3-12
NOTE: "... any irreversible health effects." Not to say that you may not be injured, just so long as your injuries will not impair your escape or be irreversible! When dealing with these products, strongly consider the use of only specialized assistance.	
VII. CANCER CAUSING AGENTS	
	OHT 3-3-13
A. Carcinogens	
1. Some 200 substances are known carcinogens	
a) Many other substances are under study as suspected carcinogens	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Whenever a known or suspected carcinogen is involved, responders must use the highest levels of protection	
a) When dealing with these products, strongly consider the use of only specialized assistance	
VIII. BIRTH DEFECT CAUSING AGENTS	
	OHT 3-3-14
A. Teratogens	
1. Effects this generation	
a) Kids in the womb	
b) Children	
c) Women of child-bearing age	
	OHT 3-3-15
2. Mutagens	
a) Effects the next generation	
b) Alters DNA genetic code	
3. When dealing with these products, strongly consider the use of only specialized assistance	

RETIRED CURRICULUM

PRESENTATION	APPLICATION

IX. OXYGEN DEFICIENT ATMOSPHERE

A. ODAs occur naturally and as a result of chemical displacement of oxygen in confined spaces

1. Below grade spaces (pools, loading docks, etc.) can be considered as a confined space and therefore are subject to ODAs

B. Less than 19.5% oxygen is dangerous

C. Quickly diminishes mental and physical capacities

1. Don't be a hero in trying to rescue someone without the right protection

D. Must protect ourselves with SCBAs

1. Remember, all chemicals have more than one hazard

2. Do not be lulled into believing that the chemical involved is strictly and ODA

3. It may well be a skin absorbable toxin as well

E. Chemical concentrations may be increased in confined spaces

NOTE: Continue with Module 3 scenario.

RETIRED CURRICULUM

SUMMARY:

Through our discussion of toxicology, we have learned how some chemicals or toxins may affect us after short duration (acute) exposure and other toxins will affect us only after long-term (chronic) exposure. We have also learned that even though a chemical exposure may result in a localized affect, it may also exhibit a systemic affect as well. We also discussed how not all people will react the same way to a given exposure. This prompts us to consider using occupational exposure limits as guidelines and not as rules. We've taken some time to discuss carcinogens, teratogens, and mutagens, and how we must use extreme caution when dealing with these materials. All in all, we've learned how to better protect ourselves from the sometimes insidious bite which all chemicals possess.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

MODULE 3 SCENARIO - LESSON 3:

Have a student add this new information to the "Chemical Fact Sheet."

ANALYSIS:

This is where you can really have fun with the student that keyed into only the flammability hazard. Dichloropropene possesses the following qualities:

1.	TLV-TWA	=	1.00 ppm
2.	IDLH	=	unavailable
3.	LD 50 dermal (rabbit)	=	333 mg/kg
4.	LD 50 oral (rat)	=	224 mg/kg

Dichloropropene is a Class 1 poison and carries a signal word (for pesticides) of "danger." Depending on the reference used, it is toxic by inhalation, ingestion, and dermal routes (injection hazards are not covered by references). Full chemical protective clothing should be worn.

In your discussion with the students, dichloropropene should be considered as a flammable poison. It is apparent that dichloropropene is an inhalation hazard, and to a lesser degree but still significant, an absorption and ingestion hazard. Impress upon the students that the clear liquid flowing down the street was not simply water but a chemical with only the appearance of water which took the lives of two Los Angeles County fire fighters. While they need to be concerned with the flammability potential, they must not lose sight of its health and environmental potential.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: SITE CONTROL/WORK ZONES

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: Level I

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of hazardous materials site control/work zones by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages XX

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- None

PREPARATION: Picture this -- a major pesticide spill. The pesticide is toxic by all routes. You come up with a solution that not only works, but amazes all who are involved or watching. Just one small problem. You forgot to set control lines or work zones. As a result, innocent people have driven through your scene and are now contaminated. Secondly, because you did not follow strict decontamination procedures (yes, stuff does run uphill in this case!), those persons who were contaminated were not decontaminated prior to being transported to the hospital. As a result, you now have the scene, personnel, an ambulance, and a hospital emergency room to decontaminate. It is imperative that site control and work zones are established immediately at every incident, regardless of size!

PRESENTATION	APPLICATION

I. CONTROL ZONES

A. As recommended by the EPA, USCG, NIOSH, and OSHA, there are three zones which need to be established

OHT 3-4-1

1. Hot or Exclusion Zone
2. Warm or Contamination Reduction Zone (CRZ)
3. Cold or Support Zone

B. Hot or Exclusion Zone

1. The area where the contaminant exists or is thought to exist
2. The area of greatest contamination
   a) In the initial stages of an incident, the Hot Zone includes any and all areas where contamination exists
3. ***Only authorized personnel who are both trained and properly equipped and are in the presence of a "buddy" are allowed in this area***
   a) In the majority of cases, this will mean only members of a hazardous materials response team
   b) Remember, you must be trained and properly equipped to perform the duties which are expected of you
      1) There are ***absolutely no exceptions***

RETIRED CURRICULUM

PRESENTATION	APPLICATION
C. Warm or Contamination Reduction Zone (CRZ)	
1. The area where decontamination takes place	
2. Designed to act as a buffer between the Hot and Cold Zones	
3. As one transitions from the Exclusion Line through the Warm Zone to the Warm Line, contamination potential reduces	
4. The purpose of the CRZ is to leave the contamination in that zone and not translocate it outside of that zone	
5. Decon personnel must be trained and practice this art	
a) Your incident may well need the assistance of trained professionals	
6. ***Though the risk potential in the Warm Zone is less than that of the Hot Zone, the law still stipulates that only those personnel who are trained and properly equipped be allowed in this zone***	
a) This is due to the presence of contaminants, regardless of concentrations	
b) All personnel must be trained for the duties which they are expected to perform and they must be properly equipped	
	OHT 3-4-1 (highlight safe refuge area)
7. Zone where the safe refuge area is placed	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
D. Cold or Support Zone	
1. Area where command functions and support personnel are staged	
2. Designed so that no contamination exists	
3. Area where personnel and resources report	
E. Area outside of Support Zone	
1. Recommended that an area outside of the Support Zone be established where the media and other nonessential personnel may accumulate	
a) "Camp" not staging	
2. Not required by EPA, etc.	
F. General considerations for establishing zones	
1. Set-up	
a) Based on where the contamination is	
b) Where it might go	
c) Most importantly, always error on the side of safety	
2. Look for subtle hints	
a) Dead vegetation	
b) Dead or injured animals	
c) Dead or injured personnel	
3. Make your zones large or small, but always error on the side of safety	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Use natural or existing boundaries	
a) Trees	
b) Vehicles	
c) Fences	
5. Clearly mark your boundaries	
a) Fire line tape	
b) Barricades	
c) Enforce with the biggest, meanest person you can find	
6. Always position yourself upwind and uphill	
7. Be flexible	
a) In a protracted incident, you may have to move your zones several times to accommodate changing conditions	
8. Base your judgment on	
a) What is happening or likely to happen	
b) Past experiences	
c) Worst case scenario	
G. Basic rules used by HMRTs	
1. No eating, drinking or smoking in the Hot or Warm Zones	
2. No horseplay allowed	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. ***While there is work going on in the Hot or Warm Zones, all back-up teams and support personnel are also working***	
a) ***All safety considerations are in place any time there is work being done***	
b) ***Never leave your entry or decon teams by themselves***	
1) Their safety depends on you and those working for you	
NOTE: Continue with Module 3 scenario.	

RETIRED CURRICULUM

SUMMARY:

When determining site control lines, consider where the contaminant is and where it might be. Secondly, remember to consider all the hazards of the contaminant, not just the obvious.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

MODULE 3 SCENARIO - LESSON 4:

Ask the students where they would place the control lines for this scenario. You're absolutely right... it's a trap. The recommended evacuation distance for an incident involving a rail tanker with this material involved in fire filled is one-half mile in all directions. No evacuation distances were given for simply a spill without fire. However, with a substance as toxic as this, particularly with an added flammable hazard, your control lines should be well out of the immediate area.

Recall that the Hot Zone is where the chemical is or might be. The CRZ also has contaminants, but it is due to the toxin being translocated into the area, not because it was there originally.

You won't be able to draw your control lines in because the diagram is too small. Remember, the recommended evacuation distance provided reflects a rail tanker which is on fire. Since we are dealing with only a fraction of the quantity (2,500 gallons versus 33,000 gallons), our lines might shrink some. Remember to be conservative, however. Our material is not burning now, but it may at some point. Another factor which leads to the large evacuation distance is a rail tanker is made of steel with some type of relief device. This leads one to a BLEVE. The tank on the farmer's truck is made of steel or aluminum and is lightweight, similar to that of a gasoline tanker. As we all know, gasoline tankers will not BLEVE. They cannot build the pressure. However, one factor which leads us to keep the control lines further out is the downwind dispersion of the dichloropropene at the TLV-TWA (1 ppm) is 321 yards at one minute! "Houston, we have a problem!"

At a minimum, unless some mitigation or controlling technique is employed (i.e., foam or visqueen), the Hot Zone should include all points shown north of the Sierra Highway. If something is done to minimize or eliminate vapor production, this zone would decrease in size.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: EVACUATION CONSIDERATIONS

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of evacuation considerations by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- None

PREPARATION: As an Incident Commander, you are faced with a simple but yet very complex decision. Evacuation concerns are easy because, with very few exceptions, an evacuation is necessary and required. Complexity enters when you must consider how large an area needs to be evacuated, when to evacuate, who performs this task, where the evacuees go, when the evacuees return, how long will it take, and who gets the privilege of dealing with the media and the residents who are not inclined to leave. Remember, you're going to be "wrong" regardless of which side of the line you toe. Hopefully, you already have evacuation procedures which answer some of these concerns. If not, you've some work in front of you. Regardless, the questions of when, where, and why are always going to be ultimately answered by you. In this lesson, we will give you some guidelines to use.

PRESENTATION	APPLICATION

I. WHEN TO EVACUATE

A. When the presence of a hazardous material is known or suspected

B. Potential for fire or explosion

1. Or thought to be present

C. When the affected populous is such that an evacuation is "demanded"

1. Very sensitive

a) Nurseries

2. Predisposed

3. Aged-infirmed

a) Retirement homes

b) Care facilities

4. Young children

a) The presence of this type of populous may also prohibit an evacuation due to immobility or logistical concerns

b) In these cases, shelter in place may be a better option

II. WHO TO EVACUATE

A. All civilian and noncivilian personnel are removed from the area

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Exception	
a) Those persons who required to be there for mitigation/control measures	
b) This area is now considered to be part of the Hot Zone	
1) ***All persons inside this area must be rescued by trained and equipped personnel***	
III. OTHER CONSIDERATIONS	
A. General description of the area	
1. High versus low density	
2. Urban versus suburban	
3. Rural versus wildland	
B. Weather conditions/forecast	
1. Wind	
a) Speed	
b) Direction	
2. Relative humidity	
a) Rain	
b) Water reactive materials	
3. Temperature	
a) Certain chemicals will not volatize at the onset of your incident, but as the ambient	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
temperature rises, so might the volatization	
C. The general population will become symptomatic as soon as the suspected symptoms are made public	
1. Therefore, do not release symptoms	
D. An incident is not static	
E. All chemicals have more than one hazard	
1. Gasoline	
a) Flammable	
b) Toxic	
c) Mildly corrosive	
IV. TYPES OF EVACUATIONS	
	OHT 3-5-1
A. Active or "actual evacuation"	
1. Persons are physically moved from the hazard	
2. Problems	
a) Transportation	
b) Sheltering	
c) Food and care	
d) Sanitation	
	OHT 3-5-2

RETIRED CURRICULUM

PRESENTATION	APPLICATION
B. Passive or "shelter in place"	
1. Leave people where they are	
a) Close windows and doors	
b) Shut down HVAC systems	
c) By doing so, we relieve those logistical needs already discussed	
2. Problems	
a) Requires monitoring of evacuees	
b) Will impact on-scene personnel	
c) Protecting people by windows and walls only	
V. ADDITIONAL THOUGHTS	
A. Remain flexible	
1. Even though you've evacuated in one direction, it doesn't preclude you from having to evacuate in another direction	
2. Monitor constantly	
B. Advance planning	
1. How far to evacuate?	
a) Use NAERG guidelines until additional information is obtained	
2. How do I accomplish an evacuation?	
a) Persons within the hot or CRZ Zones are not evacuees	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1) They are considered a rescue	
2) ***Must be rescued by trained and equipped personnel***	
b) Outside of Hot/CRZ Zone	
1) Suggest use of the police department, etc.	
	OHT 3-5-3
	OHT 3-5-4
NOTE: Continue with Module 3 scenario. After the students have shown their evacuation areas, display OHT 3-5-4 over the scenario diagram (OHT 3-5-3). See note, last page of section.	

RETIRED CURRICULUM

SUMMARY:

We have discussed two basic types of evacuations and the advantages of each in this chapter. We have also learned that pre-incident planning, particularly with those who will lend logistical support is a must. We have also discussed the particular problems which are posed when those who need to be evacuated are inside the Hot Zone. You have been given the basic tools needed to perform evacuations. It is now your duty to further your studies in this area.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

MODULE 3 SCENARIO - LESSON 5:

Since we discovered that the evacuation distances are a suggested one-half mile, we should all be in agreement that an evacuation is needed. The question is, "Do we move everyone out or do we shelter in place?"

Considering that we have a severe fire potential, it is wise to move all residents on Vicki Lane, Carole Lane, Gregory Avenue, Rainbow Road, and the Happy Days facility out of the area. Sheltering in this situation is not viable partially due to the fire potential, but also due to the possibility of a wind shift. All roads should be closed and all workers in the strawberry field evacuated as well. Remind the students that since these persons are within the Hot Zone, they are considered a rescue problem. This means that those folks entering into this zone must be properly equipped and trained. Since we are evacuating due to the fire potential and not simply because of airborne concentrations above acceptable levels, fire fighters dressed with full turnouts and SCBAs will be sufficient as long as they do not come in contact with the vapors. Organic canister respirators will work for the persons rescued. Remind the students that once these persons are removed, they cannot simply be let loose. They were in the Hot Zone and need to go through the CRZ and be released by the Decontamination Unit Leader with agreement from the Safe Refuge Area Manager. All others shown on the map may be sheltered in place.

Another point to pass on to the students involves incidents that have long distances between the Hot Zone and the CRZ. This distance does pose a problem, but can be simplified when battery operated vehicles, bicycles, or the like are utilized to transport the Entry Team.

PLUME DISPERSION:

The oval on OHT 3-5-3 represents the plume dispersion model as calculated by ALOHA using a scale of 1" = 200'. When placed on top of the scenario map, this overhead identifies where your plume may go. It does not, however, consider wind shifts. ALOHA's air model information is on the following page.

RETIRED CURRICULUM

ALOHA AIR MODEL

CHEMICAL NAME: DICHLOROPROPENE

TLV-TWA=1.00 PPM IDHL=Unavailable
V.P.=104 MM (HG) at 70.0 F MOL. WT.=111
BOILING POINT TEMPERATURE IS: 170 F
COMPUTED V.P. at 92.0F is 172 mm (Hg)
SATURATION CONC. At 1 ATM. And 92.0 F is:225,908 PPM OR 22.6%

WIND SPEED= 8.0 MPH FROM THE sw
AMBIENT TEMPERATURE IS 92.0 DEG. F
NO INVERSION PRESENT / STAB. CLASS=B

MAP Dist 14 LOADED

USER INPUT SOURCE STRENGTH DIRECTLY
SOURCE STRENGTH IS: 5.00 Gallons/min.

FOR A CONTINUOUS SOURCE:
DOWNWIND TLV-TWA DIST. & TRAVEL TIME IS: 321 yards & 1 min.
1.00 PPM DOWNWIND DIST. & TRAVEL TIME IS: 321 yards & 1 min.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: DECISION-MAKING PROCESS

TIME FRAME: 0:15

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the decision-making process during a hazardous materials incident by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- None

PREPARATION: As with all phases of your career, you need to make decisions regarding hazardous materials incidents. As the fire service has used RECEO for years, the "glowbugs" (HMRTs) are currently using DECIDE. In this lesson, we will give you information for using the DECIDE system to reach decisions.

PRESENTATION	APPLICATION
I. ALL DECISIONS SHOULD	
A. Favorably change the outcome	
B. Allow you to be a part of the solution	
1. Not a part of the problem	
C. Have a positive, not a negative, influence on the incident	
II. DECIDE	
	OHT 3-6-1
A. An acronym for	
1. D = Detect	
2. E = Estimate	
3. C = Chose	
4. I = Identify	
5. D = Do	
6. E = Evaluate	
	OHT 3-6-2
B. Detect	
1. The presence of a hazardous material	
2. Utilize all available information	
a) Containers	
b) Placards and labels	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Available paperwork	
d) People on scene	
e) Dead animals and/or vegetation	
3. If no hazardous material is located, your incident might be over	
a) Consider "public perception"	
	OHT 3-6-3
C. Estimate	
1. What are the likely consequences with and without intervention	
a) What will happen if I leave things alone?	
b) Do I need more resources or information prior to activity?	
2. Priorities	
a) Life	
1) Irreplaceable	
b) Property	
1) Can be replaced	
2) May be extremely costly	
c) Environment	
1) Repairs may take decades	
2) Cost millions	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Be part of the solution, not a part of the problem	
	OHT 3-6-4
D. Choose	
1. Appropriate objective	
a) What we want to accomplish	
1) Protect people	
2) Protect property	
3) Protect environment	
4) Prevent spread	
2. Primary objective	
a) Contain, control, or extinguish	
b) In the most expeditious manner	
c) With the least number of injuries and losses of life	
d) A minimum of property damage	
3. Objectives are the basis upon which your actions will be based	
a) Keep in mind at all times	
b) Keep focused on the "big picture"	
1) Not the "how to"	
4. Be flexible	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
a) You may have to alter your plan	
	OHT 3-6-5
E. Identify	
1. Your options	
a) Consider all practical options	
b) Options are tactics	
2. If the option is not practical	
a) Revert to the most practical option and chose the best one	
	OHT 3-6-6
F. Do	
1. The best option	
2. Remember the priorities	
a) Life	
b) Property	
c) Environment	
3. Always think safety	
	OHT 3-6-7
G. Evaluate	
1. Requires setting time frames	
a) Based on best judgment and experience	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. At one hour into incident a) What should have been accomplished? b) Change your plan if it isn't working **NOTE:** Continue with Module 3 scenario.	

RETIRED CURRICULUM

SUMMARY:

DECIDE is a tool which may be used to determine what action, if any, is needed following each step in order to help you in handling your situation. The main points to remember are: 1) if there is no chemical present, we can't have an incident, and 2) sometimes doing nothing is better than doing the wrong thing.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

MODULE 3 SCENARIO - LESSON 6:

Have a student scribe this information separately from the other two fact sheets. This new information will assist in completing this activity. Allow the students to work through this section as a whole. Take each letter and fill in as completely as possible to determine what they want to do. For example:

DETECT: This was pretty much taken care of in the second session. Students "saw" the truck/tanker with the placard and stenciled chemical name. You might ask why they didn't believe that it was simply water in the gutter. If it were, their incident would have been completed as no hazard existed.

ESTIMATE: This should have been fairly simple... or was it. Could the students really intervene without becoming part of the problem. Probably so. The children playing could be excluded from the area fairly easily through public address systems. Though any intimate contact with the material is not advisable, addressing the evaluation issue would be in order. Therefore, their involvement at this point is warranted.

CHOOSE: What are the objectives? To safeguard the public, to address the flammability issues, to consider the toxic effects, to stop the leak, to initiate some type of an evacuation or caring for the public, to initiate decontamination if needed, and to request additional resources are all appropriate objectives.

IDENTIFY: Perhaps something along the lines of public safety would be first in our mind. As the IC you might look at first taking care of the children, denying entry into the area, and perhaps initiating an evacuation.

DO: The first and easiest... Let's have a company call for the children. Call for additional resources. Direct the placement of control lines. When additional resources arrive, address the evacuation needs. Once a Hazardous Materials Response Team arrives, look at what can be done to mitigate this problem.

EVALUATE: Set some time limits. Realistically, we should have control lines up and the children moved out of harm's way within five minutes. After the arrival of additional resources, an evacuation should be completed within 20 minutes. After the time has expired, look at your progress. Are we OK or do we need more resources or perhaps a change of tactics altogether?

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: ICS AND THE HAZARDOUS MATERIALS INCIDENT

TIME FRAME: 1:30

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of ICS and the hazardous materials incident by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Hazardous Materials 1A-1G Student Manuals, SFT

PREPARATION: As you most likely already know, the Incident Command System (ICS) is a multi-risk system. It is capable of being molded to fit whatever the situation demands. Its limitations are set in the mind of the IC. In this lesson, you will receive the information and tools necessary to create a basic hazardous materials incident ICS organization. We will explore the various positions which must be filled and where to go to when you need more information.

PRESENTATION	APPLICATION
I. HAZARDOUS MATERIALS ORGANIZATION	**OHT 3-7-1**

A. Incident Commander

1. Don't pass responsibilities on to the HMRT
2. Assume command

B. Operations

1. Establish if needed
2. Recommend not using a HMRT member
   a) It may grow from strictly a haz mat to include medical, etc.
   b) HMRT would move into Plans

C. Hazardous Materials Group Supervisor

1. Coordinates with and supervises all HMRT personnel and operations
2. Also coordinates with Assistant Safety Officer - Hazardous Materials
3. Is accountable to
   a) Incident Commander
   b) Operations Chief
      1) If one has been appointed

D. Entry Team Leader

1. Responsible for the establishment and implementation of tactics within the Hot Zone

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Reports and makes recommendations to the Haz Mat Group Supervisor	
3. Entry Team	
a) Only three Entry Team members enter and work in the Hot Zone	
b) If a victim or team member is rescued from the Hot Zone, the Entry Team removes that person from the Hot Zone and releases them to the Decontamination Unit	
c) Only trained and properly equipped personnel are allowed in the Hot or CRZ Zones	
d) Paramedics and other rescue personnel are precluded from performing rescue operations unless they are trained, equipped, and assigned to do so	
1) Treatment such as IVs, drug therapy, etc. are not practical in the Hot or CRZ Zones due to the presence of contaminants	
2) Prudence encourages us to keep our medical personnel "clean"	
3) This, plus the immobility experienced inside of haz mat suits, mandates that all injured persons be removed from the Hot and CRZ Zones prior to treatment	
E. Decontamination Unit Leader	
1. Responsible for the entire decontamination process	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. All persons leaving the CRZ will be cleared by the Decontamination Unit Leader	
3. All victims from the Hot Zone will be cleared by the Decontamination Unit Leader and the Safe Area Refuge Manager	
F. Site Access Control Leader	
1. Reports to the Haz Mat Group Supervisor	
2. Controls the movement of personnel and equipment	
3. Ensures that contaminants are controlled	
4. Oversees the placement of the Exclusion Control Line and the Contamination Control Line	
5. Establishes the Safe Refuge Area within the CRZ	
G. Safe Area Refuge Manager	
1. Reports to the Site Access Control Leader	
2. Evaluates and prioritizes victims for treatment	
3. Prevents the spread of contaminants by the victims	
4. Establishes the Safe Refuge Area within the Contamination Reduction Zone adjacent to the Contamination Reduction Corridor and the Exclusion Control Line	
5. Shall wear the appropriate personal protective equipment if entry into the CRZ is necessary	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
H. Assistant Safety Officer - Hazardous Materials	
1. Required position	
2. Must have training equivalent or greater than the Entry Team	
3. Not the same as the incident Safety Officer	
4. Reports to the Safety Officer	
5. Has the authority to stop all haz mat related work	
a) If the work is deemed unsafe	
6. Advises Hazardous Materials Group Supervisor on all aspects of health and safety	
I. Technical Specialist - Hazardous Materials Reference	
1. Reports to the Haz Mat Group Supervisor	
2. Responsible for providing information so that an action plan can be formulated	
a) Product classification	
b) Associated hazards	
c) Incompatibilities	
3. Continued updates using all available resources	
4. Provides analysis of hazardous material samples	
5. Provides PPE compatibility with contaminants	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
6. Provides technical data for incident documentation	
J. Stand-By Rescuer Unit Leader	
1. Not identified in the FOG	
2. Required by law	
3. Responsible for rescue of the Entry Team	
4. Same training as Entry Team	
5. Suggest reporting to Haz Mat Group Supervisor	
a) Not to Entry Team Leader	
NOTE: Continue with Module 3 scenario.	

RETIRED CURRICULUM

SUMMARY:

The Incident Command System (ICS) is a management tool which will organize your incident and ensure that things are getting done. It is a flexible tool which will allow you to create the organization you desire. There are rules which need to be followed and there are positions which must be filled. We have provided several suggestions as to how to build your structure. However, the end result is yours... you are the author.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

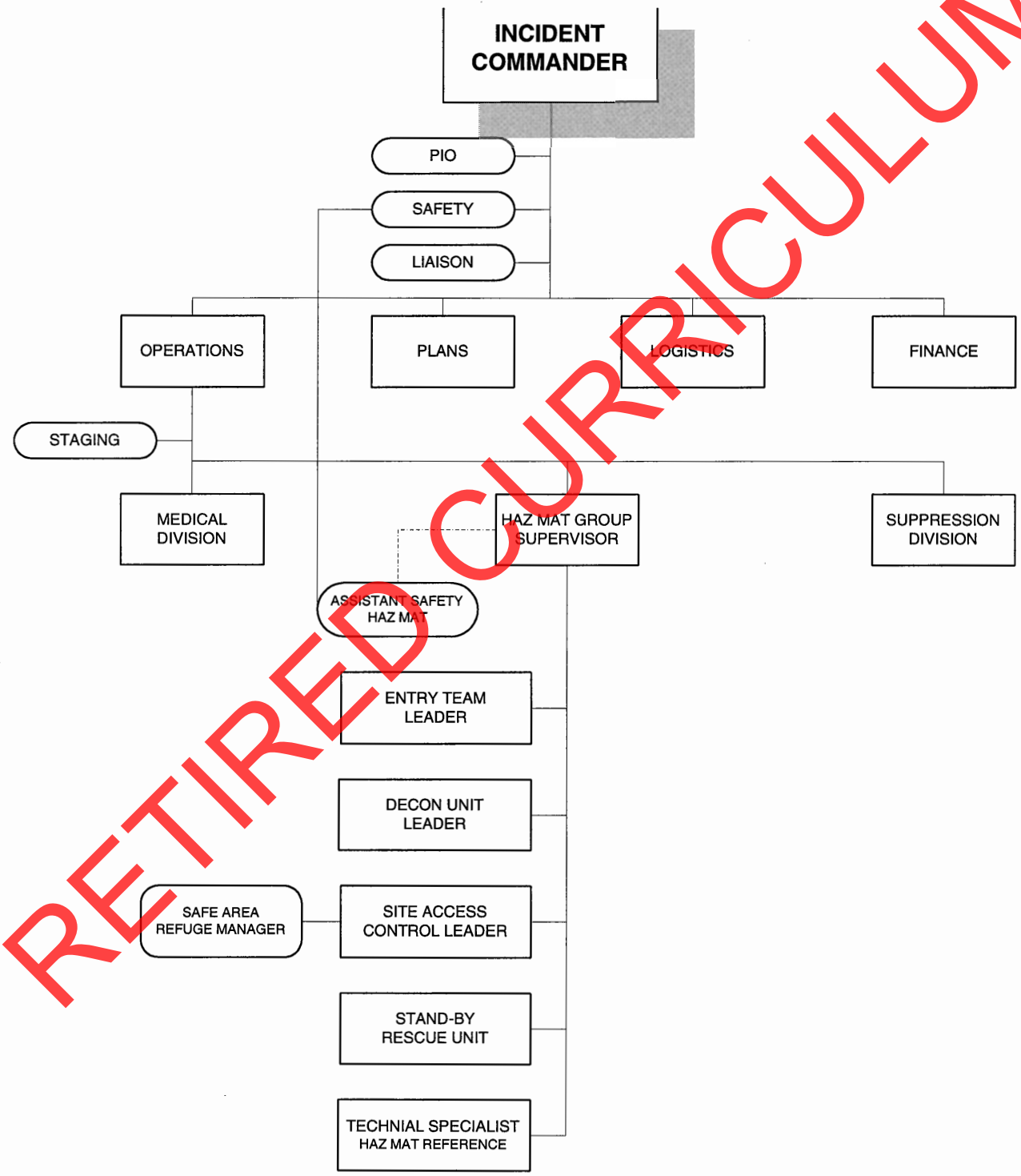
MODULE 3 SCENARIO - LESSON 7:

Have a student draw, so the entire class can see, the ICS organization chart for their incident. If there is sufficient time, break the class into teams and have each team display their organizational chart. It should be interesting to see the various configurations. Some will be purse ICS, and others will be modified to fit their incident. Showing the various configurations and discussing them will demonstrate the flexibility in the ICS as well as proving the old adage, "There's more than one way to skin a cat."

The following two pages show examples of possible organizational charts.

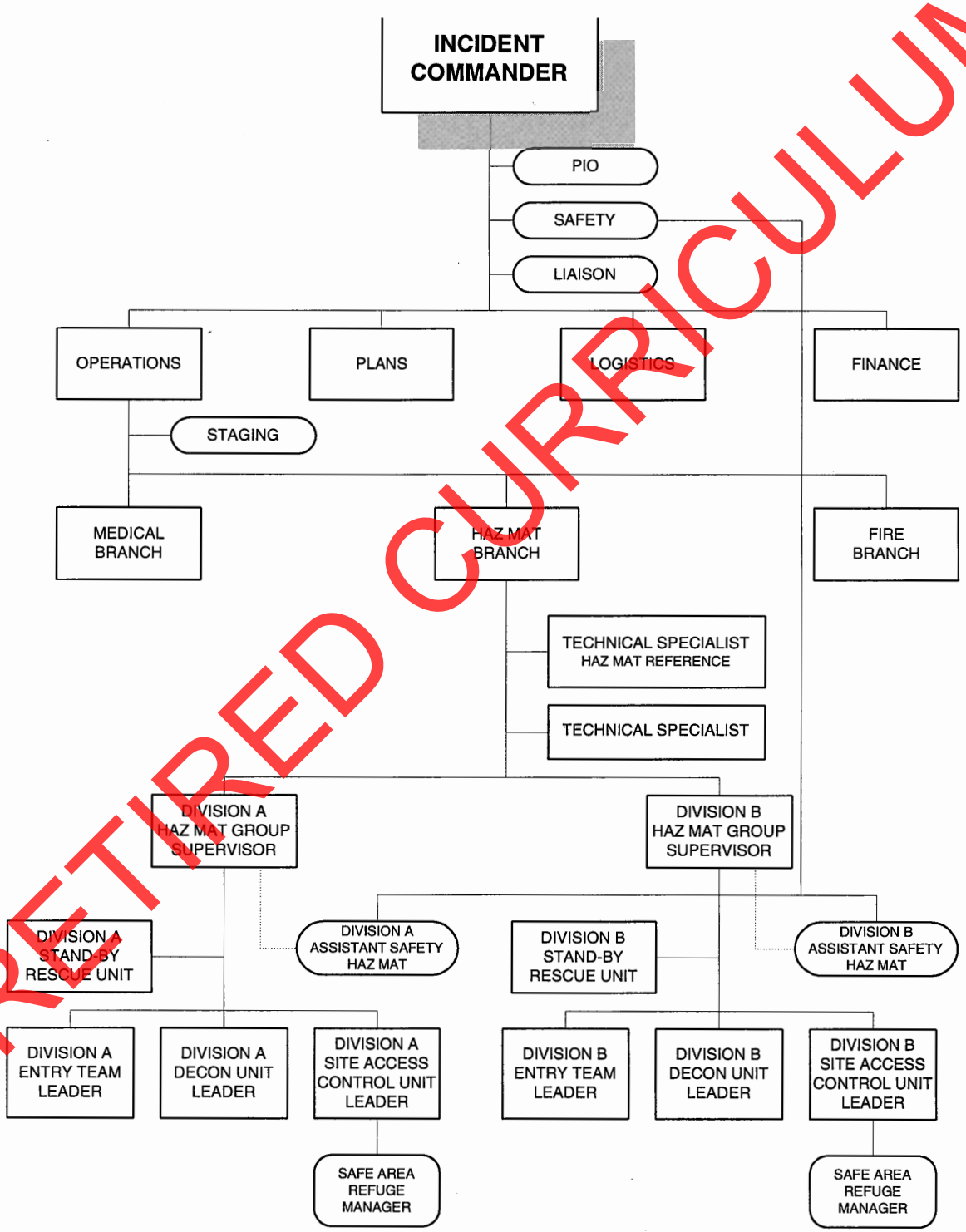
RETIRED CURRICULUM

HAZARDOUS MATERIALS INCIDENT COMMAND SYSTEM



RETIRED CURRICULUM

HAZARDOUS MATERIALS EXPANDED INCIDENT COMMAND SYSTEM



RETIRED CURRICULUM

RETIRED CURRICULUM

\TOPIC: FACTORS AFFECTING WILDLAND FIRES

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the factors relating to and effecting wildland fires by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Ground Cover Firefighting Practices, IFSTA, _____ Edition
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION: A wildland fire, with no outside factors affecting it, will tend to grow in a circle, spreading evenly in all directions. Unfortunately, very few fires spread in this manner. This lesson will discuss those factors that will impact wildland fire situations. Knowing these factors and their effects will help in keeping you out of potential life-threatening situations.

PRESENTATION	APPLICATION
I. FACTORS AFFECTING WILDLAND FIRE	
A. Three major factors	What are the three major factors which affect wildland fire behavior? **OHT 4-1-1**
1. Fuel	
2. Weather	
3. Topography	
II. FUEL CLASSIFICATION	
A. In North America there are several hundred common vegetation types that can be classified as flammable fuels	
B. These fuels can be classified by	
1. Weight of a live fuel (ton per acre)	
2. Size and height	
3. Geographic location	
4. Plant family	
5. Position on ground or in the air	
C. Common method of classification is to group fuels according to their position on the ground or in the air	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Ground fuels 2. Surface fuels 3. Crown fuels	**OHT 4-1-2**
	What are some common ground fuels?
D. Ground fuels 1. Fuels that are laying on the ground a) Small twigs, leaves, needles b) Duff 1) Decomposition materials E. Surface fuels 1. Low level live fuel a) Grass, field crops, brush, small trees F. Crown fuels 1. Suspended fuels 2. Upright fuels a) Large trees and vegetation 3. Leaves and needles	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
III. FUEL RATE OF BURNING	
	Does the size of the fuel affect the spread of wildland fires?
	OHT 4-1-3
A. Fuel size determines the ease of ignition and rate of burning	
1. Light fuels or flash fuels ignite easily and burn fast	
a) Dry grass, dead leaves, small brush	
b) Serves as a kindling for heavier fuels	
2. Heavy fuels are slow burning and usually ignited by fire involving light fuels	
a) Limbs, logs, stumps, deep duff	
b) Gives off large amount of heat	
c) More difficult to extinguish than light fuels	
	Why do compact fuels burn slowly?
B. Compact fuels have less air available so they tend to burn more slowly	
1. Dense ground fuels	
2. Duff	
C. The continuity of the fuels affects the spread	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Patchy, scattered fuel affects the spread a) Spread is slow b) Transfer of heat is not sufficient to preheat or ignite surrounding fuels 2. Fuels close together a) Fire spreads faster due to heat transfer	
	Does the volume of fuel affect wildland fires?
D. Volume of fuel 1. Determines how intense the fire will burn 2. Large volumes of fuels will produce tremendous amounts of heat 3. Small volumes of fuels will produce much less heat	
	OHT 4-1-4
E. Warning signs of potential extreme fire behavior from fuels 1. Unusually low fuel moisture content 2. Large amount of fine fuel or continuous areas of fuels on slopes 3. Crown foliage dried by surface fires over a large area 4. A high concentration of snags 5. A very high burning and buildup index	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
IV. WEATHER	
	What are some of the weather factors that influence wildland fire behavior?
	OHT 4-1-5
A. There are four generally accepted weather factors which influence wildland fires	
1. Wind	
2. Temperature	
3. Relative humidity	
4. Precipitation	
V. WINDS	
	What causes wind?
A. Causes of wind	
1. Uneven heating of air	
2. Warm air expands and rises	
3. Cooler, heavier air descends	
4. Earth's rotation, air moving from west to east	
B. High and low pressure systems affect wind velocity, direction and temperature	
1. Air flow is counterclockwise in a low pressure area	
2. Air flow is clockwise in a high pressure area	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
C. Topographic features that influence wind 1. Large bodies of water 2. Wind tends to blow outward as land cools faster than water 3. Wind tends to blow inland as sun warms up the land 4. Mountains tend to act like chimneys 5. When slopes warm up, air flow moves upslope 6. When slopes cool down, air flow moves downslope	
	What are some effects that winds have on wildland fires? **OHT 4-1-6**
D. Effects of wind on wildland fires 1. Causes fire to spread faster and unevenly 2. Burns more intensely 3. Carries embers which may cause spot fires 4. Causes fuels to dry out 5. Accelerates evaporation of fuel moisture 6. Changes direction quickly and without warning 7. Jeopardizes control of fire 8. Jeopardizes fire fighters	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-1-7
E. Wildland fires will create their own winds	
1. Constant watch is required	
VI. ATMOSPHERIC TEMPERATURES	
	OHT 4-1-8
A. Warm/hot air	
1. Absorbs more moisture and dries the fuels	
2. Preheats the fuels and fire burns hotter	
B. Cool air	
1. Holds less moisture and dampens fuel	
2. Fire rate of spread is slowed	
VII. RELATIVE HUMIDITY	
	What is relative humidity?
A. The amount of moisture in the air, compared with the amount of moisture that the air can hold	
B. Temperature can affect the relative humidity	
1. Hot air holds more moisture	
2. Cool air holds less moisture	
	OHT 4-1-9
C. Fuels are affected	
1. Absorbs moisture from cool air	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Gives off moisture to hot air	
D. 30% relative humidity favorable for burning	
E. 10% relative humidity, fire danger becomes critical	
F. Rule of thumb	
1. Every 20 degrees increase in the temperature, humidity drops by half	
2. Inverse is true	
VIII. PRECIPITATION	
	Does the amount of rainfall affect the fire spread?
	OHT 4-1-10
A. While precipitation has little direct effect on the flame, it does affect the condition of fuels	
B. Amount of rain absorbed by the soil	
1. Determines length of growing season	
2. Determines amount of moisture in the fuels	
C. Prolonged dry spell	
1. Will considerably reduce the moisture in the fuel	
2. Occasional showers will do very little to relieve the fire danger	
D. Rain or damp season	
1. Flash fuels dry out quickly	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Heavy fuels retain moisture, slowing down the rate of fire spread	
IX. WEATHER WARNING SIGNS	
	What are some weather warning signs?
A. Strong surface winds or low winds aloft	
B. Unexpected calms, which may be followed by, wind shifts or strong winds that will supply fresh oxygen to smoldering areas	
C. High, fast moving clouds that may cause downdrafts or unusual ground winds	
D. Unusually high temperatures early in the morning	
E. The presence of “dust devils” or whirlwinds	
F. Thunderstorm activity moving over the fire	
G. Changes in wind slopes form upslope to downslope when areas become shaded	
H. Passing cold or warm fronts, which can result in changes in wind direction	
1. Cold fronts can produce turbulent and gusty winds	
I. Inversion layers that can cause calming of the fire until such time as a fire or smoke column break through	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
X. TOPOGRAPHY	
	What is meant by the word "topography?"
A. Refers to the slope of the land	
B. The steepness of the slope affects both the rate and direction of the fire	
	OHT 4-1-11
C. Fires move faster uphill	
1. Flames are closer to the fuel	
a) Preheating	
b) Drying	
2. Normal uphill winds push heat and flames into new fuel	
3. Convection heat rising along the slope causes a draft which increase the rate of spread	
D. Fires move slower downhill	
1. Burning embers and chunks may roll downhill, starting new fires	
E. Wildland fires spread much faster uphill than on level ground	
	How does the slope's direction of facing exposures affect wildland fires?

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-1-12

F. The direction the slope faces has bearing on the fire spread and its behavior

1. Full southern exposure

a) Sun's rays shine more directly

b) Higher temperatures

c) Lower humidity

d) Dry, light, flashy-type fuel is produced

2. Southeastern, southwestern, western exposures

a) Equal amount of solar heating as sun progresses to the west

3. Northern exposure

a) Cooler temperatures

b) Higher humidity

c) Larger, slower burning fuels

G. Local terrain and land features have a direct effect on air movements

1. Restrictions such as a saddle or narrow canyon

a) Increases wind velocity

b) Preheats fuels during a fire

c) Areas have more growth due to drainage during the rain seasons

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Steep "V" drainage	
a) Create turbulent updrafts	
b) Chimney effect	
c) Fires spread extremely fast	
d) Very dangerous areas	
	OHT 4-1-13
H. Topographical warning signs	
1. Saddles, passes, and the lee side of ridges can cause horizontal eddies	
2. Vertical eddies formed by gradient winds on lee sides of mountain formations	
3. A fire may move upslope on tops of mountains and peaks, and change behavior as it's effected by local winds	
4. A thermal belt may produce high intensity burning at night	
5. Steep slopes, chimneys and canyons can have a dramatic effect on fire behavior	
XI. ADDITIONAL FACTORS WHICH AFFECT THE SPREAD OF WILDLAND FIRES	
	OHT 4-1-14
A. Fuel moisture	
1. A dry piece of wood exposed to moderate relative humidity of 30% to 40%	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
a) Fuel moisture increases rapidly at first, then slows b) Stops when moisture in the fuel is at equilibrium with relative humidity c) If exposed for longer period of time, the fuel moisture will not change d) For every relative humidity, there is a corresponding fuel moisture content	
	Does the location of the fuel affect the fuel moisture?
2. Location of the fuel to the surface affects the fuel moisture a) Air close to hot ground surface warms and has lower relative humidity than air short distance above the ground b) Open areas in summer, fuel moisture of small surface fuel could be one half of the fuel exposed one foot above the surface c) Night ground surface cools first, cooling air and raising the relative humidity of air, raises fuel moisture of fuels d) Surface fuels at night may have higher moisture content than the fuel above the surface e) Different air temperatures in area, different fuel moisture in the same type of fuel	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
f) Significant temperature and relative humidity difference can be expected in 1) Deep canyons-exposed slopes 2) Timbered areas-open areas 3) Significant fuel moisture measurements should be expected	
	How can the fuel size affect the fuel moisture?
3. The larger the fuel, the slower the change in the fuel moisture a) Flash-type fuels can reach equilibrium in minutes b) Limbs two inches in diameter can take up to four days to equal out c) Logs can take weeks or even months	
4. Fuel moisture can be used to help control fires a) Used to find fuel moisture of surface fuels b) Ease of spot fire starting	
	How can the time of day be evaluated when considering wildland fire spread? **OHT 4-1-15**

RETIRED CURRICULUM

PRESENTATION	APPLICATION
B. Time of day	
1. The burning characteristics of wildland fires can be predicted based on the time of day	
a) 1000-1800, all factors of fire intensity are at their highest	
1) Air is dry, fuels are dry	
2) Temperatures are high	
3) Winds are strong	
b) 1800-0400, factors are favorable for fire control	
1) Winds are usually moderate	
2) Air is cool	
3) Relative humidity usually increases and fuels absorb moisture	
c) 0400-0600 is the time when the fire can most easily be controlled	
1) Burning remains slow until dawn	
d) After dawn, fire intensity increases in hill terrain	
	Which way does the wind normally blow in a mountain terrain during the day?
2. Winds blow upslope during the daytime and downslope during the night	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-1-16
C. Area ignition	
1. An advanced stage of a wildland fire	
2. Direct attack and control impossible because of sudden increase in fire intensity and rate of spread	
3. There is little warning	
4. Crew members must be aware of indicators to prepare for area ignition	
	What are the indicators of area ignition?
	OHT 4-1-17
a) High, sustained rate of fire spread	
b) Well developed convection column	
c) Long distance spotting (over 600 feet)	
d) Fire whirlwinds	
e) Horizontal flame sheets	
	Do large fires react to these additional factors in the same way as small fires?
	OHT 4-1-18

RETIRED CURRICULUM

PRESENTATION	APPLICATION
D. Size of fire 1. Large wildland fires burn with certain unique characteristics a) They react the same toward environmental influences as small fires do b) Strong convection currents c) Crown d) Spot ahead of the main fire 2. Size, distribution, compactness, and volume of fuel does impact the size of the fire 3. Intense heat results a) Large areas being consumed quickly b) Total reduction of all combustible materials	

RETIRED CURRICULUM

SUMMARY:

The need for every fire fighter to know how the different factors will affect the spread of wildland fires is critical. We have discussed the three main factors: fuel, weather, and topography. We have also discussed the additional factors which affect the wildland fire which includes fuel moisture, time of day, area ignition, and the size of the fire. Remember to help yourself and your crew members out of life threatening situations by keeping track of these different factors and how they are affecting fire behavior.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: DEFENSIVE AND OFFENSIVE STRATEGIES IN WILDLAND FIRE FIGHTING

TIME FRAME: 0:30

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the differences between defensive and offensive strategies in wildland fire fighting by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Wildland Firefighting, Fire Behavior, Tactics, and Command, Perry, 1987
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION: To safely and effectively control a wildland fire, the fire fighter must know the different types of strategy and how to apply them to a given fire situation. Without the use of appropriate strategy, the attack will be subject to failure and fire fighters will be exposed to danger needlessly.

PRESENTATION	APPLICATION
I. DEFINITIONS	
	OHT 4-2-1
A. Strategy	
	What is "strategy?"
1. The broad application of plans and actions to a problem	
B. Tactics	
	What is the definition of "tactics?"
1. The details of an action required to solve a problem	
C. Offensive	
	What is the definition of "offensive?"
1. Attacking a problem in an attempt to defeat it	
D. Defensive	
	What is "defensive?"
1. An action to protect something or someone from impending danger	
II. DEFENSIVE STRATEGIES	
	Under what circumstances would a defensive strategy be used?

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-2-2
A. Structure protection	
1. For isolated structures	
2. Communities and subdivisions	
3. Other structures and improvements	
a) Power and utility lines	
b) Radio and/or satellite towers	
B. To "turn" a fire from one direction of spread to another	
1. To keep fire from heavier fuel, rougher topography, sensitive wildlife areas, etc.	
C. To "slow down" a fire while waiting for additional resources	
1. Often refers to aerial applications of retardant to slow rate of fire spread until ground fire fighters can arrive and take action	
III. OFFENSIVE STRATEGIES	
	Under what circumstances would an offensive strategy be applied?
	OHT 4-2-3
A. Attacking the fire by extinguishing it	
1. Must have enough personnel and equipment on scene or readily available to be successful	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. May be used on any size fire	
3. Key point is that the fire is being attacked by working to put it out	
B. Attacking the fire problem by construction of fire breaks so to remove the fuel	
1. May be used on any size fire	
2. Key point is that all activity is dedicated to stopping the fire spread	

RETIRED CURRICULUM

SUMMARY:

Strategy is a plan on how to solve a problem and tactics are the specifics on how to implement and complete a plan. An offensive strategy is used when there is enough resources available that the problem can be attacked and solved. A defensive strategy is used when, due to a variety of reasons, the whole problem cannot be solved, but that some action is required to limit the extent of the problem or defend areas from the problem.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: USE OF DIRECT AND INDIRECT ATTACK METHODS ON WILDLAND FIRES

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of the various methods of direct and indirect attacks on wildland fires by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Wildland Firefighting, Fire Behavior, Tactics, and Command, Perry, 1987
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION: To safely and effectively attack a wildland fire, fire fighters must know how to apply the appropriate tactics. If the wrong tactics are used, or not everyone understands the intent of the tactics, the results could be disastrous. This lesson will address the basics of the most common tactics used in wildland fire fighting.

PRESENTATION	APPLICATION
I. DIRECT ATTACK	
	OHT 4-3-1
	Where would you use a direct attack on a wildland fire?
	OHT 4-3-2
A. Uses	
1. Small fires	
2. In light fuels	
3. In subsurface fuels	
a) Peat	
b) Duff	
4. On the flanks and rear of larger fires	
5. Where heat, smoke, burning intensities, and terrain will allow	
	What are some of the advantages of direct attack?
	OHT 4-3-3
B. Advantages	
1. Limits chance for fire to gain momentum or size	
2. Eliminates the need for backfire	
3. Reduces the danger of fire crowning	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. If necessary, crew can escape into burned area	
5. Takes advantage of burned out area along the control line	
	What are some of the disadvantages?
	OHT 4-3-4
C. Disadvantages	
1. Personnel work in heat and smoke	
2. More mop-up and closer patrol required	
3. More danger of slop over and spot fires	
4. Control line generally follows fire edge	
a) Longer and irregular	
5. Does not take advantage of existing fire barriers	
a) Either natural or man-made	
	What are some of the do's and don'ts of direct attack?
	OHT 4-3-5
D. Direct attack "do's"	
1. Take advantage of wind lulls	
2. Time the attack to coincide with fire entering lighter fuels, if possible	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Conserve water	
a) Use only as much as needed to control the fire	
4. Scatter heavy fuels inside the burn	
5. Fell snags adjacent to the control line	
	OHT 4-3-6
E. Direct attack "don'ts"	
1. Attack the head of a fast moving or hot fire	
2. Waste water	
3. Risk safety of personnel and equipment on fuel that will grow back next year	
II. INDIRECT ATTACK	
	OHT 4-3-7
	Where would you use an indirect attack?
	OHT 4-3-8
A. Uses	
1. Extremes	
a) Burning intensity	
b) Rate of spread	
c) Working conditions	
1) Heat	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2) Smoke	
3) Terrain	
2. Insufficient equipment and/or personnel available	
3. Good natural or human-made fire barrier is available	
4. Fast spreading and/or hot fires	
5. To straighten fire lines	
a) Across pockets	
	What are the advantages to an indirect attack?
	OHT 4-3-9
B. Advantages	
1. Personnel are not working in the heat and smoke	
2. Takes advantage of changes in fuel types	
3. Eliminates irregularity of lines	
4. Less danger of slop over	
5. Permits taking advantage of	
a) Tops of ridges	
b) Benches	
c) Bottoms of slopes	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
d) Natural barriers 1) Roads and trails 2) Streams and swamps 3) Old burns	
	What are the disadvantages of an indirect attack? **OHT 4-3-10**
C. Disadvantages 1. Sacrifices acreage 2. Crew may be flanked by the fire 3. Backfires may go out of control 4. Fire may change direction suddenly 5. Personnel must be held in constant readiness where fire is due to burn out by itself	
	What are some of the do's and don'ts of indirect attack? **OHT 4-3-11**
D. Indirect attack "do's" 1. Establish lines in lighter fuels, if possible 2. Make lines as straight as possible 3. Try to keep downed logs and snags on the outside of your line	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Make use of natural barriers	
5. Clean line down to mineral soil	
6. Maintain patrol on established lines	
7. Set backfires when needed	
8. Establish periodic rest period for crew	
	OHT 4-3-12
E. Indirect attack "don'ts"	
1. Overwork crew	
2. Set unwatched backfires	
3. Construct line adjacent to tall fuels	
4. Take unnecessary chances with personnel or equipment	
III. PARALLEL ATTACK	
	OHT 4-3-13
	Where would you use a parallel attack?
	OHT 4-3-14
A. Uses	
1. Primarily used by handcrews and dozers	
2. Works best in relatively light fuels	
3. Works best on relatively small fires	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Existing natural and human-made barriers are available	
	What are the advantages of a parallel attack?
	OHT 4-3-15
B. Advantages	
1. Crews work out of heat and smoke	
2. Shortens control lines	
3. Less danger of slop over	
4. Takes advantage of natural and human barriers	
	What are some disadvantages?
	OHT 4-3-16
C. Disadvantages	
1. Requires the use of burning out	
2. Unburned fuel between crew and fire	
3. Most dangerous attack method	
	OHT 4-3-17
D. Parallel attack "do's"	
1. Stay as close to fire edge as possible	
2. Establish line in lighter fuel if possible	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Keep line as straight as possible	
4. Make use of natural and human-made barriers	
5. Burn out fuel between line and main fire	
	OHT 4-3-18
E. Parallel attack "don'ts"	
1. Burn out faster than the line being constructed	
2. Construct the line in tall fuel	
3. Place crew or equipment in danger	
IV. METHODS OF DIRECT ATTACK	
	What are the different methods used for executing a direct attack?
	OHT 4-3-19
	OHT 4-3-20
A. Flanking action	
1. Action is started from an anchor point	
2. Usually near point of origin/heel	
3. Usually attacking the hottest flank	
4. May use either engine companies or handcrews	
a) If not too hot	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
5. Must make sure fire is contained before moving forward so fire does not slop-over	
	OHT 4-3-21
	OHT 4-3-22
B. Pincer action	
1. Started from anchor point	
2. Usually point of origin	
3. Action on both flanks	
4. Working toward the head, pinching off fire	
5. Both flanks do not have to be attacked at the same time or extinguished at the same rate	
a) Engines may work on hottest flank while handcrew works the cooler one	
b) First-in engine takes hot flank, second in takes the other flank	
6. Must make sure fire is contained before moving forward to prevent slop-over	
	OHT 4-3-23
	OHT 4-3-24
C. Tandem attack	
1. May be used on a flanking action or a pincer attack	
2. Must start at an anchor point	
3. Usually near point of origin	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Usually requires two engines working together on the same flank	
a) Lead engine knocks down fire	
b) Second engine makes sure fire is out and that there is no slop-over	
5. May be used by an engine and a handcrew or dozer	
a) Engine knocks down fire	
b) Handcrew or dozer follows to complete a fire break	
6. Requires good communication and teamwork	
	OHT 4-3-25
	OHT 4-3-26
D. Envelopment action	
1. Used to attack the fire from several anchor points	
2. All action needs to start at nearly the same time	
3. Good communication and teamwork a must	
4. Can be very dangerous	
a) Crews may be placed with unburned fuel between them and the fire	
b) Erratic fire behavior may cause fire to spot or out-flank a crew	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
V. METHODS OF INDIRECT ATTACK	
	What methods are used to execute an indirect attack?
	OHT 4-3-27
A. Burning out	
1. Usually a defensive action	
2. Used to strengthen a control line	
3. Used to remove pockets and/or islands of fuel	
4. Used to protect structures	
5. Must be done with tight control, good communications, and teamwork	
6. Always a risk the operation could get out of control	
	OHT 4-3-28
B. Backfiring	
1. Usually an offensive action	
2. A control line is established as close as possible to the fire	
a) Taking into account the time required to construct and hold a control line	
b) The intervening fuel is set on fire to put out the main fire	
3. May be initiated only by the Incident Commander	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Should only be done by an experience crew 5. Never start more fire than can be controlled by personnel assigned to the holding operation 6. When fire danger is extreme, backfiring is very hazardous	

RETIRED CURRICULUM

SUMMARY:

The use of an indirect or direct attack on a fire has many variables. The IC will have to weigh each of these before deciding on a specific tactic to control the fire. You must be able to take those decisions and safely and effectively attack the fire and extinguish it.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: STRUCTURE PROTECTION AND TRIAGE IN WILDLAND FIRES

TIME FRAME: 2:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of which structures to protect during a wildland/urban interface fire by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz

REFERENCES:

- Ground Cover Firefighting Practices, IFSTA, _____ Edition
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION: Fighting ground cover fires is a very dangerous occupation. Hurried decisions can be wrong decisions when confronted by major fire destruction during a wildland/urban interface fire. With the utmost concern for safety of personnel and equipment, you can be confronted with making appropriate decisions during a fast moving fire. This lesson will identify the principles and concepts you should consider when deciding which structures to protect and which ones to let go during a wildland/urban interface fire.

PRESENTATION	APPLICATION
I. CHOOSING THE ENGINE FOR THE JOB	
	OHT 4-4-1
A. Equipment complement	
1. Hose complement	
a) Single or double jacket hose	
b) Amount of 1" and 1½" hose	
1) Type 3: 1000' of 1½" with 800' of 1"	
2) Type 1; 1200' of 2½" with 400' of 1½"	
c) Reel or hard lines, booster lines	
2. Tools	
a) Wildland equipped	
b) Structural equipped	
B. Water tank capacity	
1. Ability to sustain an attack absent a static source	
2. Type 1: 400 gallons	
a) 500 gallons is normal	
3. Type 2: 400 gallons	
a) 500 gallons is normal	
4. Type 3: 300 gallons	
a) 500 gallons is normal	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
5. Type 4: 200 gallons	
a) 500 gallons is normal	
6. Tenders: 1000+ gallons	
7. OES engines: 750-1000 gallons	
C. Open or closed cab	
	Which is safer, open or closed engine cabs?
1. Open cab engines are very dangerous on wildland fires	
a) No recorded instance where a fire fighter was burned to death in a closed cab vehicle	
2. Hose bed	
	Is hose bed covered? With what?
a) Diamond plate is best	
D. Conventional versus 4-wheel drive	
1. Off road capability required	
2. Depending on terrain	
3. 4-wheel drive engines may require longer travel time on the highway	
a) May not be readily available	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
E. Wheel base	
1. Turning radius	
2. Negotiating narrow roads	
F. Weight	
1. Roadbed	
2. Bridge capacity	
3. Septic tanks	
G. Mechanical condition	
1. Strike teams often end up with relief engines that are not first line equipment	
a) Reserves	
2. Structural type engines may not be equipped with adequate air cleaner protection	
3. Tires may not be adequate for off road use	
H. Pump type	
	What are the basic types of pumps?
1. Main pump - midship	
a) Not mobile; may be disadvantage	
2. PTO (Power Take Off)	
a) May be capable of pumping and rolling slowly	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Auxiliary pump with separate power source	
a) Best if pump and roll is what you need for "hit and run"	
b) Water curtain can be provided for safety even when engine is moving	
II. PERSONNEL ON THE ENGINE	
	OHT 4-4-2
A. Order what you need	
1. Experience may determine capabilities of an individual engine	
2. Fatigue becomes a critical factor	
B. When homes are burning, you may just need the closest engines, of any type, right away	
III. TYPE OF ASSIGNMENT FOR ENGINE WILL DETERMINE BEST SUITED ENGINE FOR THE JOB	
	OHT 4-4-3
A. Mobile attack on grass fires	
1. Ability to pump and roll	
2. Shorter wheel base is better	
B. Stationary pumping on hose lay	
1. Length of hose lay may indicate need for large water tank	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Hose lay elevation may require a pump for high pressure	
a) 450 pounds or more	
C. Primarily off-road pumping	
1. Generally best to use smaller brush engines	
2. Avoid damage to larger more expensive units	
D. Structure protection	
1. Primary concern is water tank size	
a) The larger the better	
2. Depending on the terrain, smaller and shorter wheel base engines may be better	
IV. STRIKE TEAM AND ENGINE TACTICS	
A. Strike teams	
1. Up to five strike teams per division or group	
a) Five divisions or groups per branch	
	OHT 4-4-4
2. Strike team components	
a) Common capability	
b) Common communications	
c) Common leader	
3. May be dispatched to staging or directly to the fire	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
a) If dispatched to staging	
1) Strike Team Leader reports to Staging Area Manager	
2) Under direct supervision of the Operations Chief	
3) Considered an available resource	
4) Must be able to respond within 3 minutes	
b) If dispatched to fire	
1) Strike Team Leader reports to Division or Group Supervisor	
	OHT 4-4-5
B. Deployment of equipment	
1. Get clear assignment from supervisor	
a) As specific as possible	
2. Always have an escape route	
	How should we position ourselves for potential escape?
a) Back engines in	
b) Use natural or man-made barriers for protection if possible	
c) Don't park at top of draws or natural funnels	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Strike Team Leader should survey area and check for special hazards or conditions	
a) Don't park under power lines	
4. Keep engines working as a "team"	
a) Exercise tight control	
b) Don't spread out too far	
1) Visual contact is best	
5. Keep long hose lays to a minimum	
a) Restricts mobility	
b) May burn	
1) Lose a lot of hose	
C. Assure that all personnel are in full protective equipment, all water tanks are full, all engines have adequate fuel and all radios work	
D. Use of water	
1. Plan and discuss its use ahead of time	
	OHT 4-4-6
2. Water conservation with hydrant supply	
a) Consider effect on heavy water consumption	
b) What about adjacent water main	
c) Don't wet down ahead of fire	
1) Extinguish only what is necessary	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	Should fire fighters wet down roofs?
d) Don't waste water on wood shingle roofs	
1) They dry too fast	
e) Remove strategic combustibles which require more water use	
1) Garden furniture	
2) Brush along side where fire stand is to take place	
f) Let everything burn that is not vital to fire control	
g) Don't lay a line just because there is a lot of fire and a hydrant	
h) If lines are laid and fire appears to be going to overrun, take fittings with you	
	OHT 4-4-7
3. Water conservation - tank supply	
a) Conserve limited supply	
1) Use hand tools	
b) Always know your tank level	
	How much water should fire fighters save for personal safety?
c) Never go below 100 gallons or 60 seconds worth of water	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-4-8
4. Water tender use	
a) Order sufficient tenders to keep strike team adequately supplied	
1) Normally one or two tenders	
2) Dependent on travel time and distance	
b) Water conservation must be enforced even when working with water tenders	
E. Protecting structures and vehicles ahead of the fire	
1. Close windows and garage doors	
2. Leave lights on in house so it can be seen at night	
3. Put combustible garden furniture in house or garage	
4. Move wood piles away from structures	
5. Move combustible fences away from structures	
	Should curtains be removed or left alone in the structure?
6. Remove lace-type curtains from windows on exposed side	
a) Leave heavy drapes closed	
7. Remove highly combustible shrubs and place away from structure	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
8. Remove any combustibles from vicinity of LPG tanks	
9. Shut off gas	
10. Have residents place step ladders on front porch or where readily visible	
11. Place fire department ladders at houses you intend to save by working on the roof	
12. Hook up available garden hoses	
a) Test for water pressure	
13. Remove leaves and debris from roofs and gutters	
14. Call for truck companies where practical	
15. Resident's vehicles	
a) Put in garage	
1) Headed out	
b) Close all vehicle windows	
1) Even if in the garage	
c) Park where least exposed	
1) Not in driveway	
2) Not where engine or equipment may operate	
3) Front lawn area may be best	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
F. Protecting structure when fire hits	
1. Structures seldom "burst" into flames	
	What structure elements are attacked when the fire hits?
2. Usually will start small in one or more spots	
a) Blowing sparks on wood roofs	
b) Heat or flames trapped between eaves	
c) Burning debris blown through vents	
d) Windows broken from heat and drafts	
e) Doors or windows left open	
f) Exposure proximity	
1) Shrubbery, trees	
2) Garden furniture	
3) Fences	
4) Wood piles	
5) Vehicles	
6) Adjacent structures	
7) Rubbish	
3. Survey ahead of fire and priority of protection	
	What are some common structure protection errors?

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-4-9
4. Common errors	
a) Laying hose lines too far	
1) Excessive hose lays	
b) Not meeting fire where an easier stand can be made	
c) Not maintaining sight or radio contact	
d) Wasting time and energy on structures that will be lost no matter what your effort	
e) Employing unnecessary apparatus	
1) Clogging roadways	
f) Parking equipment where it is unnecessarily exposed	
g) Wetting down shingle roofs when limited water supply	
h) Using hardlines	
1) Booster lines	
	Where can fire fighters seek refuge during a major flare-up while protecting structures?
	OHT 4-4-10
G. Safety	
1. If fire is too hot, temporarily retreat into structure, engine, or even swimming pool	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
a) Extinguish residual after fire passes	
2. Without a specific purpose, don't face an intense fire	
3. Keep apparatus mobile	
a) Move from structure to structure with the fire	
b) Possible egress for fire fighters	
c) If owner is present, point possible areas of dangerous flareups before you leave	
d) Park behind structure	
1) Heading out if possible	
4. Engine safety	
a) Headlights on at all times	
1) Spotlights turned upward at night for visibility	
b) Windows closed	
c) Available charged preconnected 1½" or 1¾" hose for protection	
5. Park on roadway adjacent to structure	
a) Heading with direction of fire or escape route	
6. When protecting structure, don't forget to detail fire fighter watch for spot fires across the road	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	What about "firing out" for protection?
7. Fire out around structures where possible	
a) Check with your supervisor first	
b) Check for agency restrictions	
8. Stay out of topographic saddles and chutes	
V. WHAT TO TELL CIVILIANS AT WILDLAND FIRES	
	What are some items we can advise civilians insisting on remaining with their homes?
	OHT 4-4-11
A. Encourage civilians to leave the area	
1. On foot if necessary	
2. By vehicle if practical	
3. Even fire department activities can be a danger to them	
B. Police department personnel usually handle evacuation	
1. Leaves fire department free to operate	
C. Inform them of dangers of running up hills, canyons or draws ahead of a moving fire	
1. Explain that a person is safer in a well built structure when a fire sweeps past	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
D. If civilians are determined to stay with their homes, explain basic protection concepts	
E. Impress "family" concept	
VI. STRUCTURE PROTECTION TRIAGE	
A. The most difficult decisions on a wildland fire are	
1. Which ones to try and save	
2. Which ones to "write-off"	
	What are the basic five factors to consider during structure triage?
	OHT 4-4-12
B. General factors for structure triage	
1. Clearance	
2. Fuel type	
3. Terrain	
4. Access	
5. Roof construction	
	OHT 4-4-13
C. General guidelines for structure protection	
1. If it's well involved and others are not, go for the ones that are not	
2. Look at the type of roof covering	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
3. Consider personnel safety	
4. Consider available personnel	
5. Consider water supply	
6. Consider values at stake	
a) Including human life	
7. Sometimes everything you try won't be enough	
a) At other times the rewards and thanks will be great	

RETIRED CURRICULUM

SUMMARY:

Fighting ground cover fires is a very dangerous occupation. Hurried decisions can be wrong when confronted by major fire destruction, especially during a wildland/urban interface fire.

With the utmost concern for safety of personnel and equipment, you can be confronted with making serious decisions during a fast moving fire. The principles and concepts of identifying structures to protect and which ones to let go during a wildland/urban interface fire will confront fire fighters with seconds to spare. Be prepared to make a sound decision that you will feel comfortable with. Utmost of all, do it safely!

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

RETIRED CURRICULUM

TOPIC: WILDLAND FIRE SAFETY

TIME FRAME: 1:00

LEVEL OF INSTRUCTION: Level II

BEHAVIORAL OBJECTIVE:

Condition: Given a written quiz

Behavior: The student will confirm a knowledge of wildland fire safety by completing the written quiz

Standard: With a minimum 80% accuracy according to the information contained in Fire Command 1B Student Manual, SFT, 1998, pages ##

MATERIALS NEEDED:

- Writing board with markers/erasers
- Overhead projector and screen
- Overhead transparencies for this lesson plan
- Written quiz
- "Wildland Strikes Home" video

REFERENCES:

- Ground Cover Firefighting Practices, IFSTA, _____ Edition
- Wildland Firefighting, Clayton, Day, and McFadden, 1987

PREPARATION: We know that wildland fire fighting is dangerous. We know that each year, hundreds of productive hours and many lives are lost to wildland fires. We know that many of the lives lost are fire fighters. Knowing these facts adds credence to the need for understanding basic safety considerations for all fire fighters that may participate in wildland incidents. These basic considerations, along with the safety rules to be used when working around aircraft and the knowledge of how to find safe refuge in your apparatus and structures can make working on these incidents a much safer place. This lesson will cover these considerations and may prevent you from being injured on a wildland incident.

PRESENTATION	APPLICATION
I. TEN STANDARD FIRE FIGHTING ORDERS	
	OHT 4-5-1
A. Can be separated into four categories	
1. Behavior	
2. Safety	
3. Operations control	
4. Ultimate goal	
B. Fire behavior orders	
1. Keep informed of fire weather conditions and forecasts	
2. Know what your fire is doing at all times	
a) Observe personally or use scouts	
3. Base all actions on the current and expected behavior of the fire	
C. Safety orders	
1. Have escape routes for everyone and make them known	
2. Post a lookout when there is possible danger	
3. Be alert, keep calm, think clearly, and act decisively	
D. Operations control orders	
1. Maintain prompt communications with personnel, your supervisor, and adjoining forces	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Give clear instructions and be sure they are understood	
3. Maintain control of personnel at all times	
E. Ultimate goal order	
1. Fight fire aggressively, but provide safety first	
NOTE: Show "Wildland Strikes Home" video	
II. TEN STANDARD FIRE FIGHTING ORDERS DESCRIBED	
	OHT 4-5-2
A. Keep informed of weather conditions and forecasts	
	What are some considerations we can take with respect to weather conditions?
1. Weather is a major factor in fire behavior	
2. Constant monitoring required	
3. Use your senses as valuable guides	
a) Feel the temperature and the wind	
b) See by watching the trees, clouds or smoke	
c) Hear weather forecasts from locals who are familiar with expected behavior	
	OHT 4-5-3
B. Know what your fire is doing at all time, observe personally or use scouts	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	What are some considerations we can take with respect to the fire situation?
1. Personally observe from vantage point	
2. Personally scout ahead	
3. Use helicopter or other aircraft for information	
4. Make certain that the findings are made known and shared with the fire fighters	
a) Fire may have out flanked the crew	
b) As fire increases, fire awareness must increase	
c) Crews have been burned, due to lack of information updates	
	OHT 4-5-4
C. Base all actions on the current and expected behavior of the fire	
	What questions can we ask ourselves about the fire situation?
1. The action you take should be determined by everything that is happening and everything you think may happen	
a) What is the fire doing now?	
b) What is the fire going to do later?	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) What action is being taken now?	
d) What is the weather in the fire area?	
e) What is the weather going to do?	
f) What type of fuel is burning?	
g) What type of fuel is the fire heading for?	
	OHT 4-5-5
D. Have escape routes for everyone and make them known	
	What considerations can we take regarding escape routes?
1. Some good areas to select	
a) The burned area	
1) If close enough	
b) Cutting an escape line	
c) Natural barriers	
1) Rock ledges	
2) Riverbeds, streams, lakes	
3) Slide areas	
d) Avoid areas where the canopy is intact	
2. Once these areas are selected, make them known to all the crew members	
	OHT 4-5-6

RETIRED CURRICULUM

PRESENTATION	APPLICATION
E. Post a lookout when there is possible danger	When should we establish a lookout?
1. When the head of the fire is not visible	
2. When felling snags	
3. When personnel and engine-driven equipment are working closely together	
4. Possibility of debris falling or fire starting outside of control line	
5. Any apparent hazard	
a) A snag that needs felling	
	OHT 4-5-7
F. Be alert, keep calm, think clearly, act decisively	What does this safety rule mean to you?
1. Panic can injure or kill	
2. After thoroughly evaluating the situation, you can make a better, more accurate decision	
	OHT 4-5-8
G. Maintain prompt communications with your personnel, your supervisor, and adjoining forces	What are some ways to maintain prompt communication?
1. Radio communication	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Line of sight with visual aids or hand signals	
	OHT 4-5-9
H. Give clear instructions and be sure they are understood	
	Cite some examples of instruction that we want to be sure are understood?
1. What to do	
2. Where to go	
3. Where to finish	
4. When to finish	
5. With whom to tie in	
6. Expected duration of attack	
7. Who will relieve you	
8. Who your supervisor will be	
	OHT 4-5-10
I. Maintain control of personnel at all times	
	How can we maintain control of personnel at all times?
1. Communication maintains control	
2. Coordination of available equipment	
3. Provision of safety equipment	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
	OHT 4-5-11

J. Fight fire aggressively, but provide safety first

1. Aggressive action is the key to suppression
2. Must not short cut or violate any safety rule
3. Take another look
   a) Then apply accepted practices

III. SITUATIONS THAT SHOUT "WATCH OUT!"

A. The fire is not scouted and sized up

B. You are in country not seen in daylight

C. Your safety zones and escape routes are not identified

D. You are unfamiliar with weather and local factors influencing fire behavior

E. You are uninformed on strategy, tactics, and hazards

F. Instructions and assignments are not clear

G. You have no communication link with crew members or supervisors

H. You are constructing a line without a safe anchor point

I. You are building a fire line downhill with fire below

J. You are attempting a frontal assault on the fire

K. There is unburned fuel between you and the fire

RETIRED CURRICULUM

PRESENTATION	APPLICATION
L. You cannot see the main fire and you are not in contact with anyone who can	
M. You are on a hillside where rolling material can ignite fuel below you	
N. The weather is getting hotter and drier	
O. Wind increases and/or changes direction	
P. You are getting frequent spot fires across the fire line	
Q. Terrain and fuels make escape to safety zones difficult	
R. You feel like taking a nap near the fire line	
IV. SAFETY AROUND AIRCRAFT	
	OHT 4-5-12
A. Air Tanker Drops - It is important to know the different types of drops so you can react properly in the event you are at the wrong place at the wrong time	
1. Split	
a) Single drop from one door at a time	
2. Trail	
a) Overlapping series of drops from 2 to 8	
3. Salvo	
a) The total load at one time	
V. SAFETY RULES REGARDING AIR TANKER OPERATIONS	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
1. Developed for use by all personnel working on the fire line	
2. Tanker operations are directed by an Air Attack Officer who is in charge of air operations	
3. The Air Attack Officer flies above the fire and tells the air tankers where their drops are to be made	
4. Air Attack operations are always coordinated with the Incident Commander who is directing all suppression operations	
VI. IF YOU ARE ABOUT TO BE DROPPED ON	
	OHT 4-5-13
1. Move out of the target area, if you have time	
2. Stay away from large, old trees	
a) Limbs or top make break off and cause injury	
3. Never stand up in the path of an air drop	
a) Greatly increases your chances for injury	
4. The most dangerous area for ground personnel in a low drop area is in the center, 15-20 feet of the pattern	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
5. If possible, grab something solid and get behind it	
a) Lie down on your stomach facing the oncoming air drop	
b) Helmet and goggles on	
c) Feet spread apart for better body stability and digging in	
d) Cover your face, if possible	
e) Hold tools firmly out to the side and away from your body	
VII. ROTARY WINGED AIRCRAFT (HELICOPTERS)	
	OHT 4-5-14
A. Helicopter uses	
1. Reconnaissance	
2. Ferrying personnel or supplies	
3. Evacuation	
4. Retardant, water, foam drops	
5. Search and rescue	
	What are some safety rules used when working around helicopters?
	OHT 4-5-15

RETIRED CURRICULUM

PRESENTATION	APPLICATION
B. Safety precautions	
1. Approach and departure	
a) Get the pilot's attention and get permission before approaching the helicopter	
b) Always approach or depart in a crouched position	
1) Gusts of wind could cause the rotor blades to drop dangerously low to the ground	
c) Hold your safety helmet securely in your hand to prevent it from being blown away and/or into the rotor blades	
d) Never approach or depart a helicopter from ground which is upslope from the main rotor when it is turning, or under bad lighting conditions	
1) Rotors are almost invisible	
e) Keep clear of the main and tail rotors at all times	
1) Do not walk to the rear of the helicopter when entering or exiting	
f) Carry all long handled tools in such a manner that the handles will not be inadvertently raised into the rotor path	
	OHT 4-5-16

RETIRED CURRICULUM

PRESENTATION	APPLICATION
2. Working around the helibase a) Stay at least 100 feet away from the helicopters at all times 1) Unless you have a specific job that requires otherwise 2) Your presence can cause confusion and disrupt the pilot's concentration b) Do not face a landing helicopter unless you are wearing goggles c) Do not remain in the area that is constantly under the flight path of any helicopter d) No smoking within 50 feet of the helicopter or fueling areas e) Learn and use the standard helicopter hand signals	
	What are some inflight safety rules used with helicopters? **OHT 4-5-17**
3. In-flight safety a) No smoking in the helicopter b) Use the seat belt and keep it secured until the pilot instructs you to leave the helicopter	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
c) Make sure all loose gear and helmets, maps, papers, etc., are held securely in your hands	
1) Prevents them from being blown about the helicopter or out the window	
d) Never slam the doors of a helicopter	
1) The doors do not have spring loaded locks	
2) The handles must be physically turned to secure the door	
e) Do not let any of your gear get in the way of the pilot or the controls	
f) Never throw anything out of a helicopter	
g) Do not talk to the pilot during takeoff	
h) Be alert for hazards	
1) Other aircraft	
2) Telephone and power lines	
VIII. STAYING SAFE IN A WILDLAND FIRE	
	What is the best way to stay safe?
A. By following the standard fire fighting orders, or "Situations That Shout Watch Out," you will usually avoid having to make the choice	
	OHT 4-5-18

RETIRED CURRICULUM

PRESENTATION	APPLICATION
B. If something does happen, the options to follow include	
1. Escape from the area of danger	
2. Take refuge in a structure	
3. Take refuge in a vehicle	
4. Take refuge in a "safe" area and deploy a fire shelter	
a) Fire shelters should be your last resort	
IX. USE OF STRUCTURES FOR REFUGE	
	OHT 4-5-19
A. If you have time to prepare	
1. Advise Strike Team Leader, Division/Group Supervisor, or Incident Commander of the situation	
2. Close windows	
3. Remove as many combustibles as possible away from the structure	
a) Lawn furniture	
b) Wood piles	
c) Fencing	
d) Light curtains	
1) Close any heavy drapes	
e) Vegetation	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
4. Remove gas combustibles away from LPG tanks	
a) Shut off gas	
5. Bring protection equipment inside structure	
a) Hose line, extinguishers, back pumps, etc.	
b) Self-contained breathing apparatus (SCBA)	
c) Personal protective clothing	
	OHT 4-5-20
B. If fire is imminent	
1. Advise Strike Team Leader, Division/Group Supervisor, or Incident Commander of the situation	
2. Close windows	
3. Close any heavy drapes	
4. Bring protection equipment inside structure	
a) Hose line, extinguishers, back pumps, etc.	
b) Self-contained breathing apparatus (SCBA)	
c) Personal protective clothing	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
X. USING A VEHICLE FOR REFUGE	
	When should you be prepared to use your vehicle as a place of refuge?
	OHT 4-5-21
A. Before responding to a fire	
1. Check door and window seals for tightness	
2. Cover holes in floorboards, if possible	
3. Practice getting crew into cab while wearing personal protective equipment	
4. Check condition of fire blankets or drapes, if so equipped	
	OHT 4-5-22
B. When fire is imminent	
1. Call for help	
2. Park apparatus	
a) Best location possible	
1) Away from fuel	
2) Behind structure	
3) Out of saddles and draws	
4) Pointed in direction of escape	
5) Away from power lines	

RETIRED CURRICULUM

PRESENTATION	APPLICATION
b) Set parking brake	
3. Fire out around apparatus if there is time	
	OHT 4-5-23
C. When fire hits	
1. Roll up windows	
2. Shut doors	
3. Cover windows with fire blankets or fire shelters	
4. Stay as low as possible	
5. Keep engine running	
a) With RPMs up	
6. Cover up with turnouts, if possible	
7. Keep calm	
8. Take shallow breaths	
9. Use SCBA if possible	
	OHT 4-5-24
D. What to expect	
1. Temperature may reach 200°F	
2. Plastic parts may start to melt and give off gas	
3. Exposed skin will burn from radiant heat	
	OHT 4-5-25

RETIRED CURRICULUM

PRESENTATION	APPLICATION
E. If vehicle catches fire and you have to exit before the fire passes 1. Deploy fire shelters in cab 2. Step out 3. Wrap shelter around you 4. Stay as low as possible 5. Move away from vehicle 6. Deploy shelter in safe area	
	OHT 4-5-26
F. After fire passes 1. Check for injuries and treat, if possible 2. Exit cab with fire shelter 3. Put out fire on apparatus, if possible 4. Be cautious of the fire coming back through 5. If apparatus cannot be saved, start for another safe area	

RETIRED CURRICULUM

SUMMARY:

Fighting ground cover fires is a very dangerous occupation. Many fire fighters have lost their lives or have been injured seriously while trying to control ground cover fires. Hurried decisions can be wrong decisions. Remember, the safety of personnel and equipment always comes first.

Aircraft can be a very valuable tool in combating wildland fires. It is, however, extremely important that all ground crews understand and follow all safety precautions.

Unfortunately, we can't always be in the right place at the right time as wildland fires sometimes react in unpredictable ways. If you are caught in one of these situations it is important to know how to react and find safety in your apparatus or a close by structure.

EVALUATION:

The student will complete a written quiz with a minimum of 80% accuracy at a time determined by the instructor.

ASSIGNMENT:

Review your notes and read pages ## in your Fire Command 1B Student Manual, SFT, 1998 in order to prepare yourself for the upcoming quiz. Study for our next session.

RETIRED CURRICULUM

FIRE COMMAND 1B

APPENDIX A

COURSE OUTLINE

RETIRED CURRICULUM

COURSE TITLE: FIRE COMMAND 1B
Incident Management for Company Officers

COURSE OBJECTIVES: To…

a) Provide fire service personnel with information in which to direct the initial operations of a multi-casualty incident
b) Provide fire service personnel with information in which to direct the initial operations of a hazardous materials incident
c) Provide fire service personnel with information in which to direct the initial operations of a wildland fire incident
d) Provide fire service personnel with the opportunity to demonstrate the knowledge and skills learned in handling initial operations at hazardous materials, wildland fire, and multi-casualty incidents through simulation and class activities

COURSE CONTENT: ..... 40 HOURS

Unit 1: Course Overview and ICS Review
1. Orientation And Administration 1:00
2. Course Overview 1:00
3. Fire Command 1A Review 2:00
4. Concepts Of ICS Organization 3:00
   Activity #1

Unit 2: Multi-Casualty Incidents
1. Components Of Triage And START 2:00
2. ICS And EMS Multi-Casualty 1:30
3. ICS-MCI Implementation Overview 1:30
   Activity #2

RETIRED CURRICULUM

Unit 3: Hazardous Materials Incidents

1. Hazardous Materials Overview 0:30
2. Properties Of Hazardous Materials 1:00
3. Toxicology 0:30
4. Site Control/Work Zones 0:30
5. Evacuation Considerations 1:00
6. Decision-Making Process 0:30
7. ICS And The Hazardous Materials Incident 1:30

   Activity #3

Unit 4: Wildland Fire Incidents

1. Factors Affecting Wildland Fires 2:00
2. Defensive And Offensive Strategies In Wildland Fire Fighting 0:30
3. Use Of Direct And Indirect Attack Methods On Wildland Fires 1:00
4. Structure Protection And Triage In Wildland Fires 2:00
5. Wildland Fire Safety 1:00

   Activity #4

Simulation Exercises 14:00
Review and Certification Exam 2:00

TEXTS & REFERENCES:

- Firefighting Tactics, Lloyd Layman
- Wildland Firefighting, Clayton, Day, and McFadden, 1987
- ICS 200, NWCG, 1994
- "START – The Race Against Time" video, Newport Beach Fire Department and Hoag Memorial Hospital, 1994
- Field Operations Guide ICS 420-1, FIRESCOPE, 1994
- The Dose Makes the Poison, M. Alice Ottoboni, 1984
- Hazardous Materials 1A-1G Student Manual, SFT
- Ground Cover Practices, IFSTA, Second Edition
- Wildland Firefighting, Fire Behavior, Tactics, and Command, Perry, 1987

RETIRED CURRICULUM

FIRE COMMAND 1B

APPENDIX B

OVERHEAD TRANSPARENCY MASTERS

RETIRED CURRICULUM

STUDENT INTRODUCTIONS

- Name
- Department
- Rank
- Years of experience
- Current assignment
- Reason for taking Fire Command 1B

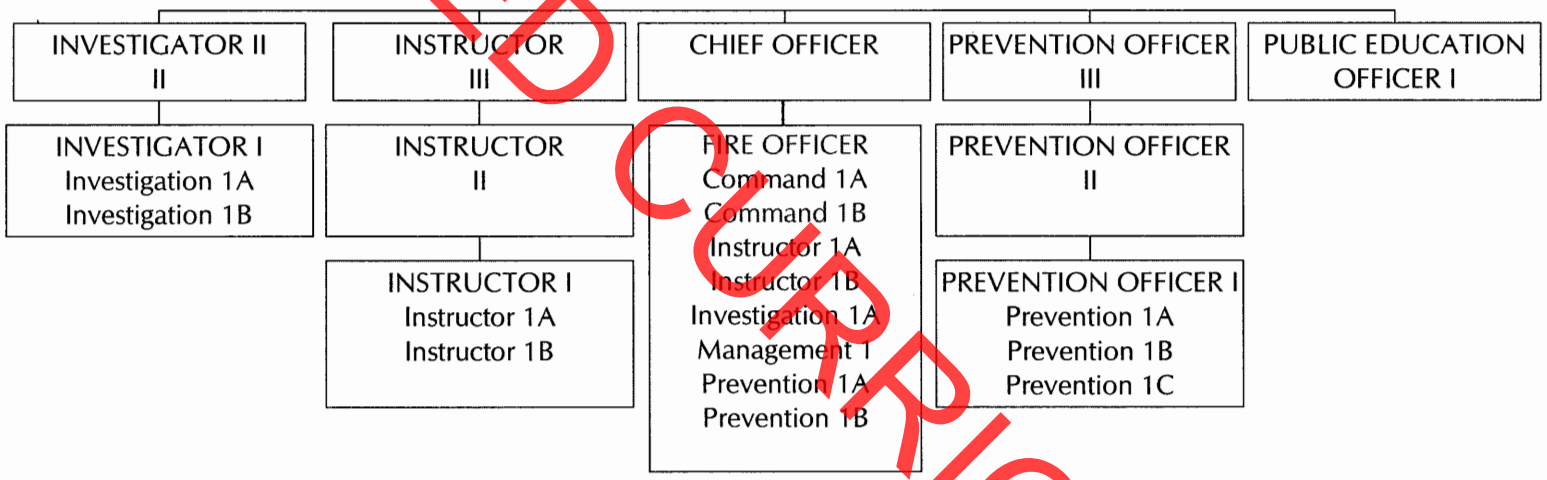
RETIRED CURRICULUM

FACILITIES ORIENTATION

- Classroom location(s)
- Restrooms
- Food locations
- Smoking
- Breaks
- Telephones
- Parking

RETIRED CURRICULUM

CERTIFICATION TRACKS



RETIRED CURRICULUM

SIZE-UP DEFINED

The mental evaluation made by an officer in charge of a fire or other emergency which enables him or her to determine the best course of action

RETIRED CURRICULUM

Layman's System of Size Up

1. Facts
2. Probabilities
3. Own situation (resources)
4. Decisions
5. Plan of operation

RETIRED CURRICULUM

FACTS

- Number can be enormous
- Not all are relevant or immediately important
- Must be filtered and screened
- Pertinent considerations
  - Time of emergency
  - Location
  - Type or nature

RETIRED CURRICULUM

PROBABILITIES

- Large number may exist
- Filtering is required
- Probabilities versus remote possibilities
- Given initial attention
- Considerations
  - Life hazards
  - Construction type and reaction to fire
  - Rate of fire growth

RETIRED CURRICULUM

OWN SITUATION

- Think big
- Resources extension
- Reference resources
  - Prefire plans, maps, building guides
- Considerations
  - Immediate needs
  - Eventual resources available
  - Water supply

RETIRED CURRICULUM

DECISIONS

- Obtain all pertinent material first
- Not cast in concrete
- Correct and modify as necessary
- Maintain flexibility
- Constantly review and assess
- Considerations
  - Strategic mode
  - Initial and supplemental

RETIRED CURRICULUM

PLAN OF OPERATION

- May be modified or changed
- Constantly monitor and evaluate
  - For effectiveness
- Requires issuing orders and instructions
- Management and supervision must be exercised

RETIRED CURRICULUM

DIVISIONS OF FIRE FIGHTING

R escue

E xposures

C onfinement

E xtinguishment

O verhaul

S alvage

V entilation

RETIRED CURRICULUM

TACTICAL PRIORITIES

R - first priority in all emergencies

E - keep fire from extending

C - smallest possible area

E - attack and halt

O - check and investigate

V - remove heat, smoke, fire gases

S - minimize damage

RETIRED CURRICULUM

Strategy, Tactics, & Methods

- Strategy identifies goals and prioritizes objectives based on mode of attack
  - *Offensive or defensive*
- Tactics are objectives that must be completed to achieve strategy
  - *Search, rescue, exposure protection*
- Methods are evolutions to accomplish tactics
  - *Hose lay, ladder raise, medical aid*

RETIRED CURRICULUM

COMMAND DEFINED

The systematic management of resources to reduce the impact of an emergency

RETIRED CURRICULUM

COMMAND ACTIVITIES

- Collecting and analyzing facts
- Identifying and assessing of probabilities
- Determining resource capabilities
- Making decisions
- Implementing the plan

RETIRED CURRICULUM

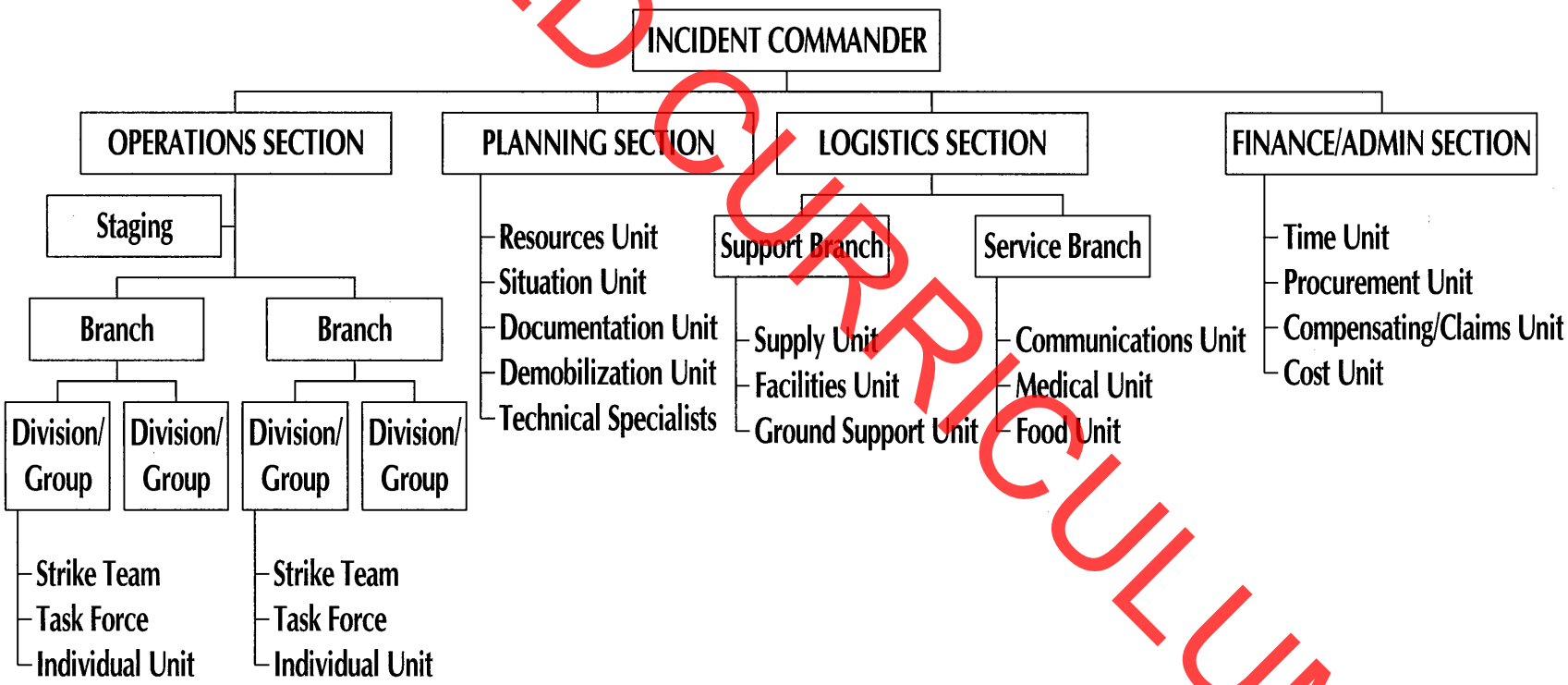
THE HUMAN ELEMENT

- The "perfect" commander does not exist
- Subject to human variables and flaws
- No two individuals will handle an emergency in the same way
  - Perceptions differ
  - Difference in experience and training
  - Priorities may vary

RETIRED CURRICULUM

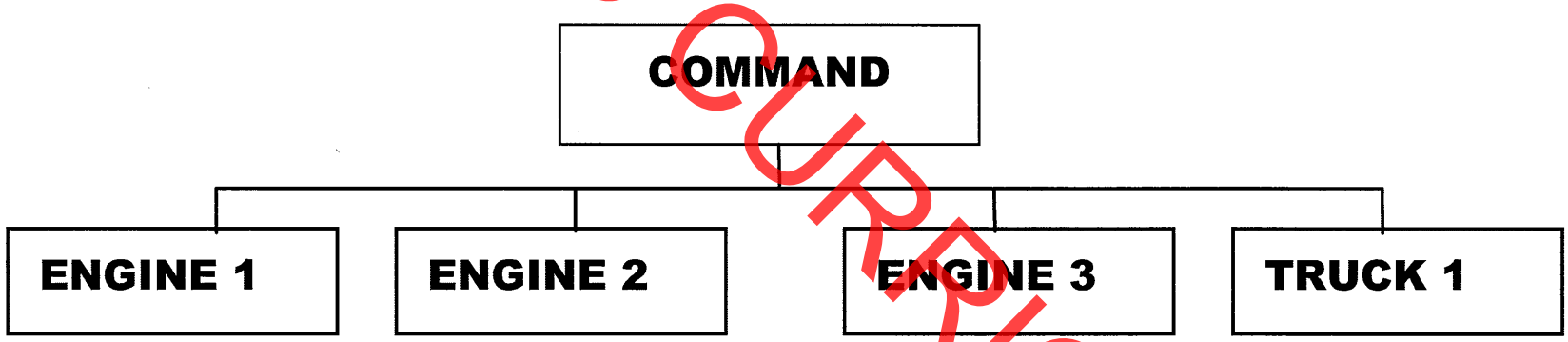
EXPANDED ORGANIZATION

INCIDENT MANAGEMENT



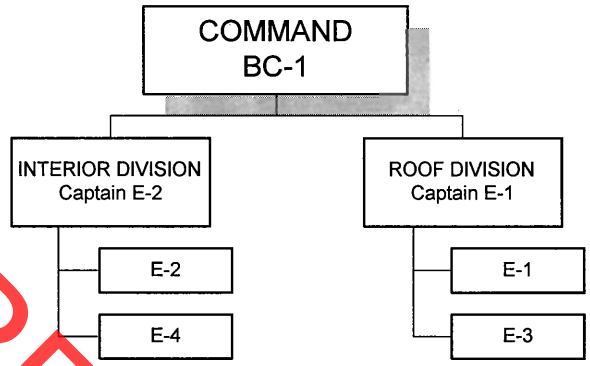
RETIRED CURRICULUM

SIMPLE COMMAND



RETIRED CURRICULUM

DIVISION DESIGNATION

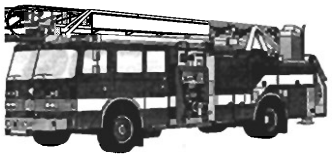


ROOF DIVISION
Captain E-1

COMMAND
BC-1

INTERIOR DIVISION
Captain E-2

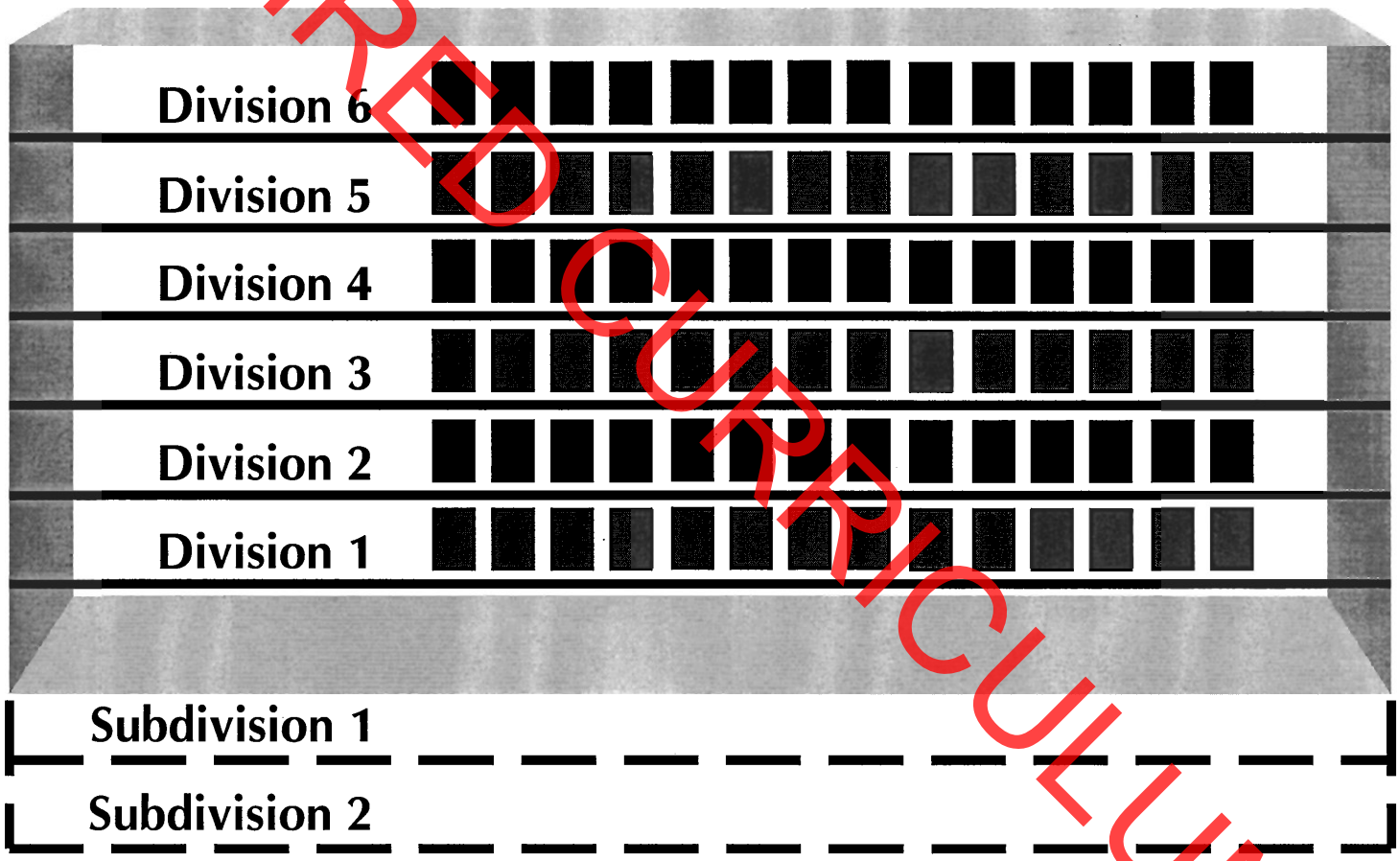
E-4



E-3

RETIRED CURRICULUM

TACTICAL ASSIGNMENTS



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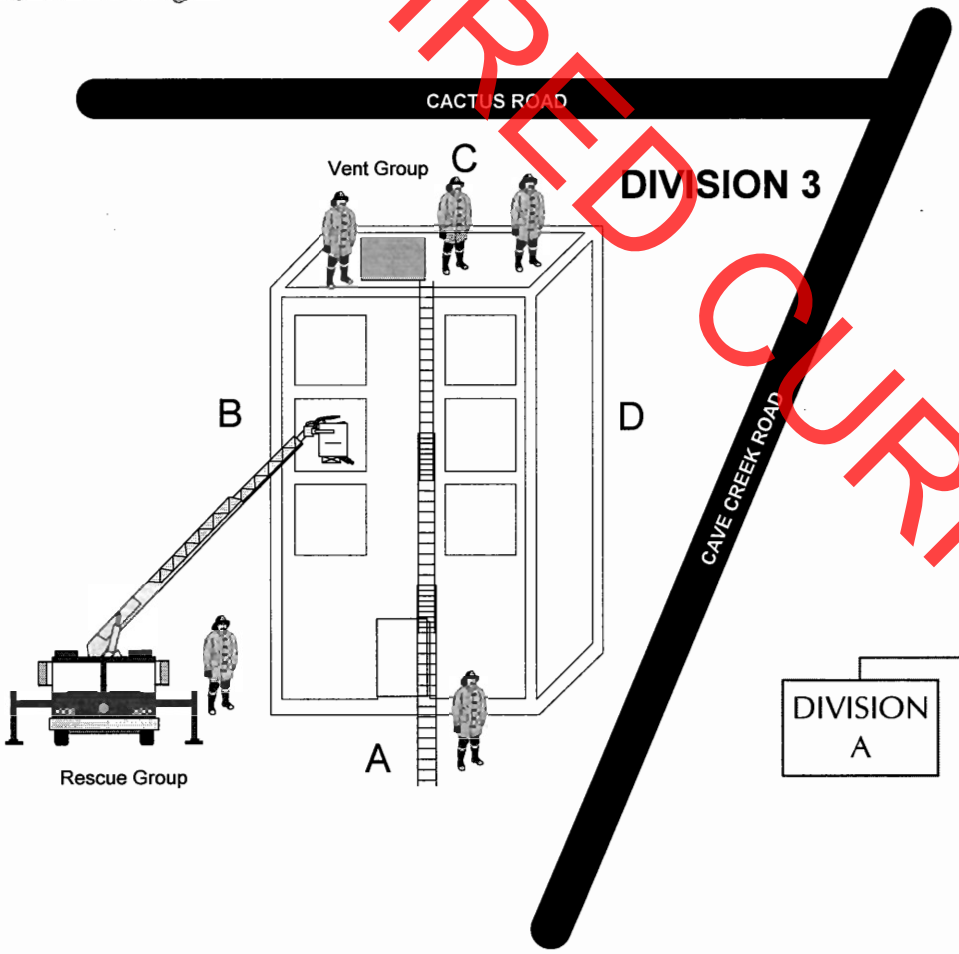
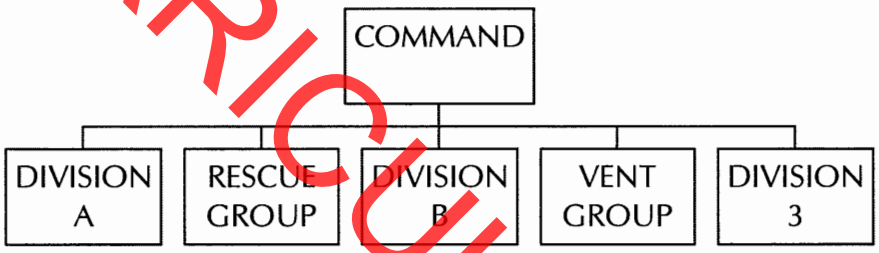
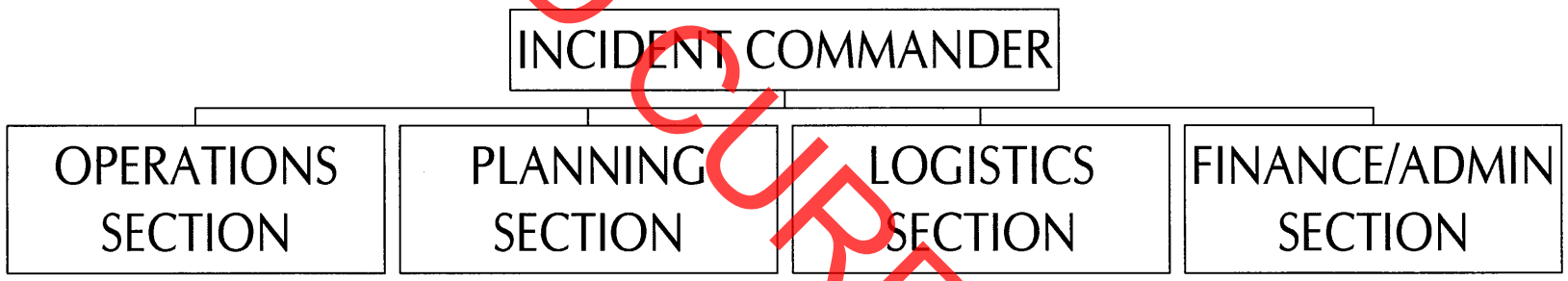
GROUP DESIGNATION





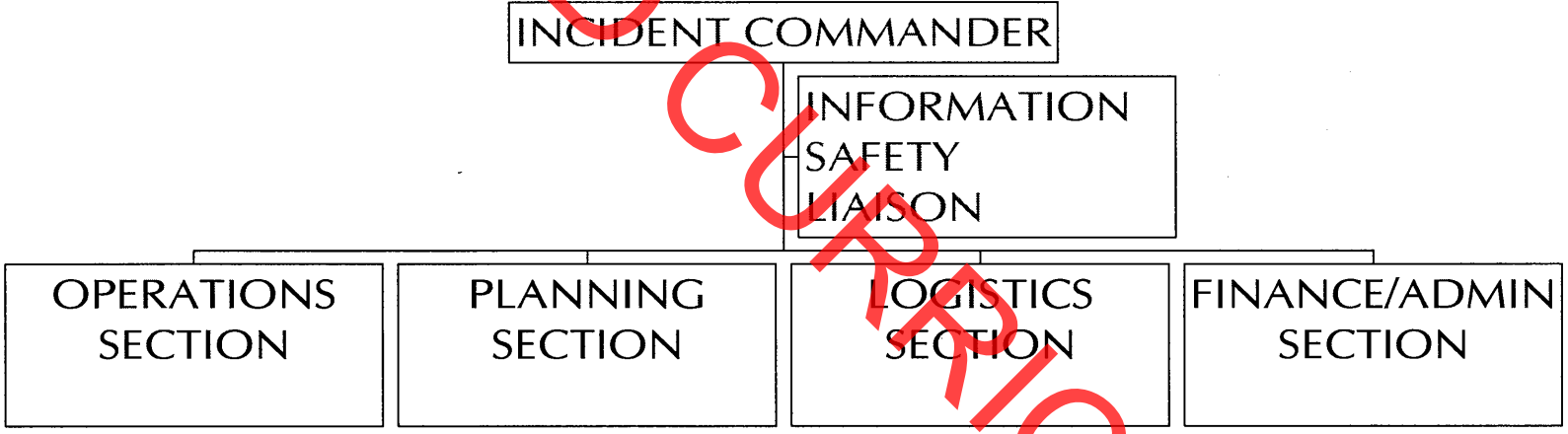
RETIRED CURRICULUM

COMMAND STRUCTURE



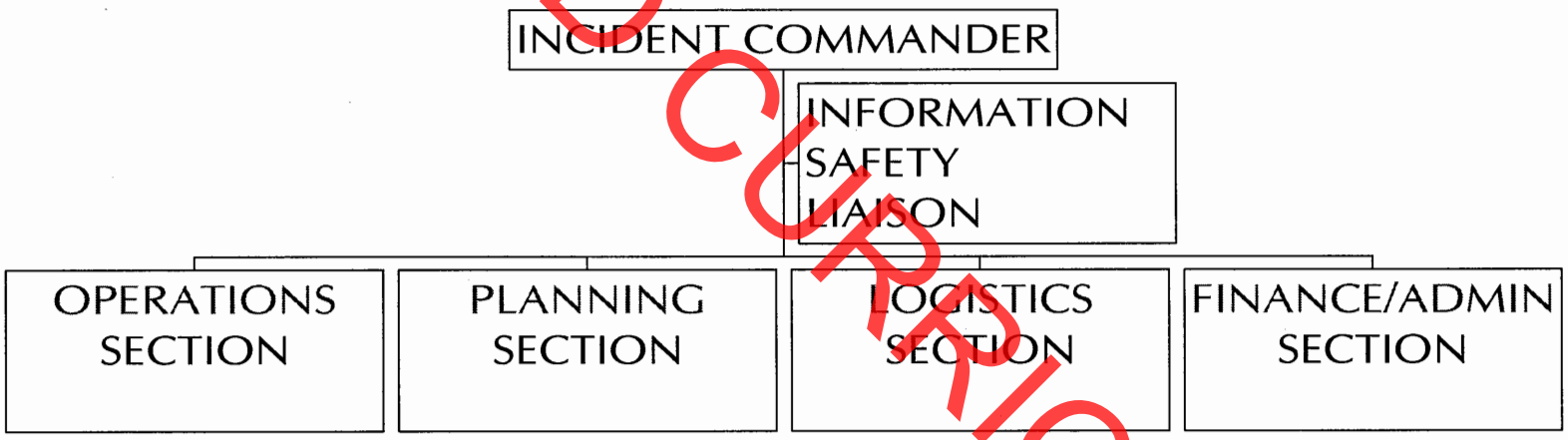
RETIRED CURRICULUM

COMMAND STAFF



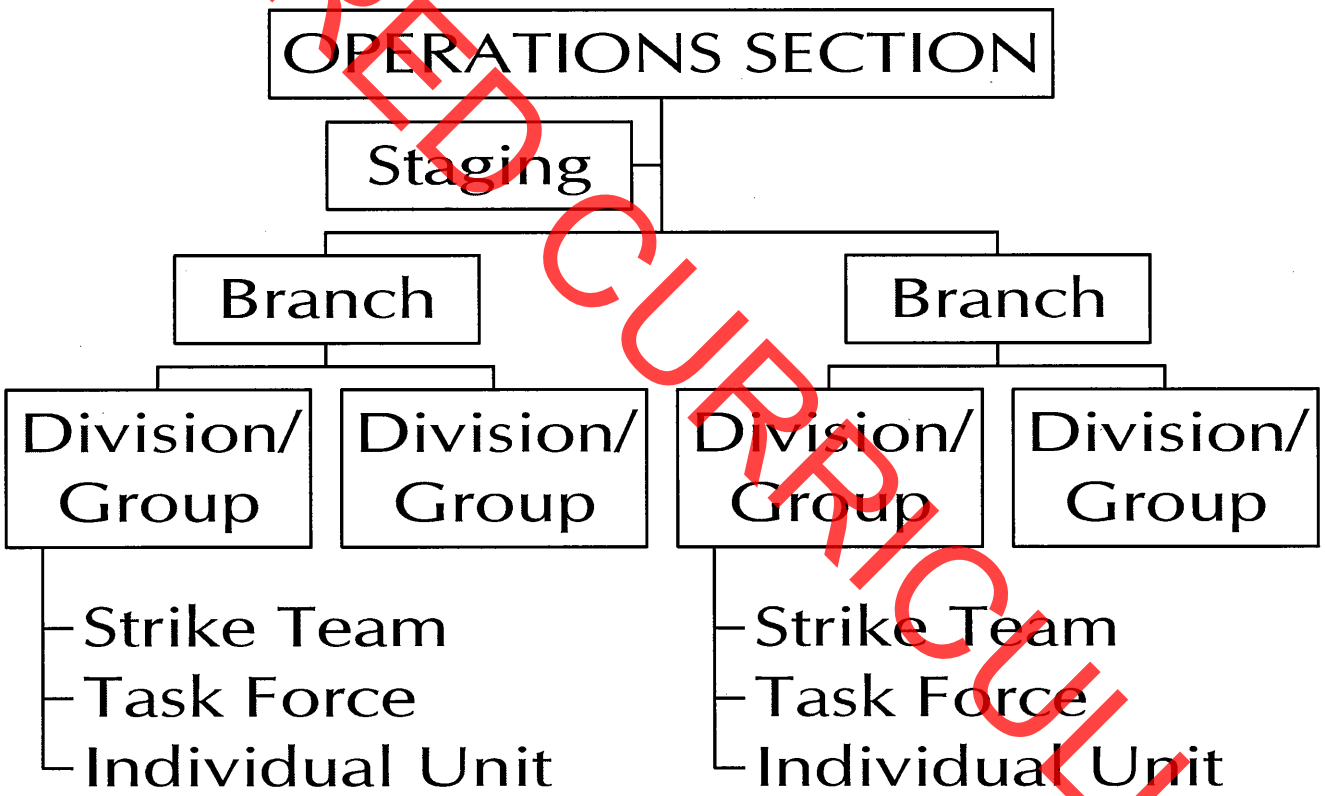
RETIRED CURRICULUM

GENERAL STAFF



RETIRED CURRICULUM

OPERATIONS SECTION



RETIRED CURRICULUM

PLANNING SECTION

PLANNING SECTION

- Resources Unit
- Situation Unit
- Documentation Unit
- Demobilization Unit
- Technical Specialists

RETIRED CURRICULUM

LOGISTICS SECTION

RETIRED CURRICULUM

- LOGISTICS SECTION
  - SUPPORT BRANCH
    - Supply Unit
    - Ground Support Unit
    - Facilities Unit
  - SERVICE BRANCH
    - Communications Unit
    - Medical Unit (Responder Rehab)
    - Food Unit

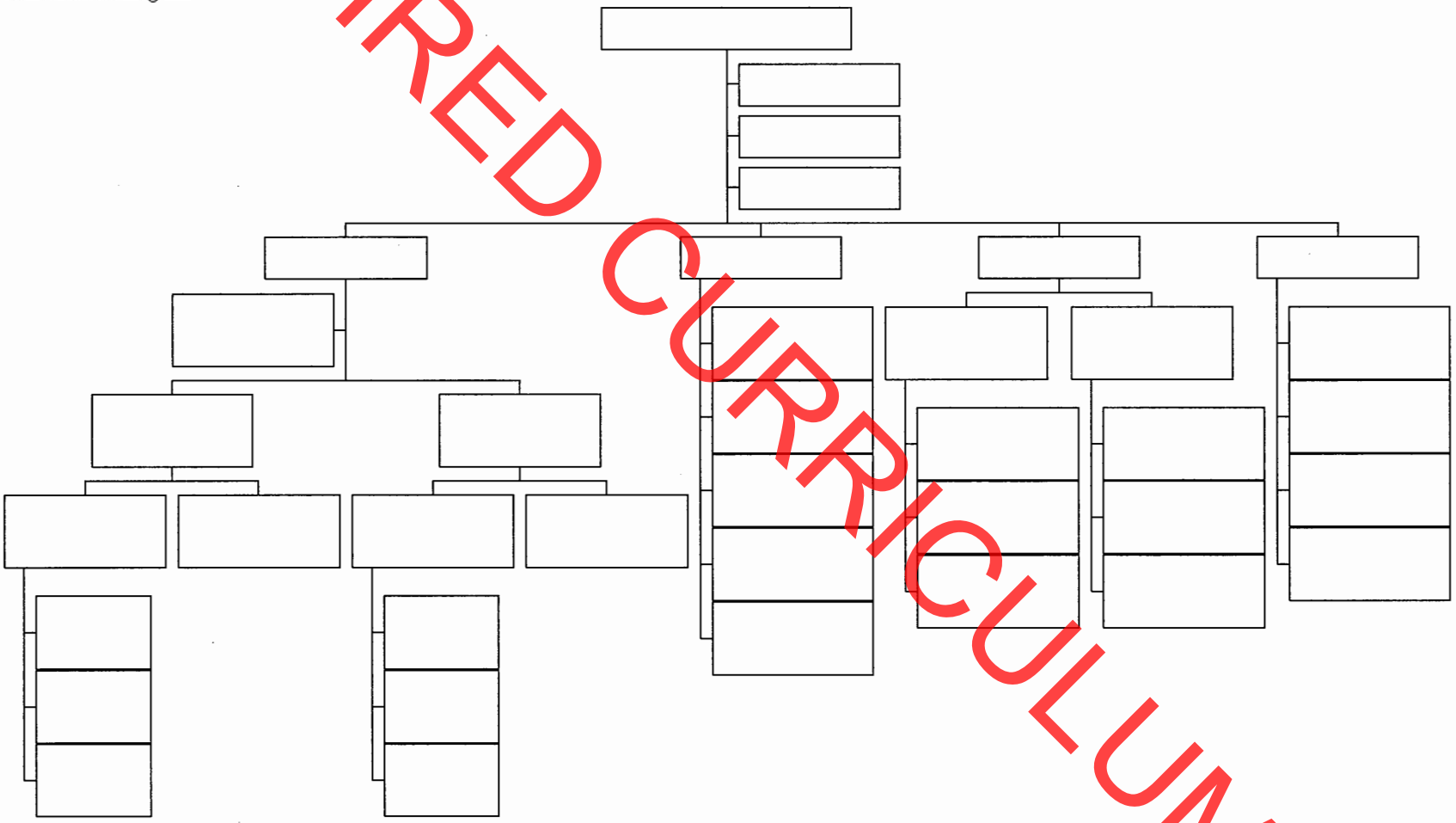
FINANCE/ADMIN SECTION

RETIRED CURRICULUM

FINANCE/ADMINISTRATION SECTION

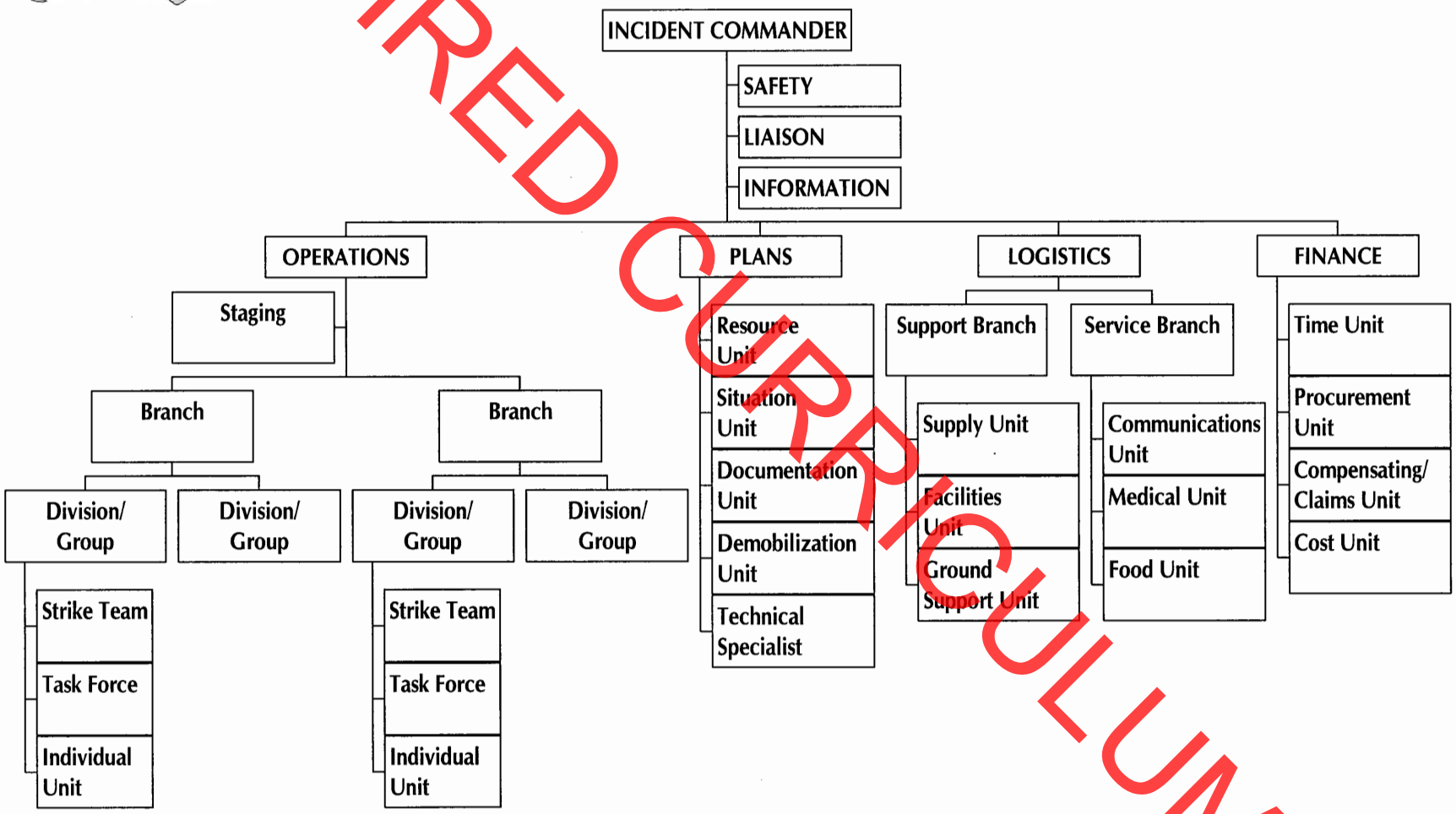
- Time Unit
- Procurement Unit
- Compensation/Claims Unit
- Cost Unit

ACTIVITY 1-4-1



RETIRED CURRICULUM

MODEL for ACTIVITY 1-4-1



RETIRED CURRICULUM

DISASTER DEFINED

Any event that

overtaxes the resources

of the

responding agency

RETIRED CURRICULUM

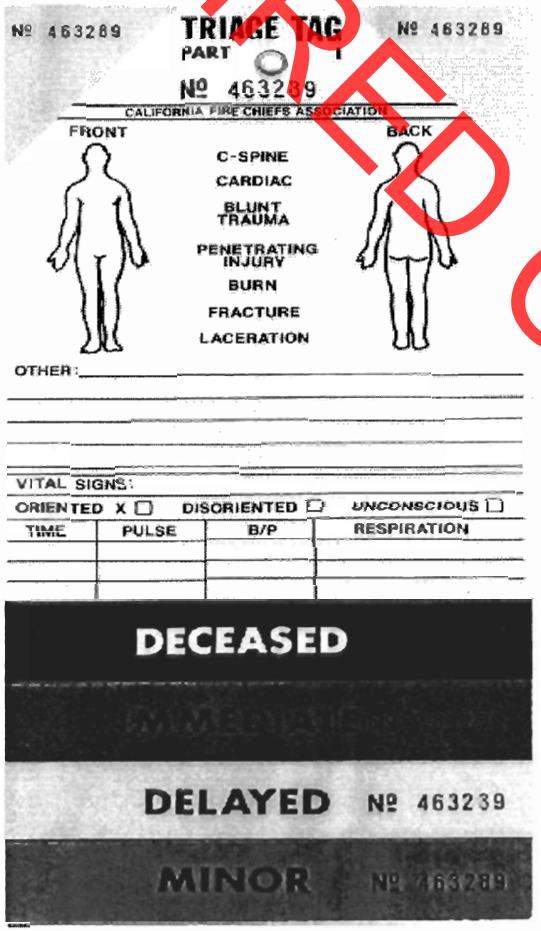
TRIAGE DEFINED

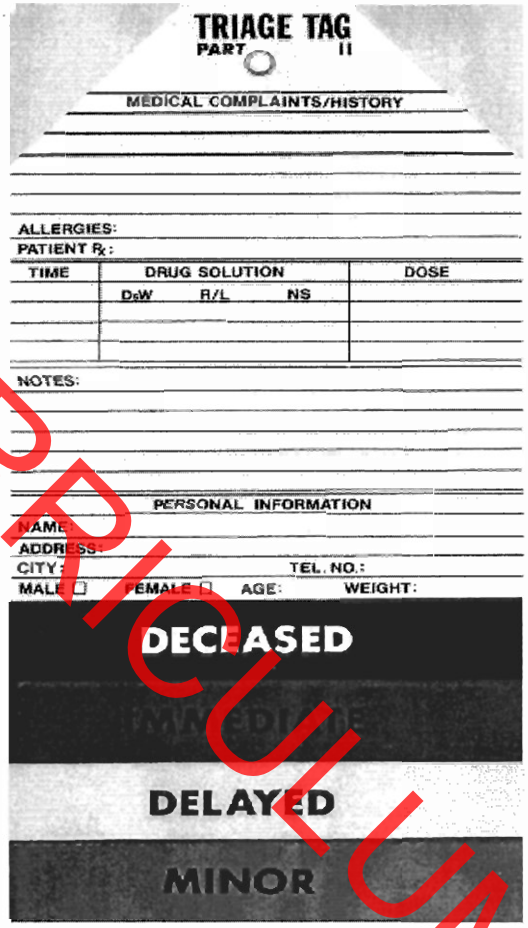
A French term meaning to sort; assign medical priorities

- Efficient use of personnel, equipment, and facilities
- Don't relocate disaster to the hospitals
- Provide organized care within the disaster setting

RETIRED CURRICULUM

TRIAGE TAG





RETIRED CURRICULUM

START Victim Assessment

1. Ventilation
   - None, >30 per minute, <30 per minute
2. Perfusion
   - Capillary blanch test
   - Radial pulse test
3. Mental status
   - Altered, normal

RETIRED CURRICULUM

MEDICAL EMERGENCY CONDITIONS

- Acts of nature
  - Floods, earthquakes, etc.
- Airplane crashes
- Large fires
  - High-rise, wildland, etc.
- Hazardous materials incidents

RETIRED CURRICULUM

MUTUAL AID DEFINED

Agreements intended to establish systematic sharing of emergency resources by all fire departments within the region or state

RETIRED CURRICULUM

TYPES OF EMERGENCIES

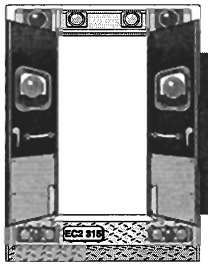
- Expanded Medical Emergency
  - Exceeds the normal response capabilities
- Major Medical Emergency
  - Requires the access of local mutual aid resources
- Medical Disaster
  - Requires the access of county-wide mutal aid resources
- Medical Catastrophe
  - Beyond the control of the existing county resources

RETIRED CURRICULUM

EXPANDED MEDICAL

- Involves 5 to 15 patients
- Five or more critical
- Resources dependent on severity and number of patients

RETIRED CURRICULUM



MAJOR MEDICAL

- Involves 16-50 patients
- May require a medical group
- One ALS provider per 3 critical patients
- One EMT per 7 patients

RETIRED CURRICULUM

MEDICAL DISASTER

- Involves over 50 patients
- Requires one or more medical groups

RETIRED CURRICULUM

MEDICAL CATASTROPHE

- Beyond control of existing resources
- Requires use of master mutal aid agreement

RETIRED CURRICULUM

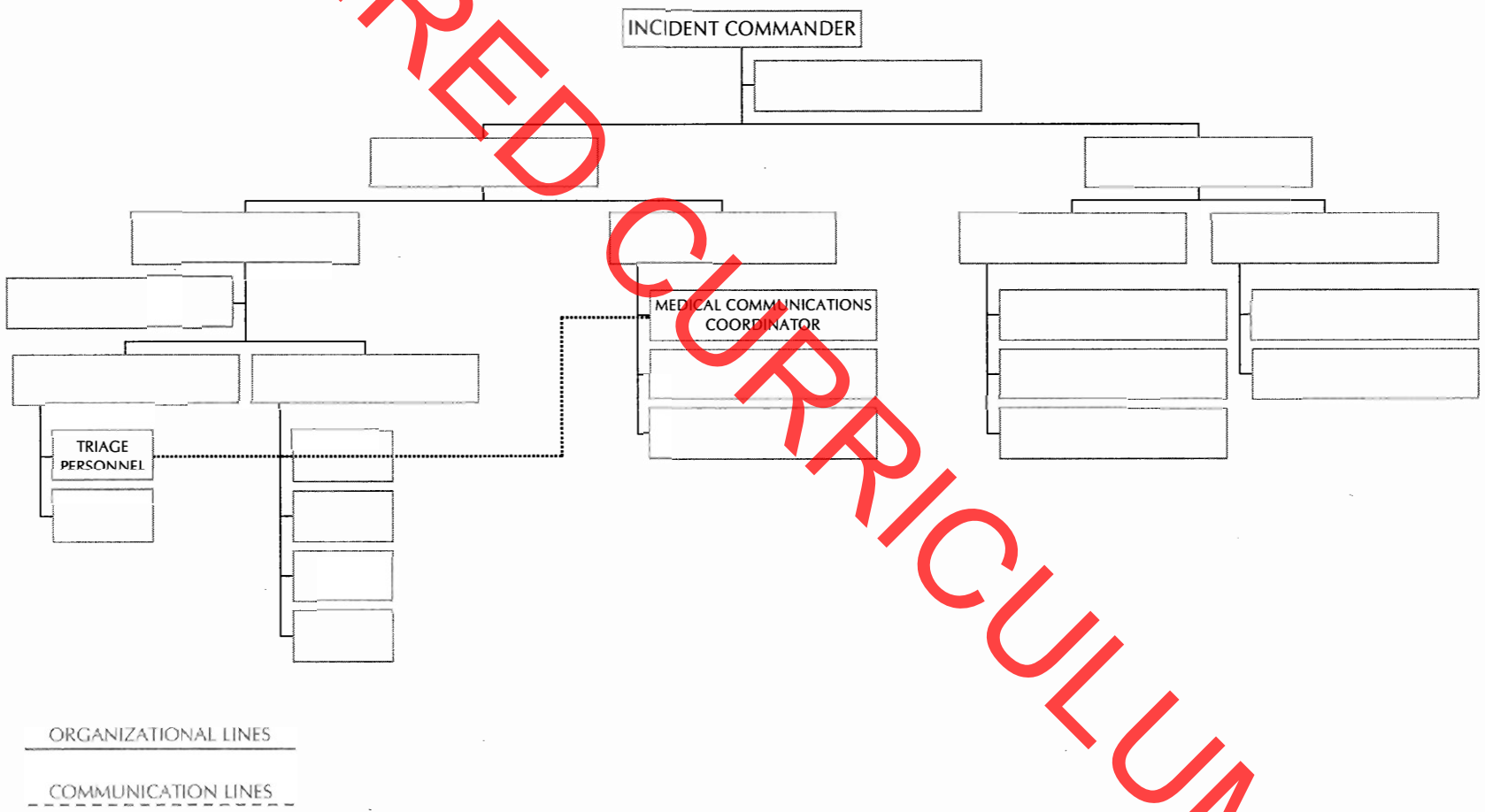
BENEFITS

. . .OF STANDARDIZED INCIDENT MANAGEMENT SYSTEM

- Common procedures
- Common organization
- Common terminology

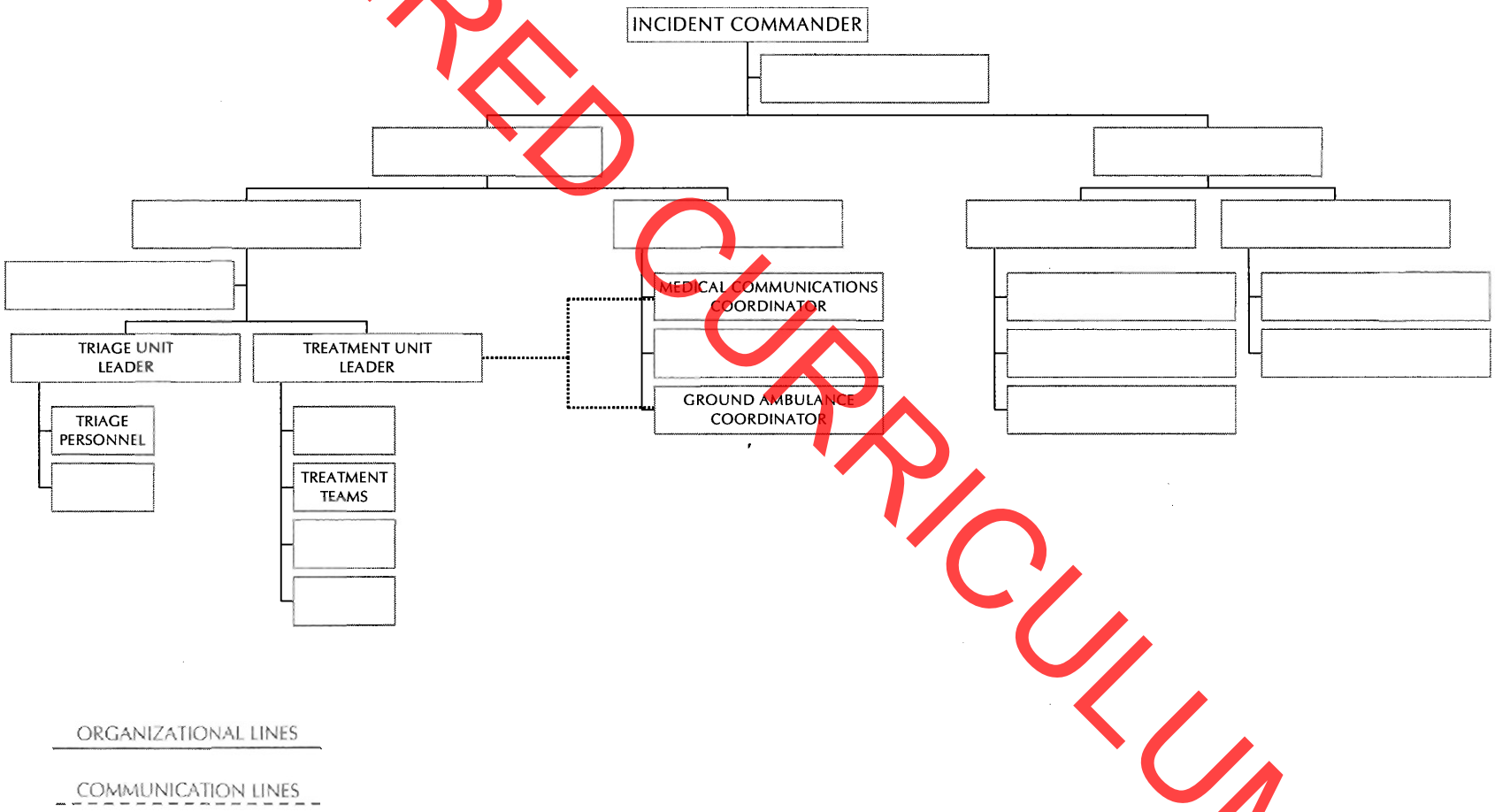
RETIRED CURRICULUM

INITIAL RESPONSE



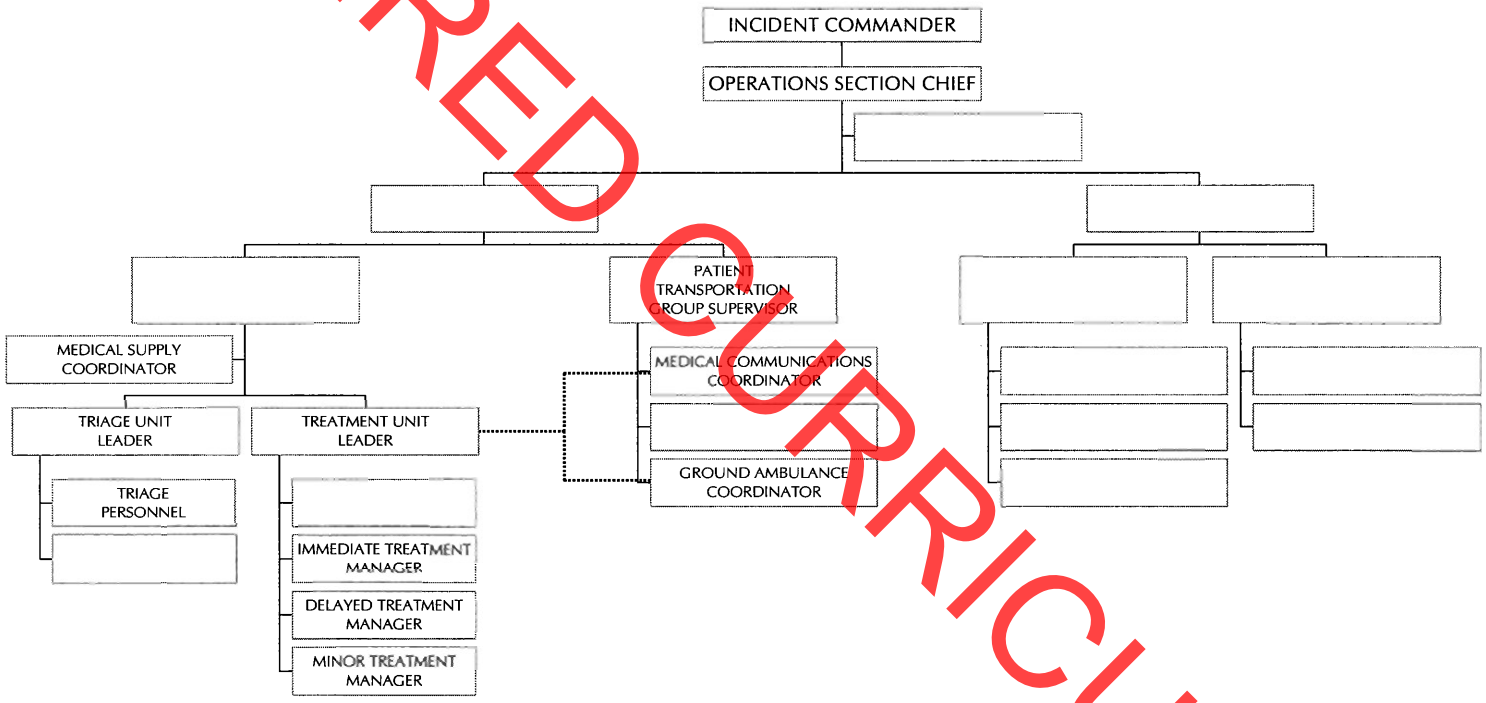
RETIRED CURRICULUM

RE-INFORCED RESPONSE



RETIRED CURRICULUM

MULTI-LEADER RESPONSE

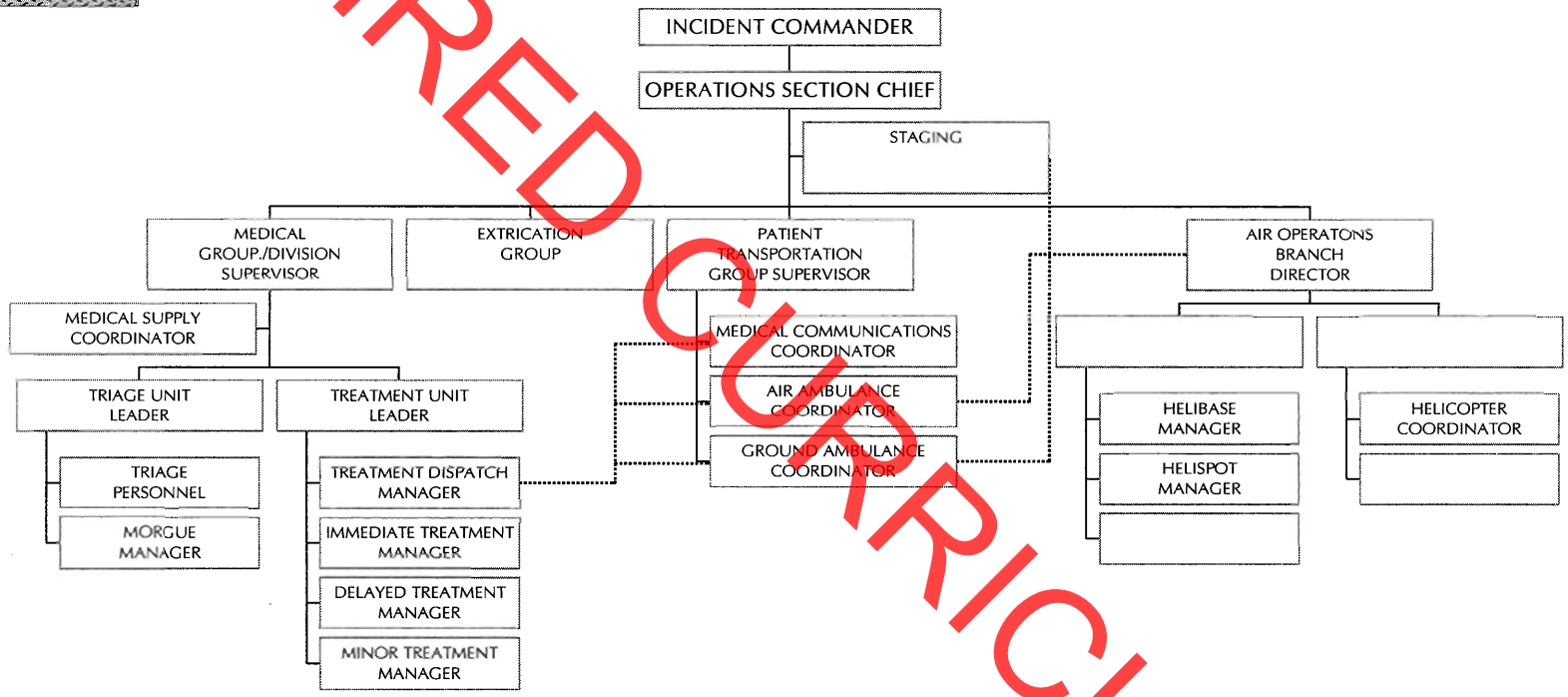


ORGANIZATIONAL LINES

COMMUNICATION LINES

RETIRED CURRICULUM

MULTI-GROUP RESPONSE

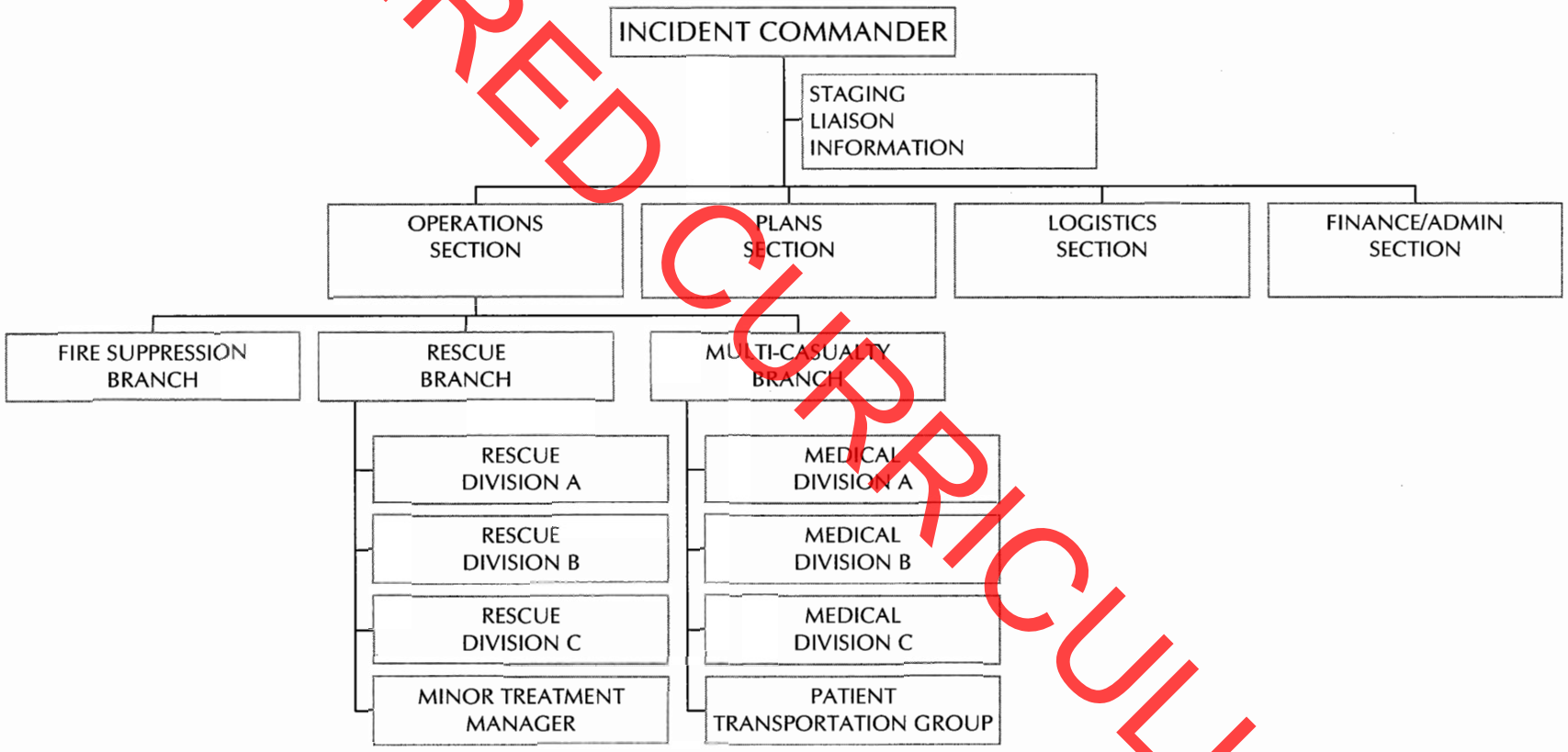


ORGANIZATIONAL LINES

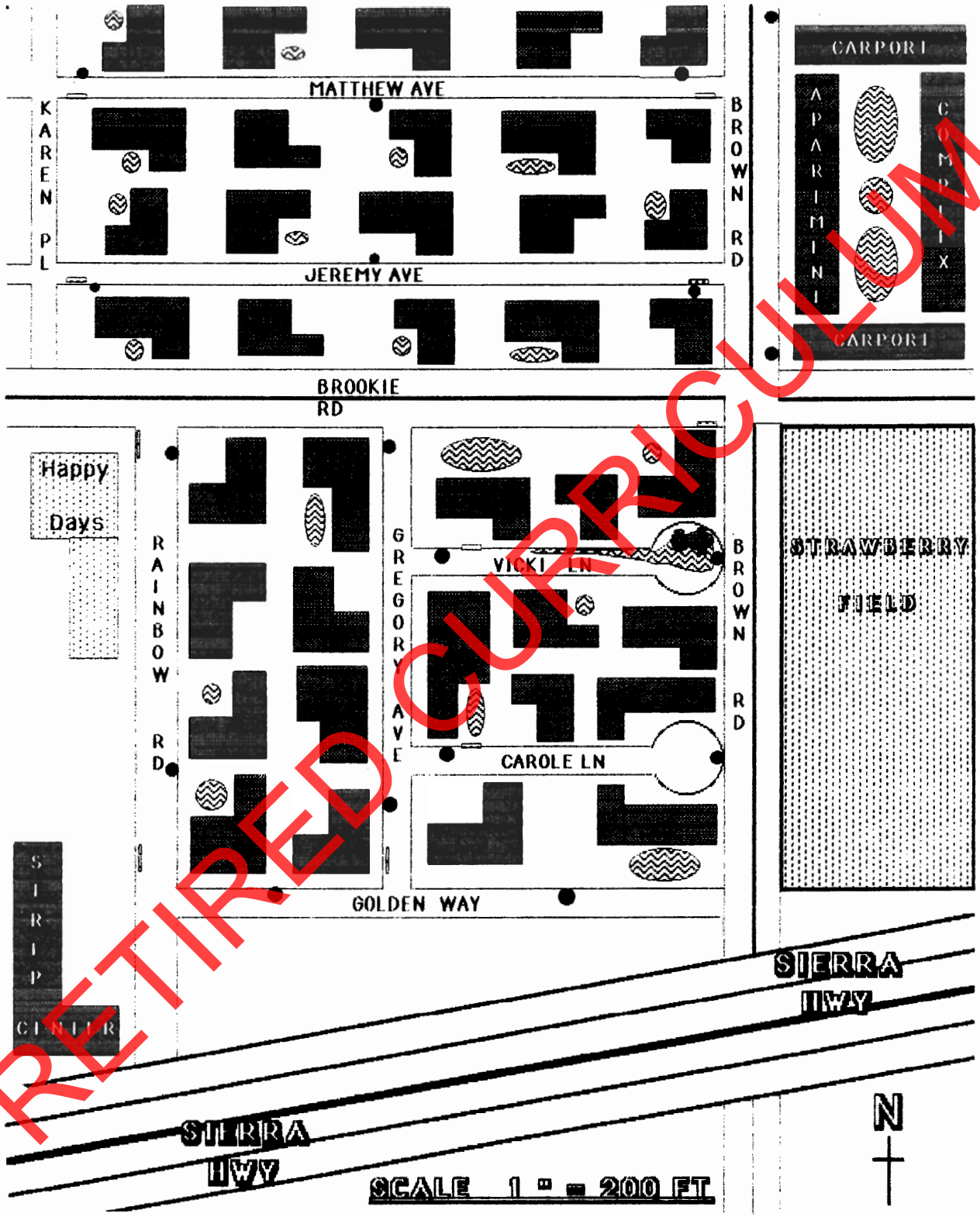
COMMUNICATION LINES

RETIRED CURRICULUM

MULTI-BRANCH RESPONSE



RETIRED CURRICULUM



RETIRED CURRICULUM

HAZARD

- All chemicals possess ***more than one*** hazard
  - Physical
  - Chemical
  - Health
  - Environmental

RETIRED CURRICULUM

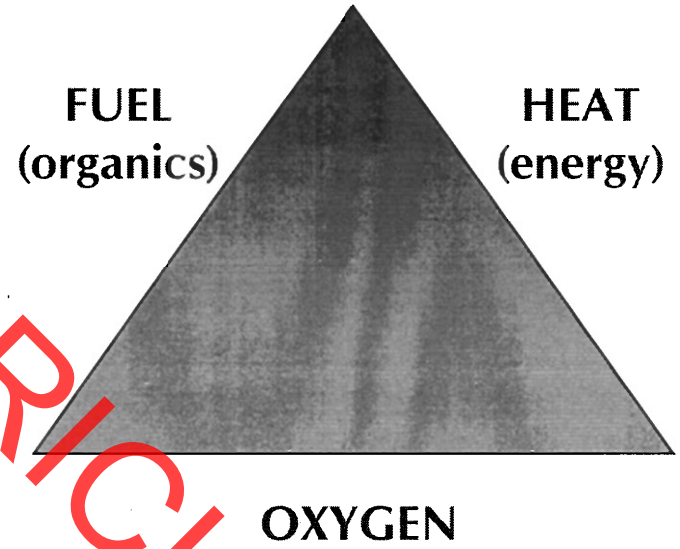
PLACARD IDENTIFICATION

UN #	HAZARD CLASS	COLOR	PICTOGRAPH
1	Explosives	Orange	Bursting Bomb
2	Compressed Gases	Multi	Multi
3	Flammable Liquids	Red	Flame
4	Flammable Solids	Red/White	Flame
5	Oxidizers	Yellow	Ball/Flame
6	Poisons	Black/White	Skull/Crossbones
7	Radioactives	Yellow/White	Propeller
8	Corrosives	Black/White	Hands/Test Tube

RETIRED CURRICULUM

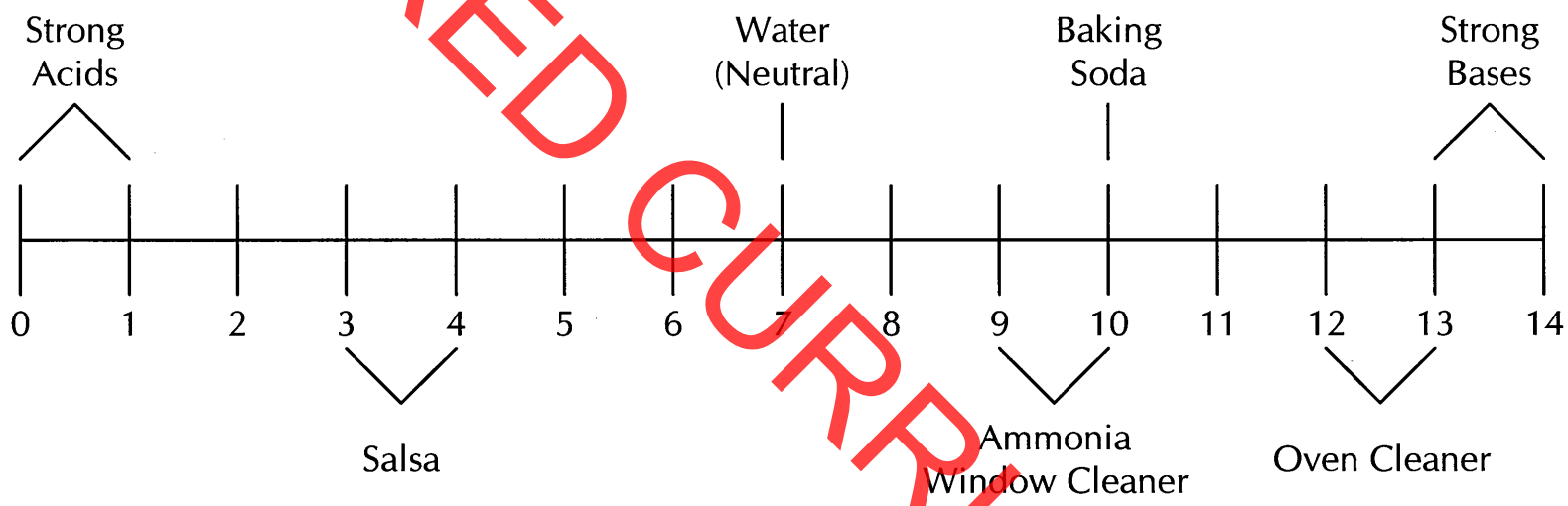
Fire Triangle & Organics

- Oxidizers
  - Hazard Class 5
  - Yellow Placard
  - Heat Sensitive
- Organic peroxides
  - Subclass of oxidizers
  - "Per" indicates "extra"
    - In this case, extra oxygen
  - Handle with respect
  - If involves heat or refrigeration
    - Do not turn unit off



RETIRED CURRICULUM

THE pH SCALE



pH of Acids = 0 to 6

pH of Bases = 8 to 14

RETIRED CURRICULUM

COMMON STRONG ACIDS

- Sulfuric Acid
  - H2SO4
  - Battery acid
- Hydrochloric Acid
  - HC1
  - Concentrated pool acid
- Nitric Acid
  - Used in metal plating
  - Also a strong oxidizer

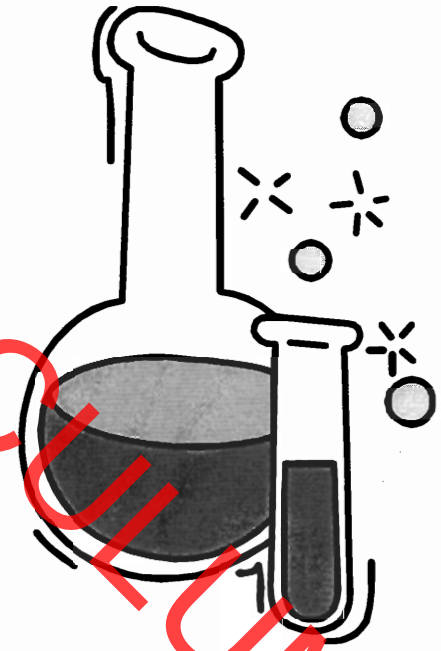
RETIRED CURRICULUM

COMMON STRONG BASES

Called by several diffierent names but mean the same

BASES = CAUSTICS = ALKALINES

- Sodium Hydroxide
  - NaOH
- Potassium Hydroxide
  - KOH



RETIRED CURRICULUM

PARACLEUS

WHAT IS NOT POISON?

All things are poison and nothing is without poison.

It is the dose that makes things not a poison.

RETIRED CURRICULUM

TOXICOLOGY DEFINED

The science that investigates the adverse systemic effects of chemicals

RETIRED CURRICULUM

TIME FRAMES

- Short-term exposure (acute)
  - Short duration/high dose
  - Measured in seconds, minutes, hours
  - Single exposure can result in death
  - Usually leads to an emergency situation
- Long-term exposure (chronic)
  - Long duration/small dose
  - Sublethal quantities over a long period

RETIRED CURRICULUM

TYPES OF ACTION

- Local
  - Takes place at site of contact
  - Burns, rashes, necrosis
- Systemic
  - Occurs at site other than point of contact
  - Target organs

RETIRED CURRICULUM

CHEMICAL INFLUENCES

- Solid
  - Ingestion hazard
- Liquid
  - Ingestion or absorption
- Gas
  - Inhalation or absorption

RETIRED CURRICULUM

EXPOSURE INFLUENCES

- Route
  - Respiratory/inhalation
    - Greatest of hazards
  - Dermal/absorption
  - Oral/ingestion
  - Injection
    - Not normally considered
- Duration
  - Dose and concentration
  - Local or systemic action

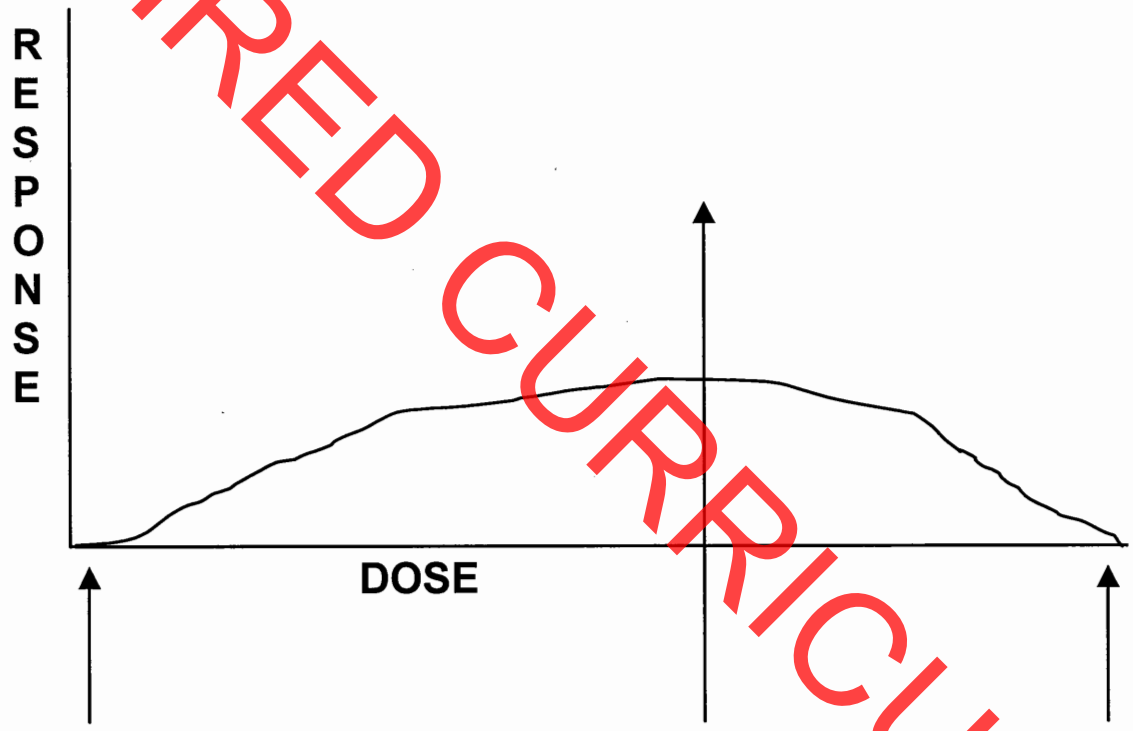
RETIRED CURRICULUM

INDIVIDUAL INFLUENCES

- Sex
  - Women more susceptible
- Age
  - Metabolic rate slows with age
  - Respiratory/cardiac disease
- Individual susceptibility
  - Allergies
  - Physical impairments
- Nutrition/health
  - Fitness = less susceptible
  - Poor health may mask exposure
  - Vitamins and proteins protect

RETIRED CURRICULUM

DOSE-RESPONSE CURVE



The young, aged, and infirmed

The majority of the population

The "Super Humans" (very little effect)

RETIRED CURRICULUM

LETHAL DOSE/CONCENTRATION

- Lethal dose
  - LD50
    - Death of 50% of test population
  - LD1o
    - First death in population
  - Oral or dermal exposure
- Lethal concentration
  - LC
  - Inhalation exposure

RETIRED CURRICULUM

OCCUPATIONAL EXPOSURE LIMITS

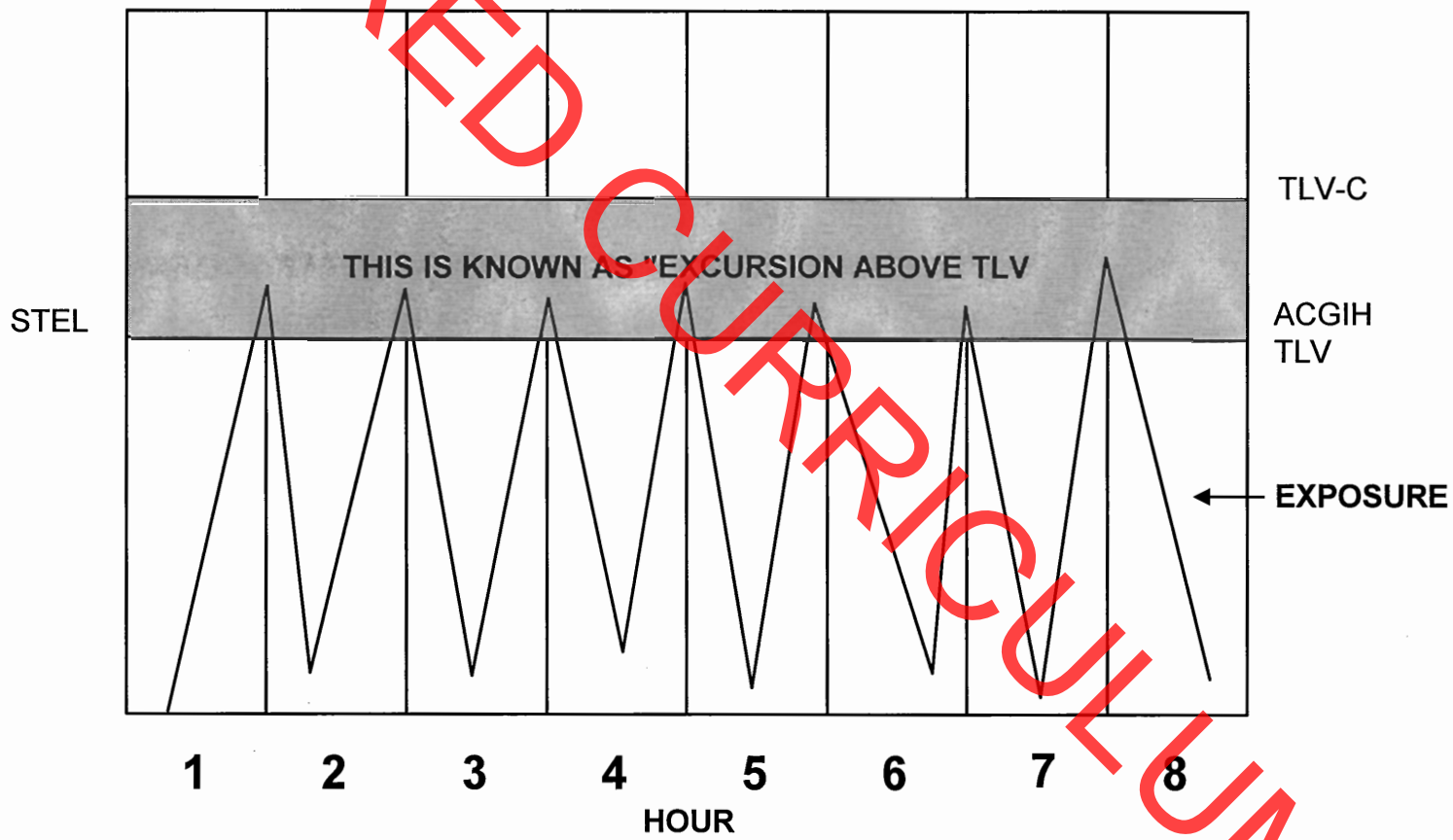
- Threshold limit value (TLV)
- Dose or concentration with *no adverse effect*
- Airborne concentrations
- Subject to change as data develops
- Guidelines only

RETIRED CURRICULUM

TLV-TWA

RETIRED CURRICULUM

STEL: 15 MINUTE TWA / LIMITS EXCURSION ABOVE TLV

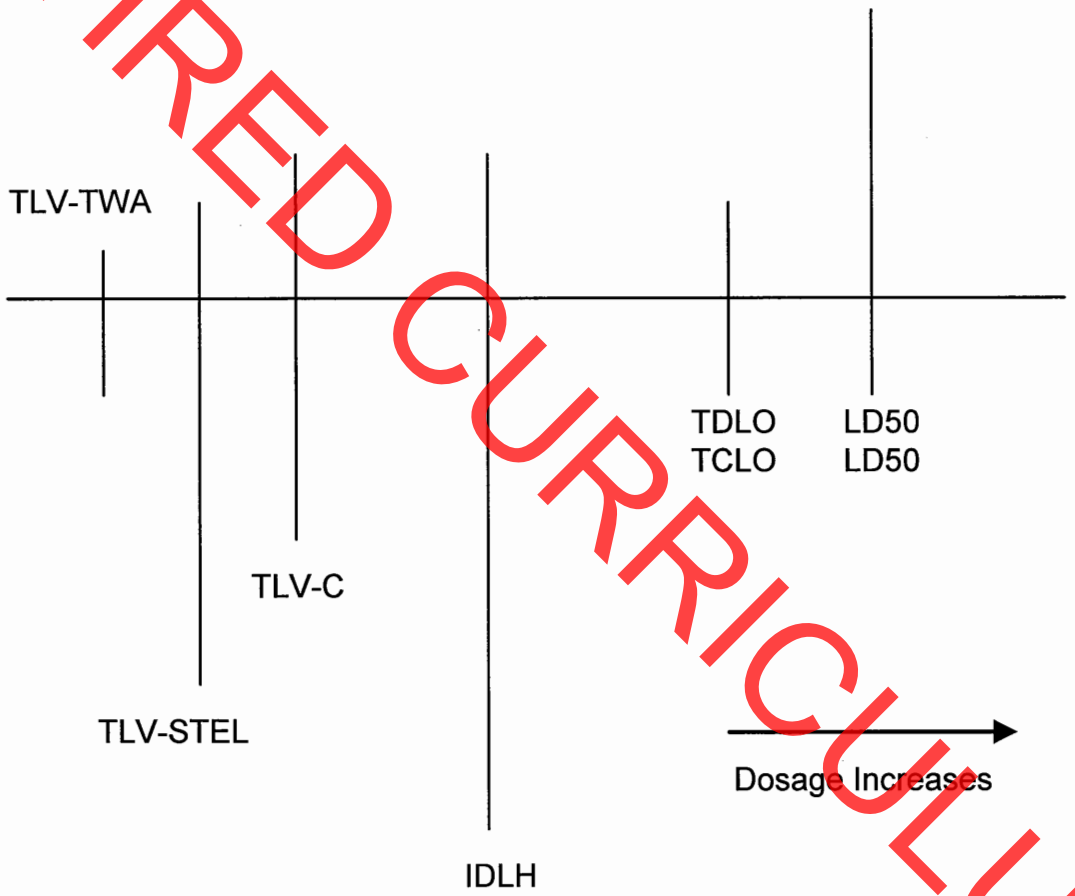


IDLH

- Life-threatening concentrations
- Maximum level for worker to escape *without* impairing symptoms or irreversible health effects

RETIRED CURRICULUM

TOXICITY TABLE



RETIRED CURRICULUM

CARCINOGENS

- 200+ known carcinogens
- Must use highest level of protection
- Use specialized assistance
- Protect with SCBAs

RETIRED CURRICULUM

BIRTH DEFECTS

- Causing agents
  - Teratogens
    - Effects this generation
    - Kids in womb, children, women of child-bearing age
  - Mutagens
    - Effects the next generation
    - Alters DNA genetic code
  - Use specialized assistance

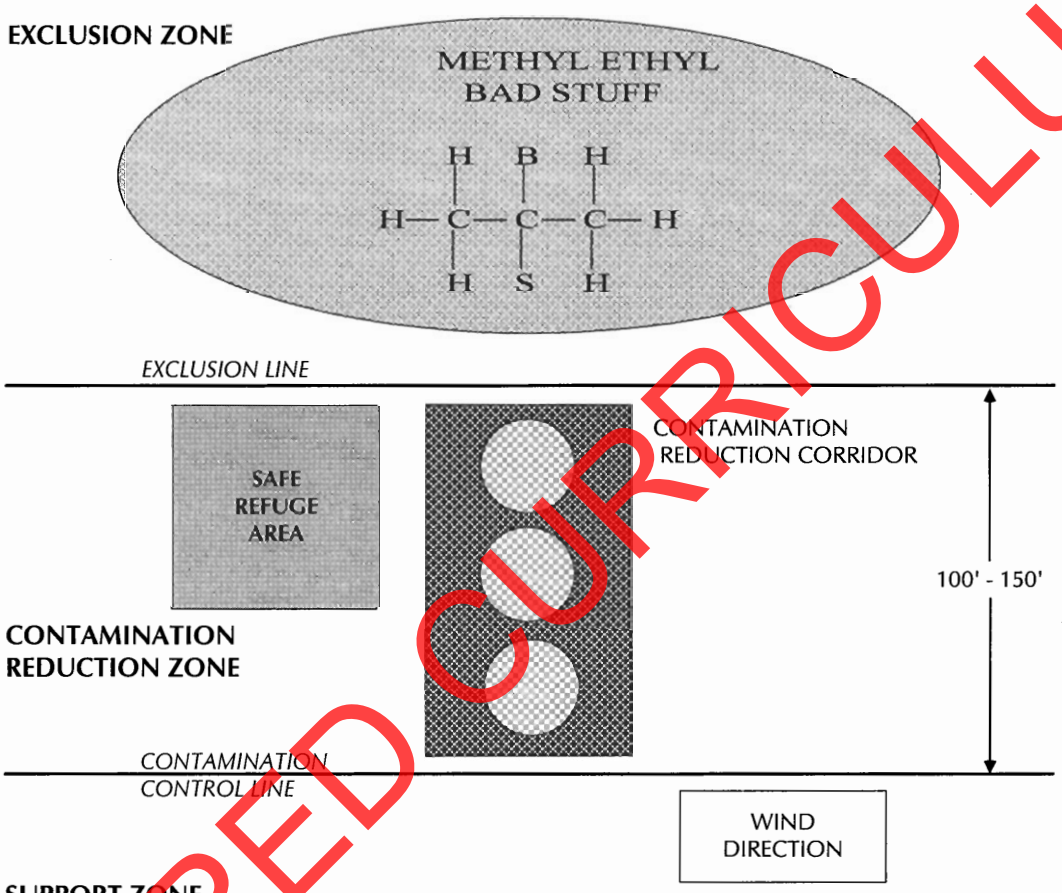
RETIRED CURRICULUM

OXYGEN DEFICIENT ATMOSPHERE

- Occur naturally or as a result of chemical displacement of oxygen in a confined space
- Less than **19.5%** oxygen is **dangerous**
  - Diminishes mental and physical capacities
- Use SCBAs
- Chemical concentrations may be increased

RETIRED CURRICULUM

SITE CONTROL



RETIRED CURRICULUM

ACTIVE EVACUATIONS

- Physically removes people from the area
- Increases logistical burden on the IC
  - Transportation
  - Sanitation
  - Food and shelter
  - Medical or psychological assistance
- Decreases the "worry factor" on the IC

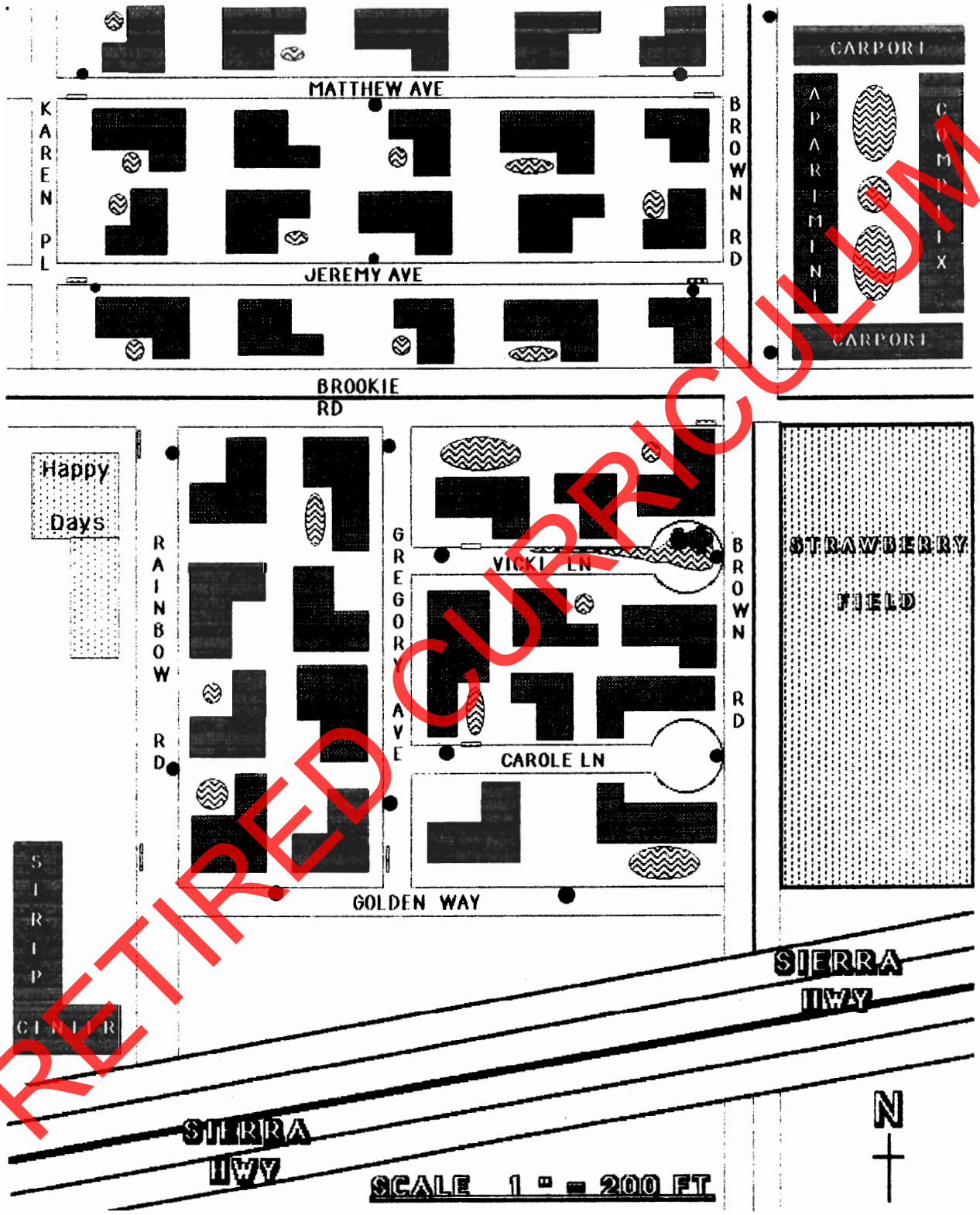
RETIRED CURRICULUM

PASSIVE EVACUATION

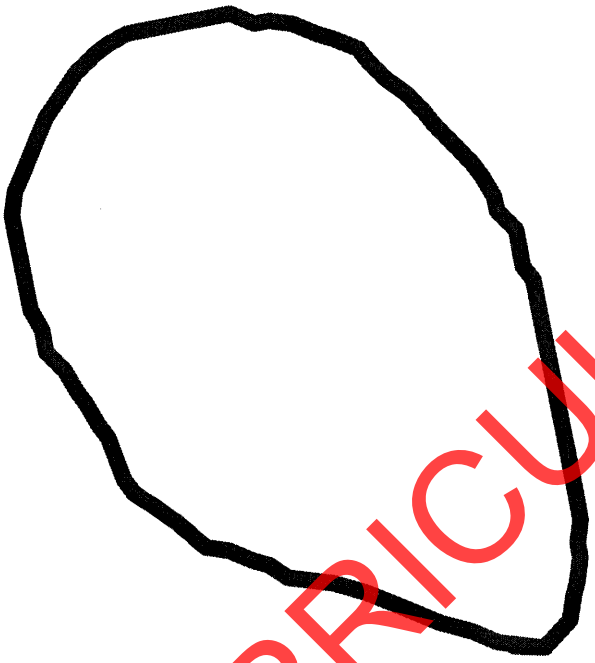
SHELTER-IN-PLACE

- Leaves people where they are
- Lessens the logistical burden on the IC
  - Raises the "worry factor"
- Buys time
  - Can still actively evacuate later if needed
- Problems
  - Sheltered persons must be monitored
  - Requires an increase in committed personnel
  - Protecting people using only windows and walls

RETIRED CURRICULUM



RETIRED CURRICULUM



RETIRED CURRICULUM

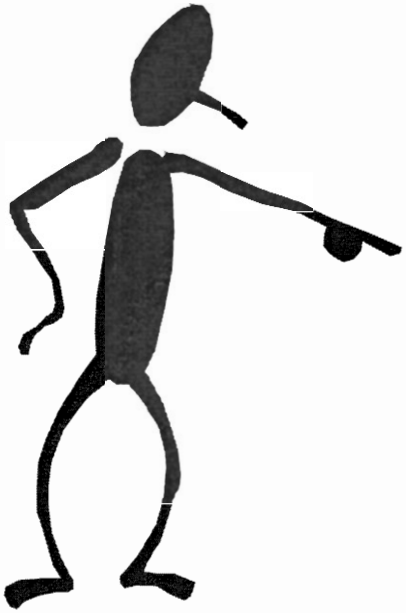
DECIDE

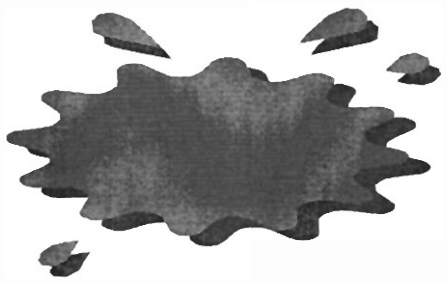
Detect
Estimate
Choose
Identify
Do
Evaluate

RETIRED CURRICULUM

DETECT...

. . . the presence of a hazardous material

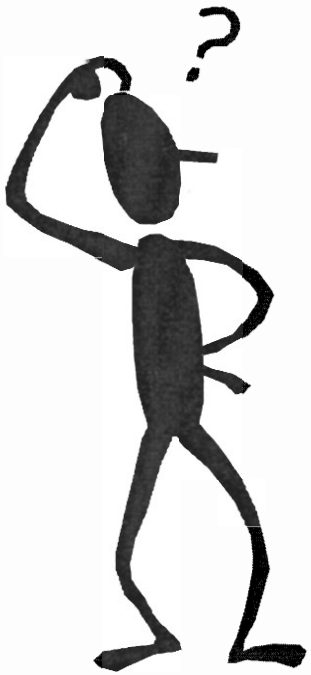


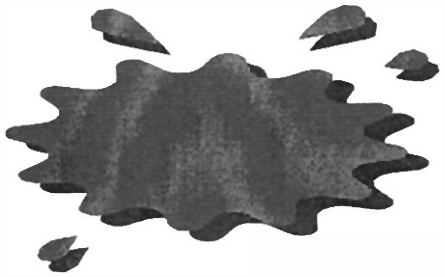


RETIRED CURRICULUM

ESTIMATE

- . . . whether to intervene or leave it alone

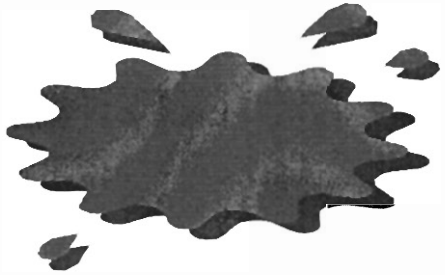




RETIRED CURRICULUM

CHOOSE

- . . . the appropriate objective

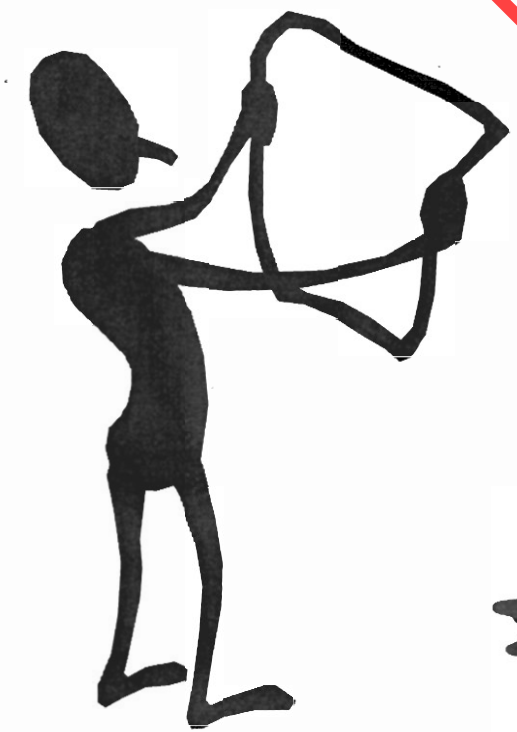


- if you plan to intervene

RETIRED CURRICULUM

IDENTIFY

- . . . practical options



- Dropping Napalm on a pesticide fire is probably not practical!

RETIRED CURRICULUM

DO

- . . . the best option

- As long as the best option is practical. Remember your priorities!

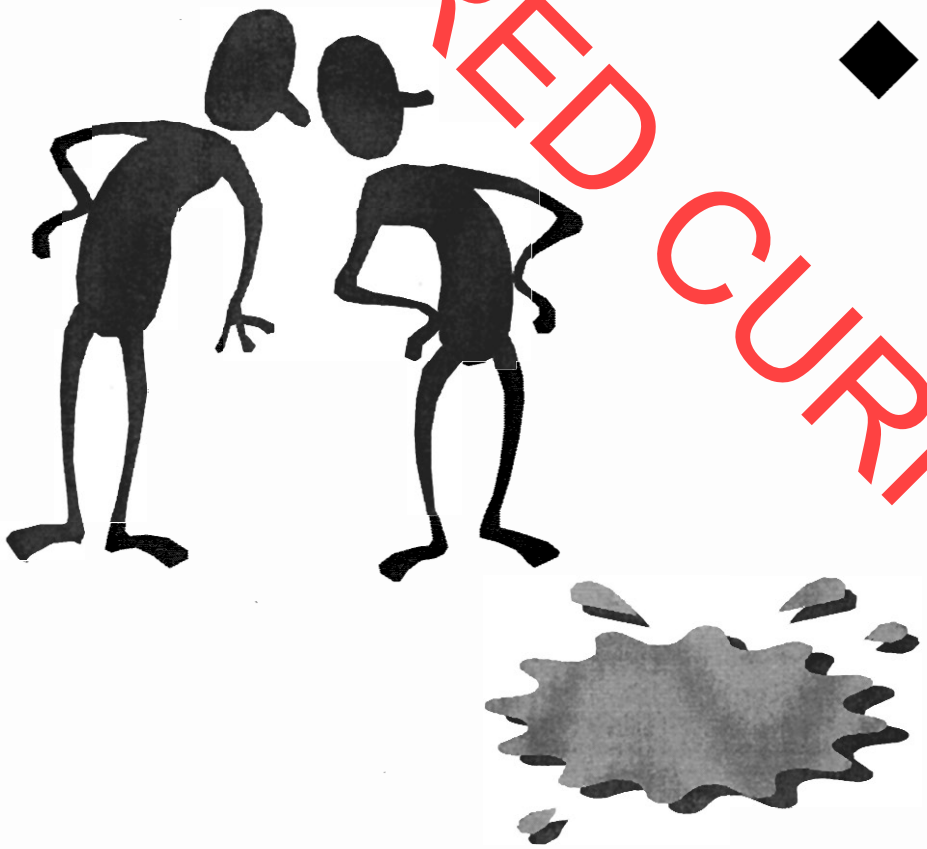
RETIRED CURRICULUM

RETIRED CURRICULUM

OXIDIZER

5

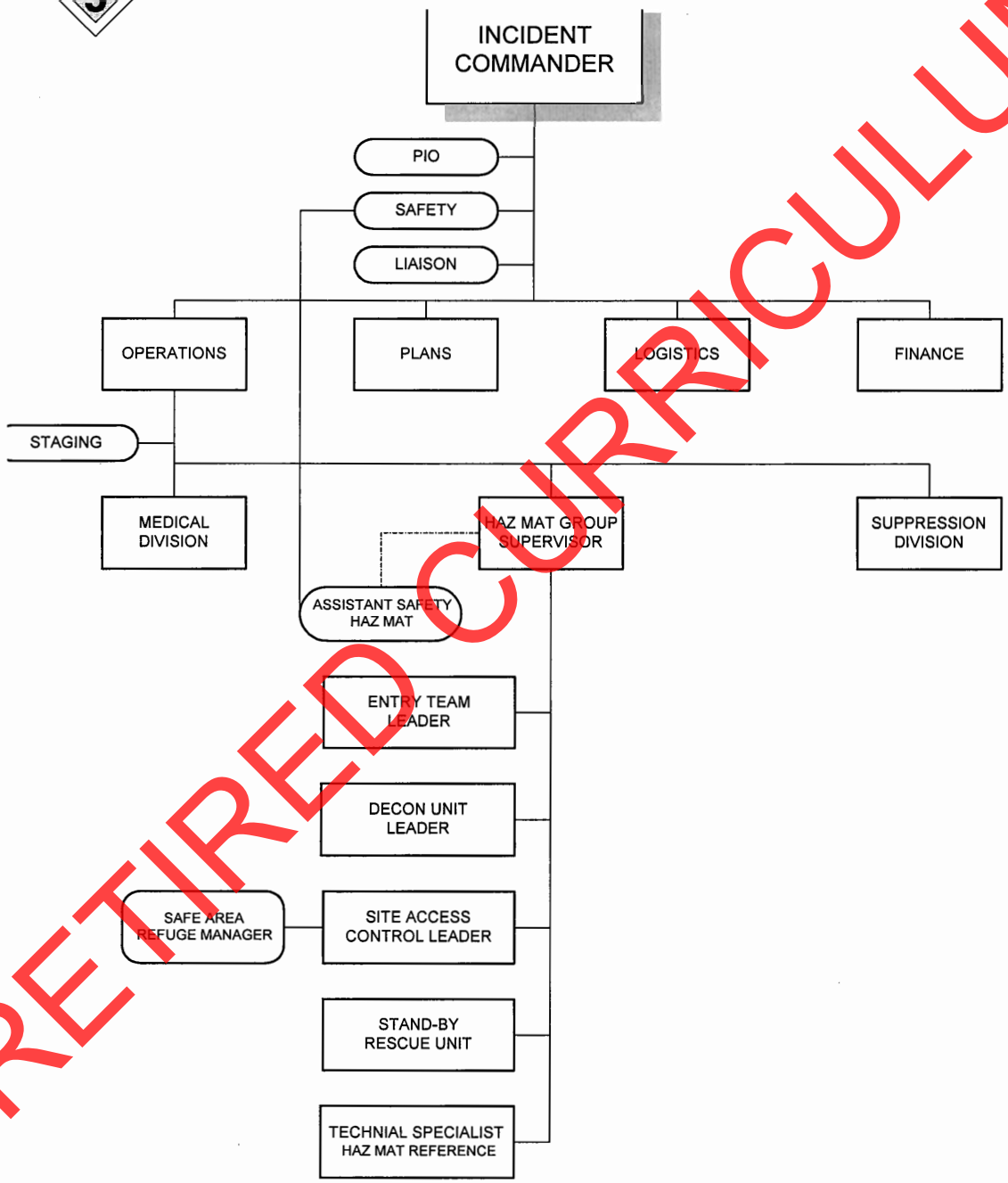
EVALUATE



- . . . your progress

- If there is no progress, consider another option!

HAZ MAT ICS



RETIRED CURRICULUM

What Affects Wildland Fires?

- Three major factors
  - Fuel
  - Weather
  - Topography

RETIRED CURRICULUM

FUEL CLASSIFICATION

- Ground fuels
  - Twigs, leaves, needles
- Surface fuels
  - Grass, crops, brush
- Crown fuels
  - Suspended fuels
  - Upright fuels
    - Large trees

Grouped according to their position on the ground or in the air

RETIRED CURRICULUM

FUEL RATE OF BURNING

- Fuel size determines the ease of ignition and rate or burning
- Compact fuels have less air available
  - Tend to burn more slowly
- Continuity of fuels affects the spread
- Volume of fuel determines how intense the fire will burn

RETIRED CURRICULUM

WARNING SIGNS

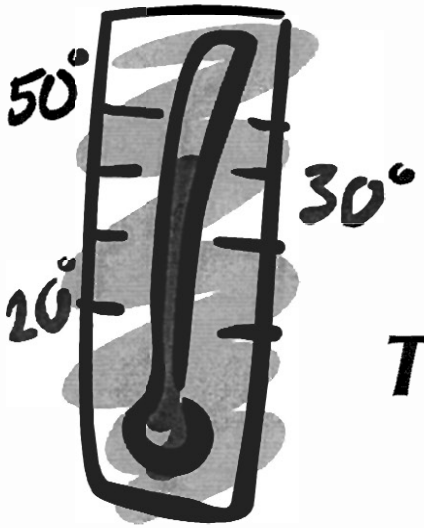
- Unusually low fuel moisture content
- Large amount of fine fuel
- Continuous areas of fuels on slopes
- Crown foliage dried by surface fires
- High concentration of snags
- Very high burning and buildup index

RETIRED CURRICULUM

WEATHER FACTORS

WIND

PRECIPITATION



HUMIDITY

TEMPERATURE

RETIRED CURRICULUM

EFFECTS OF WIND

- Fire spreads faster and unevenly
- Burns more intensely
- Carries embers; may cause spot fires
- Dries fuel out
- Accelerates evaporation of fuel moisture
- Changes direction of fire
- Jeopardizes control of fire & fire fighters

RETIRED CURRICULUM

WIND CREATION

- Wildland fires create their own wind
- Constant watch is required

RETIRED CURRICULUM

ATMOSPHERIC TEMPS

- Warm/hot air
  - Absorbs more moisture
  - Dries fuel
  - Preheats fuel
  - Fire burns hotter
- Cool air
  - Holds less moisture
  - Dampens fuel
  - Spread is slowed

RETIRED CURRICULUM

RELATIVE HUMIDITY

- Affects fuels
  - Absorbs moisture from cool air
  - Gives off moisture to hot air
- 30% RH = favorable for burning
- 10% RH = fire danger is critical

RETIRED CURRICULUM

PRECIPITATION

- Affects the ***condition*** of fuels
  - Amount of rain absorbed by soil
    - Determines length of growing season
    - Determines moisture in fuels
  - Dry spells will reduce moisture in fuels
  - Rainy or damp season
    - Flash fuels dry out quickly
    - Heavy fuels retain moisture

RETIRED CURRICULUM

TOPOGRAPHY

- Refers to ***slope*** of the land
- Steepness affects both the ***rate and direction*** of fire
- Fires move faster uphill
  - Flames closer to fuel
  - Uphill winds push heat and flames
  - Convection heat causes a draft
- Fires move slower downhill
  - Burning embers may roll and start new fires

RETIRED CURRICULUM

DIRECTION OF SLOPE

- Full southern exposure
  - Sun more direct
  - Higher temperature
  - Lower humidity
  - Dry, light, flashy-type fuel
- Southeastern, southwestern, western exposures
  - Equal amount of heating
- Northern exposure
  - Cooler temperature
  - Higher humidity
  - Larger, slower burning fires

RETIRED CURRICULUM

WARNING SIGNS

- Saddles, passes, lee side of ridges
  - Cause horizontal eddies
- Gradient winds on lee sides of mountain formations
  - Form vertical eddies
- Wind on mountain/peak tops
- Thermal belt
- Steep slopes, chimneys, and canyons

RETIRED CURRICULUM

FUEL MOISTURE

- Controlled by the relative humidity
- Location of fuel to the surface affects fuel moisture
- Larger fuel = slower change in fuel moisture
- Can be used to help control fires

RETIRED CURRICULUM

TIME OF DAY

USED TO PREDICT BURNING CHARACTERISTICS

- **1000-1800:** fire intensity at its highest
- **1800-0400:** favorable for fire control
- **0400-0600:** most easily controlled

RETIRED CURRICULUM

AREA IGNITION

- An advanced stage of a wildland fire
- Direct attack and control impossible
  - Sudden increase in intensity and rate of spread
- Little warning

RETIRED CURRICULUM

INDICATORS

- High, sustained rate of spread
- Well developed convection column
- Long distance spotting
  - Over 600 feet
- Fire whirlwinds
- Horizontal flame sheet

RETIRED CURRICULUM

SIZE OF FIRE

- Large wildland fires burn with unique characteristics
- Size, distribution, compactness, and volume of duels ***does impact*** the size
- Intense heat results

RETIRED CURRICULUM

DEFINITIONS

- Strategy
  - Broad application of plans and actions
- Tactics
  - Details of an action (strategy)
- Offensive
  - An action that attacks
- Defensive
  - An action that protects

RETIRED CURRICULUM

DEFENSIVE STRATEGIES

- Structure protection
  - Isolated structures
  - Communities and subdivisions
  - Power and utility lines
  - Radio/satellite towers
- To "turn" a fire from direction of spread
- To "slow down" a fire while waiting for resources

RETIRED CURRICULUM

OFFENSIVE STRATEGIES

- Attack fire by extinguishing it
  - Enough personnel and equipment
  - Any size fire
- Attack fire problem by removing fuel
  - Construct fire breaks
  - Any size fire

RETIRED CURRICULUM

RETIRED CURRICULUM

DIRECT ATTACK

USES

- Small fires
- Light fuels
- Subsurface fuels
  - Peat, duff
- Flanks and rear of larger fires
- Where heat, smoke, burning intensities, and terrain will allow

RETIRED CURRICULUM

ADVANTAGES

- Limits chance for fire to gain momentum or size
- Eliminates need for backfire
- Reduces danger of crowning
- Crew can escape into burned area
- Takes advantage of burned out area along control line

RETIRED CURRICULUM

DISADVANTAGES

- Working in heat and smoke
- More mop-up and closer patrol
- Danger of slop over and spot fires
- Control line generally follows fire edge
- Does not take advantage of existing fire barriers

RETIRED CURRICULUM

DIRECT ATTACK DO'S

- Take advantage of wind lulls
- Coincide with fire entering lighter fuels
- Conserve water
- Scatter heavy fuels inside burn
- Fell snags adjacent to control line

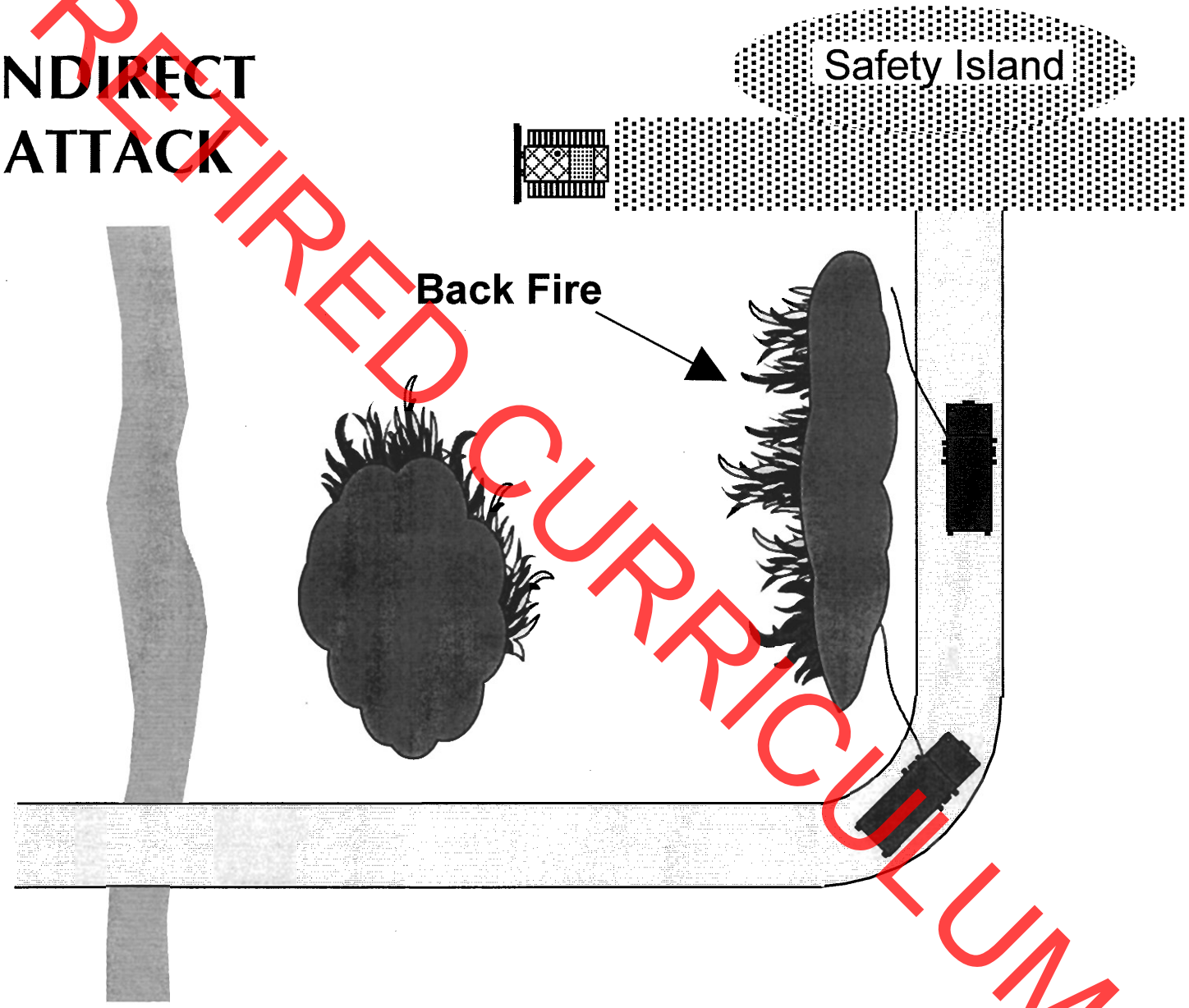
RETIRED CURRICULUM

DIRECT ATTACK DON'TS

- Attack the head of a fast moving or hot fire
- Waste water
- Risk safety of personnel and equipment

RETIRED CURRICULUM

INDIRECT ATTACK



RETIRED CURRICULUM

USES

- If there are extremes
  - Burning intensity
  - Rate of spread
  - Working conditions
    - Heat, smoke, terrain
- Insufficient equipment/personnel
- If good fire barrier is available
- With fast spreading/hot fires
- To straighten fire lines across pockets

RETIRED CURRICULUM

ADVANTAGES

- Not working in heat and smoke
- Takes advantage of changes in fuel type
- Eliminates line irregularity
- Less danger of slop over
- Takes advantage of
  - Tops of ridges, benches, bottoms of slopes, natural barriers

RETIRED CURRICULUM

DISADVANTAGES

- Sacrifices acreage
- Crew may be flanked by fire
- Backfires may go out of control
- Fire may change direction suddenly
- Personnel held in constant readiness

RETIRED CURRICULUM

INDIRECT ATTACK DO'S

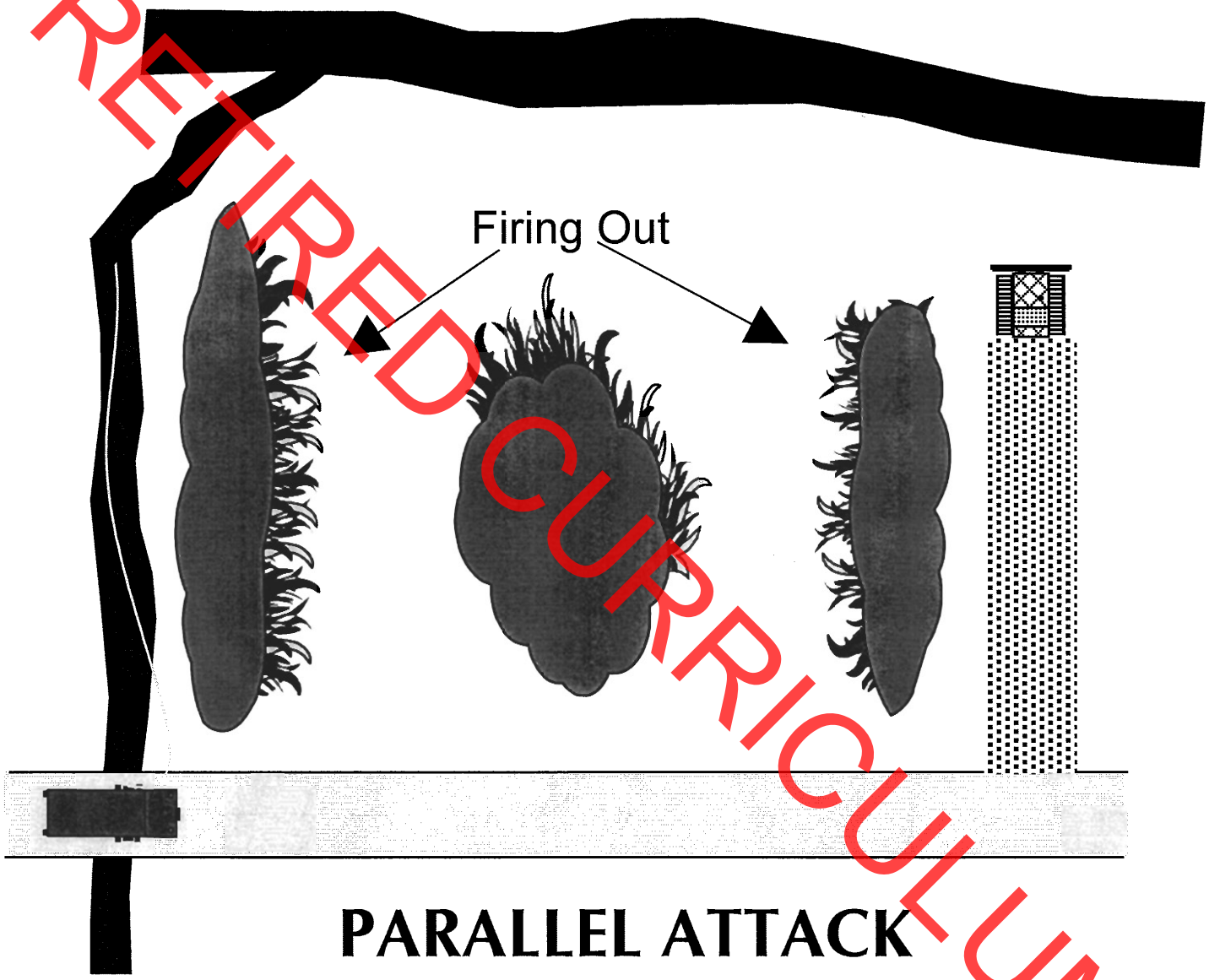
- Establish lines in lighter fuels
- Make lines straight
- Keep downed logs and snags outside your line
- Use natural barriers
- Clean line down to mineral soil
- Maintain patrol
- Set backfires
- Periodic rest for crew

RETIRED CURRICULUM

INDIRECT ATTACK DON'TS

- Overwork crew
- Set unwatched backfires
- Construct a line adjacent to fall fuels
- Take unnecessary changes with personnel or equipment

RETIRED CURRICULUM



PARALLEL ATTACK

RETIRED CURRICULUM

USES

- Primarily used by hand crews and dozers
- Works best in relatively light fuels
- Works best on relatively small fires
- Existing natural and man-made barriers are available

RETIRED CURRICULUM

ADVANTAGES

- Crew's work out of heat and smoke
- Shortens control lines
- Less danger of slop over
- Takes advantage of natural and man-made barriers

RETIRED CURRICULUM

DISADVANTAGES

- Requires the use of burning out
- Unburned fuel between crew and fire
- Most dangerous attack method

RETIRED CURRICULUM

PARALLEL ATTACK DO'S

- Stay close to fire edge
- Establish line in lighter fuel
- Keep line straight
- Use natural barriers
- Burn out fuel between line and main fire

RETIRED CURRICULUM

PARALLEL ATTACK DON'TS

- Burn out faster than the line being constructed
- Construct line in tall fuel
- Place crew or equipment in danger

RETIRED CURRICULUM

FLANKING ACTION

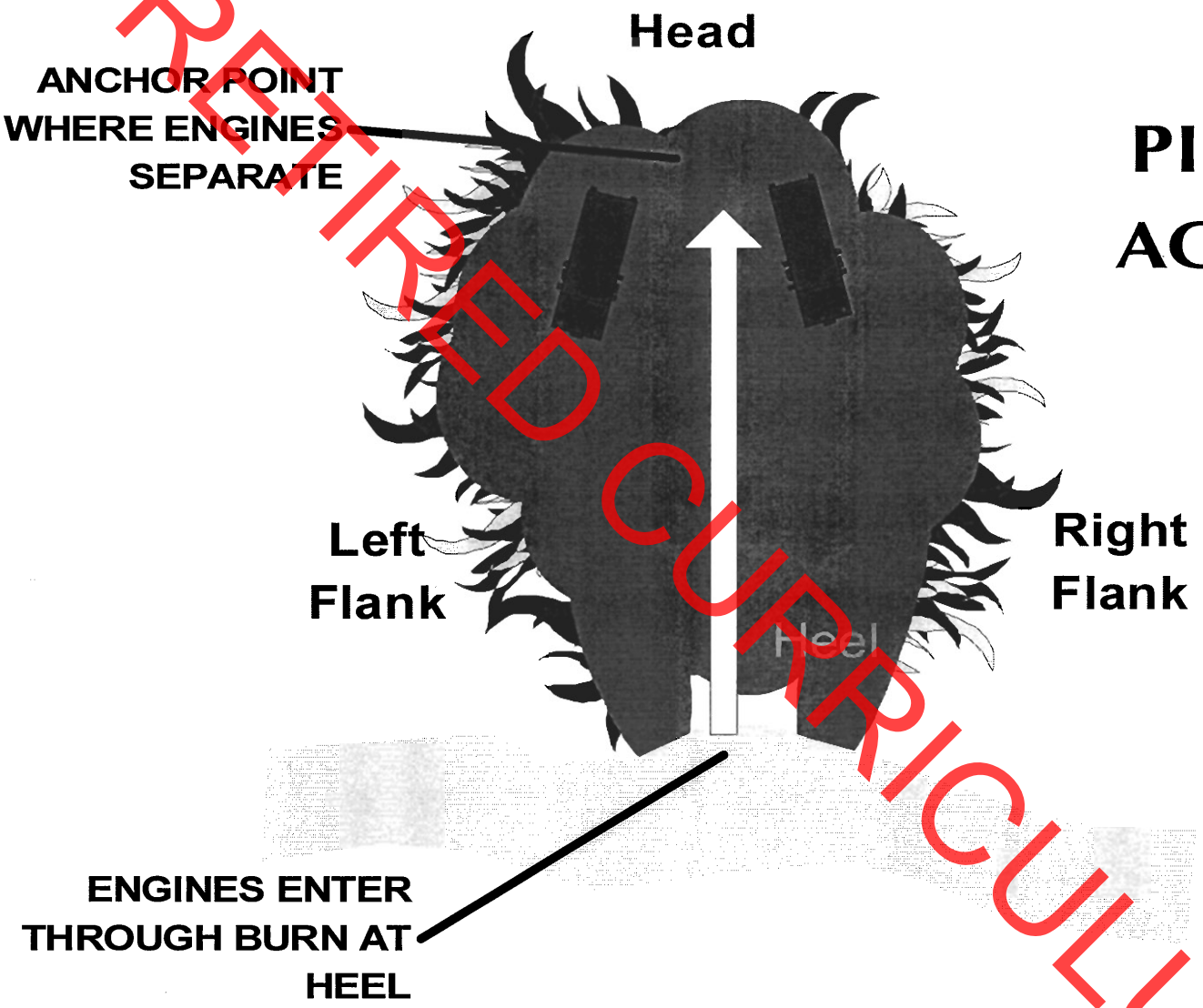
RETIRED CURRICULUM

FLANKING ACTION

- Action is started from an anchor point
  - Usually near point of origin/heel
  - Usually attacking the hottest flank
  - May use either engine companies or hand crews
  - If not too hot
    - Must make sure fire is contained before moving forward so fire does not slop-over

RETIRED CURRICULUM

PINCER ACTION



RETIRED CURRICULUM

PINCER ACTION

- Started from anchor point
  - Usually point of origin
  - Action on both flanks
  - Working toward the head, pinching off fire
  - Both flanks do not have to be attacked at the same time or extinguished at the same rate
  - Engines may work on hottest flank while hand crew works the cooler one

RETIRED CURRICULUM

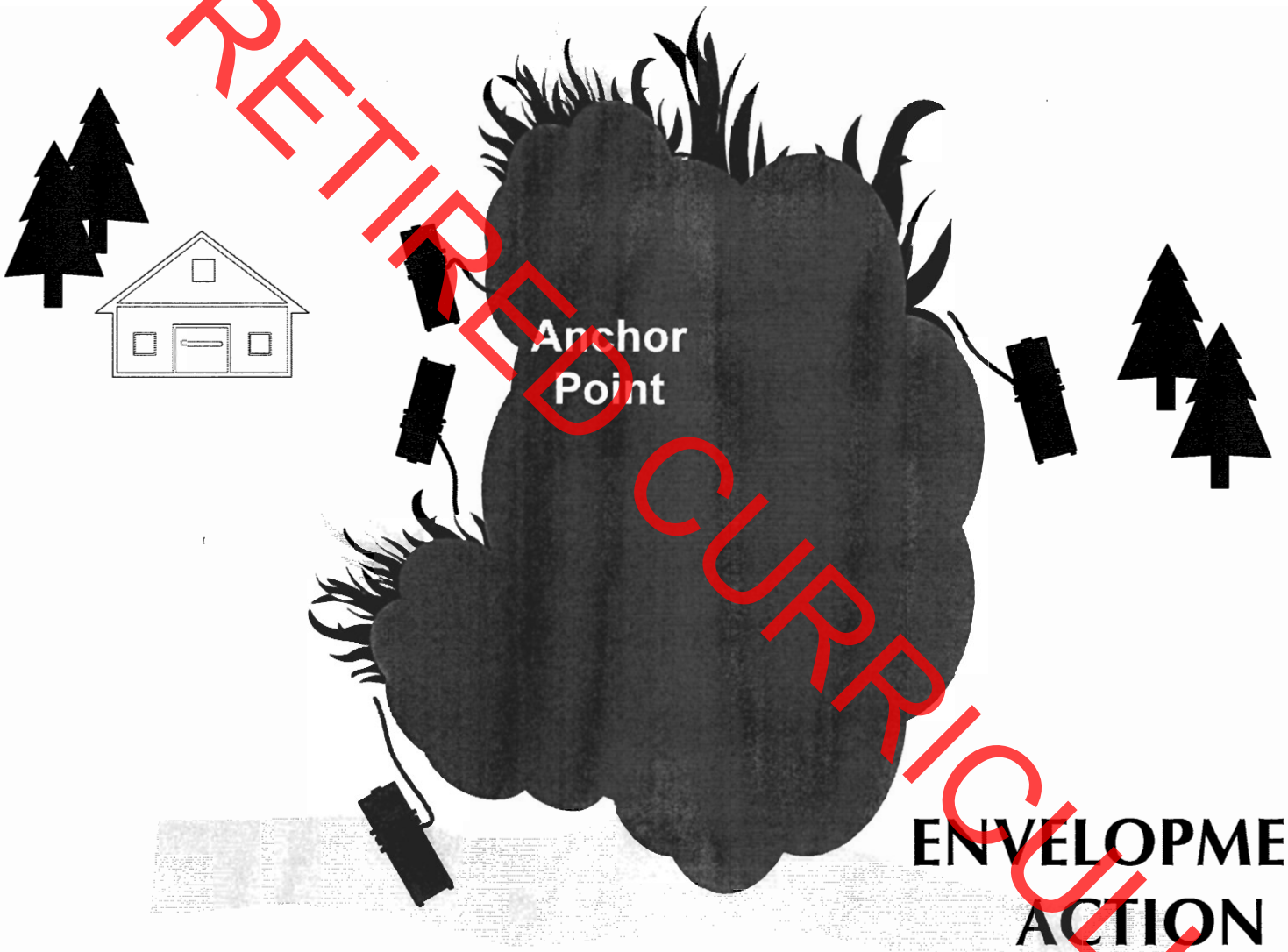
TANDEM ACTION

RETIRED CURRICULUM

TANDEM ATTACK

- May be used on a flanking or a pincer attack
- Must start at anchor point
  - Usually near point or origin
- Usually requires two engines on the same flank
- May use an engine and hand crew
- Requires good communication and teamwork

RETIRED CURRICULUM



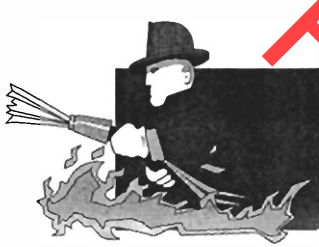
ENVELOPMENT ACTION

RETIRED CURRICULUM

ENVELOPMENT ACTION

- Used to attack the fire from several anchor points
- All actions starts at nearly the same time
- Good communication and teamwork
- Can be dangerous
  - Crews may have unburned fuel between them
  - Erratic fire behavior

RETIRED CURRICULUM



BURNING OUT

- Usually a defensive action
- Used to strengthen a control line
- Used to remove pockets and/or islands of fuel
- Used to protect structures
- Must be done with tight control, good communications, and teamwork
- Always a risk the operation could get out of control

RETIRED CURRICULUM

BACKFIRING

- Usually an offensive action
- Control line is established as close as possible to the fire
  - Taking into account the time required to construct and hold control line
  - Intervening fuel is set on fire to put out the main fire
- May be initiated only by the Incident Commander
- Should only be done by an experience crew

RETIRED CURRICULUM

CHOOSING THE ENGINE

- Equipment Compliment
- Tank Capacity
- Open or Closed Cab
- Conventional or 4-Wheel Drive
- Wheel Base
- Weight
- Mechanical Condition
- Pump Type

RETIRED CURRICULUM

ENGINE PERSONNEL

- Order what you need
- Experience may determine capabilities
- Fatigue becomes a critical factor

When homes are burning, you may just need the closest engines, of any type, right away

RETIRED CURRICULUM

TYPE OF ASSIGNMENT

- Mobile attack on grass fire
  - Pump and roll - Shorter wheel base
- Stationary pumping on hose lay
  - May need large water tank, pump for high pressure
- Primarily off-road pumping
  - Smaller brush engines
- Structure protection
  - Water tank size

RETIRED CURRICULUM

STRIKE TEAM COMPONENTS

- Common capability
- Common communications
- Common leader

RETIRED CURRICULUM

EQUIPMENT DEPLOYMENT

- Get clear assignment
- Always have an escape route
- STL should survey area/check for hazards
- Keep engines working as a team
- Keep long hose lays to a minimum

RETIRED CURRICULUM

WATER - HYDRANT SUPPLY

- Extinguish only what is necessary
- Don't waste water on wood shingle roofs
- Remove strategic combustibles
- Let everything burn that is not vital to fire control
- Take fittings with you if you might be overrun

RETIRED CURRICULUM

WATER - TANK SUPPLY

- Conserve limited supply
- Use hand tools
- Always know your tank level
- Never go below ***100*** gallons ***or*** ***60*** seconds worth of water

RETIRED CURRICULUM

WATER TENDER USE

- Order enough to keep ST supplied
  - Normally 1 or 2
  - Dependent on travel time and distance
- Water conservation must still be enforced

RETIRED CURRICULUM

PROTECTING STRUCTURES

COMMON ERRORS

- Laying hose lines too far, excessive hose lays
- Not meeting fire
- Not maintaining sight or radio contact
- Wasting time/energy on "lost" structures
- Unnecessary apparatus
- Exposing parked equipment
- Wetting down wood shingle roofs when water is limited
- Using hardlines
- Prewetting vegetation

RETIRED CURRICULUM

SAFETY

- If too hot, retreat
- Don't face intense fire
- Keep apparatus mobile
- Engine
  - Headlights on
  - Windows closed
  - Charged preconnect
- Park on roadway adjacent to structure
- Fire fighter watch for spot fires
- Fire around structures
- Stay out of saddles and chutes

RETIRED CURRICULUM

WHAT TO TELL CIVILIANS

- Encourage them to leave the area
  - Police personnel usually will handle an evacuation
- Inform them of dangers of a moving fire
- Explain basic protection for those who choose to stay
- Impress "family" concept

RETIRED CURRICULUM

STRUCTURE TRIAGE

General Factors

- Clearance
- Fuel Type
- Terrain
- Access
- Roof construction

RETIRED CURRICULUM

STRUCTURE PROTECTION

- Go for the one not well involved
- Look at type of roof covering
- Consider personnel safety
- Consider available personnel
- Consider water supply
- Consider values at stake

RETIRED CURRICULUM

10 STANDARD ORDERS

- Four Categories
  1. Behavior
  2. Safety
  3. Operations control
  4. Ultimate Goal

RETIRED CURRICULUM

FF ORDER #1

Keep informed of weather conditions and forecasts

- Major factor in fire behavior
- Constant monitoring required
- Use your senses as guides
  - Feel, see, hear

RETIRED CURRICULUM

FF ORDER #2

Know what your fire is doing at all time, observe personally or use scouts

- Observe from vantage point
- Scout ahead
- Use helicopter or other aircraft info
- Make sure findings are made known

RETIRED CURRICULUM

FF ORDER #3

Base all actions on the current and expected fire behavior

- What is the fire doing now? and later?
- What action is being taken now?
- What is the weather now? and later?
- What type of fuel is burning now?
- What type of fuel is the fire heading for?

RETIRED CURRICULUM

FF ORDER #4

Have escape routes for everyone and make them known

- The burned area if close enough
- Cutting an escape line
- Natural barriers
- Avoid areas where canopy is intact

RETIRED CURRICULUM

FF ORDER #5

Post a lookout when there is possible danger

- When the head is not visible
- When felling snags or debris falling
- When personnel/equipment working closely together
- Fire starting outside of control line

RETIRED CURRICULUM

FF ORDER #6

Be alert, keep calm,
think clearly, act decisively

- Panic can injure or kill
- After evaluating situation, you can make a better, more accurate decision

RETIRED CURRICULUM

FF ORDER #7

Maintain prompt communications with personnel, supervisor, adjoining forces

- Radio communication
- Line of sight with visual aids or hand signals

RETIRED CURRICULUM

FF ORDER #8

Give clear instructions and be sure they are understood

- What to do and where to go
- When and where to finish
- With whom to tie in
- Expected duration of attack
- Who will relieve you - supervise you

RETIRED CURRICULUM

FF ORDER #9

Maintain control of personnel at all times

- Communication maintains control
- Coordination of available equipment
- Provision of safety equipment

RETIRED CURRICULUM

FF ORDER #10

Fight fire aggressively,
but provide safety first

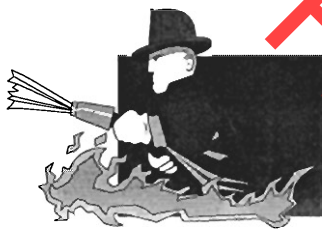
- Key to suppression
- Don't short cut or violate any safety rule
- Take another look and apply accepted practices

RETIRED CURRICULUM

AIR TANKER DROPS

- Split
  - Single drop from one door at a time
- Trail
  - Overlapping series of drops from 2-8
- Salvo
  - The total load at one time

RETIRED CURRICULUM



HERE IT COMES!

- Move out of the target area
- Stay away from large trees
- Never stand up in the path of an air drop
- The most dangerous area is in the center
  - 15-20 feet of the pattern
- Grab something solid and get behind it

RETIRED CURRICULUM

HELICOPTER USES

- Reconnaissance
- Ferrying personnel and supplies
- Evacuation
- Retardant, water, or foam drops
- Search and rescue

RETIRED CURRICULUM

HELICOPTERS

- Safety Precautions
  - Approach and departure
  - Working around the helibase
  - In-flight safety

RETIRED CURRICULUM

THE HELIBASE

- Stay at least 100 feet away from helicopter
  - Unless you have specific job
- Do not face a landing helicopter
  - Without goggles
- Do not remain under flight path
- No smoking with 50 feet
- Learn and use standard hand signals

RETIRED CURRICULUM

IN-FLIGHT SAFETY

- No smoking
- Use seat belt
- Secure loose gear, helmets, maps, papers
- Never slam doors
- Stay away from pilot and controls
- Never throw anything out
- Do not talk during takeoff

RETIRED CURRICULUM

WILDLAND FIRE SAFETY

RETIRED CURRICULUM

If something does happen

- Escape from the area of danger
- Take refuge in a structure
- Take refuge in a vehicle
- Take refuge in a "safe" area
- Deploy fire shelter
  - Your last resort

STRUCTURES for REFUGE

If time to prepare

- Advise STL, Supervisor, or IC of situation
- Close windows
- Remove combustibles away
- Remove gas combustibles away from LPG tank
- Bring protection equipment inside

RETIRED CURRICULUM

STRUCTURES for REFUGE

If fire is imminent

- Advise STL, Supervisor, or IC of situation
- Close windows and any heavy drapes
- Bring protection equipment inside

RETIRED CURRICULUM

VEHICLES for REFUGE

Before responding to a fire

- Check vehicle door and window seals
- Cover any holes in floorboard
- Practice getting crew into cab while wearing PPE
- Check condition of fire blankets or drapes
- Pack an extra fire shelter

RETIRED CURRICULUM

VEHICLES for REFUGE

If fire is imminent

- Call for help
- Park in best location possible & set brake
  - Away from fuel and power lines
  - Behind structure
  - Out of saddles and draws
  - In direction of escape
- Fire out around apparatus if time

RETIRED CURRICULUM

VEHICLES for REFUGE

When fire hits

- Roll up windows and shut doors
- Cover windows with fire blanket/shelter
- Stay low, cover up with turnouts
- Keep engine running with RPMs up
- Keep calm, take shallow breaths, use SCBA

RETIRED CURRICULUM

VEHICLES for REFUGE

What to expect

- Temperature may reach 200 degrees F
- Plastic parts may start to melt and release gas
- Exposed skin will burn

RETIRED CURRICULUM

VEHICLES for REFUGE

If vehicle catches fire
and you have to exit

- Deploy fire shelter in cab
- Step out
- Wrap shelter around you
- Stay low and move away from vehicle
- Deploy shelter in safe area

RETIRED CURRICULUM

VEHICLES for REFUGE

After fire passes

- Check for injuries and treat if possible
- Exit cab with fire shelter
- Put out any fire on apparatus
- Be cautious of fire coming back through
- If apparatus can't be safe, move to another safe area

RETIRED CURRICULUM

FIRE COMMAND 1B

APPENDIX C

ACTIVITY SHEETS

RETIRED CURRICULUM

TERMINOLOGY AND CONCEPTS OF COMMAND

MATERIALS NEEDED:

- None

INTRODUCTION:

Understanding terminology and concepts of command is important for the fireground commander. To be successful, the fireground commander must be able to quickly relate to appropriate actions on the scene of an emergency.

DIRECTIONS:

1. Match the terms in the left-hand column with the appropriate descriptor in the right-hand column to see how well you remember the concepts presented in Fire Command 1A. (Note: Some descriptors in the right-hand column may be used more than once.)

Term			Descriptor	
1.	E	Fire Load	A	Demands/Stress
2.	I	RECEO	B	Convection Heat Transfer
3.	G	Knowledge/Reinforcement	C	Problem Solving
4.	F	Concept of Alternatives	D	Ignition to Control
5.	A	Systems Overload	E	Amount of Fuel per Square Foot
6.	C	Decision Model	F	Branching Decisions
7.	B	Thermal Balance.	G	Synergistic Effect
8.	K	Priorities	H	Fire Tactics Division
9.	D	Reflex Timing	I	Fireground Objectives
10.	J	Offensive	J	Mode of Operation
11.	J	Defensive	K	Things to Be Done First
12.	H	Command	L	Information as the Problem Changes
13.	O	952	M	One Person - One Supervisor
14.	L	Disclosure Effect	N	Allowing Subordinates to Act
15.	M	Unit of Command	O	Report of Authority
16.	P	Chain of Command	P	Transfer of Authority
17.	N	Delegation of Authority	Q	Amount of Water Needed

RETIRED CURRICULUM

ICS ORGANIZATION CHART

MATERIALS NEEDED:

- Blank organization chart

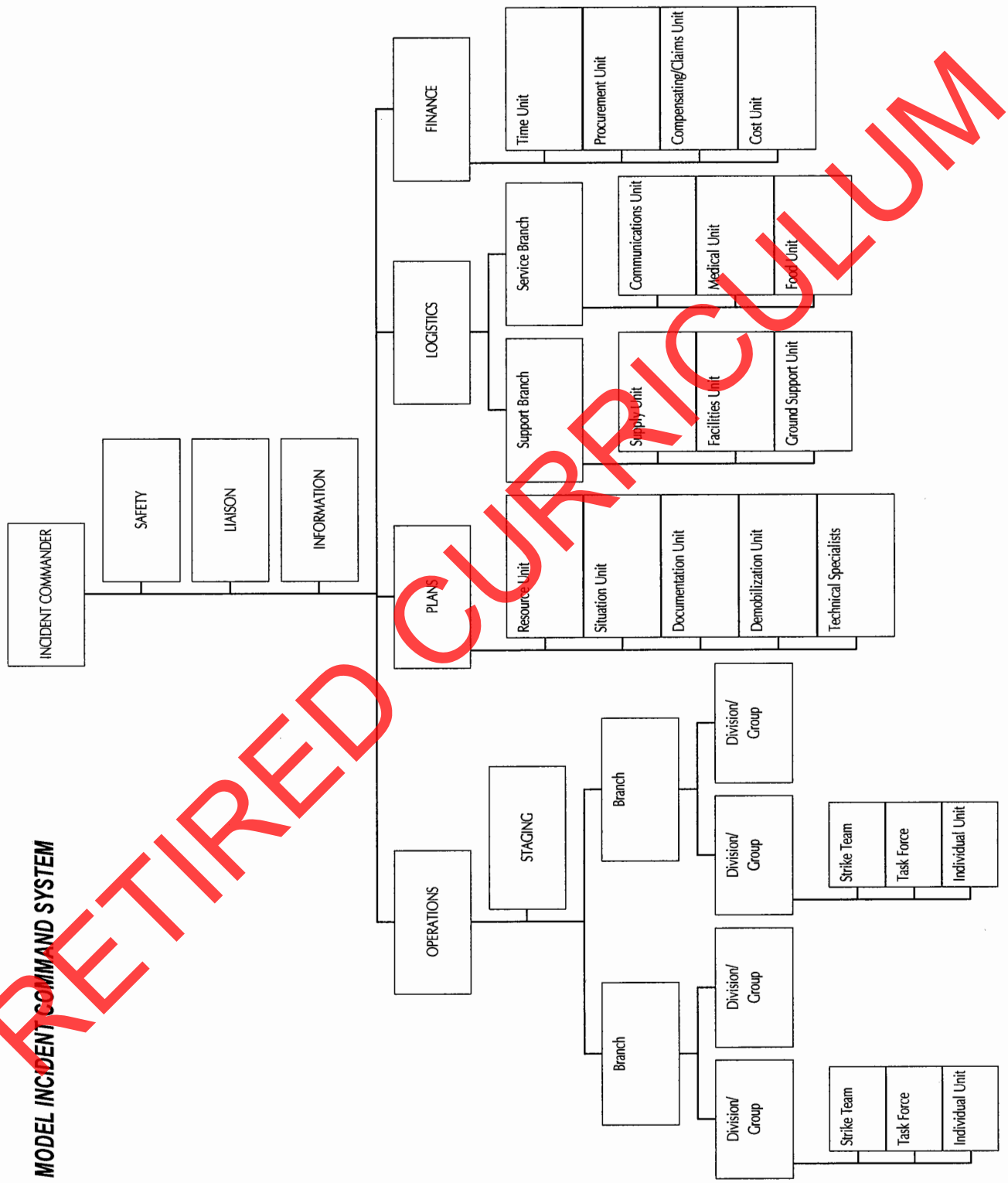
INTRODUCTION:

At an incident that has grown from simple to complex, an organizational structure will exist. This structure can be drawn in an organization chart from top to bottom. Knowing the positions in the command system will enhance the efficiency and safety of most field operations. This activity is designed so you may put in use the information you just learned.

DIRECTIONS:

1. Divide the class into groups and instruct them to review Unit 1, Topic 4.
2. Without looking at or copying from the student manual, have each group fill in each block on their model ICS chart by writing in the position name used within the ICS.
3. Allow 20 minutes to complete the activity.
4. Each group must choose a spokesperson to explain their completed chart.

RETIRED CURRICULUM



RETIRED CURRICULUM

SIMPLE TRIAGE AND RAPID TREATMENT

MATERIALS NEEDED:

- Triage worksheet

INTRODUCTION:

As a first responder to a major incident, you must be able to quickly establish priorities for a large number of victims. You must be able to deal with only the initial assessment phase, and not allow retriaging or transportation to interfere with this assessment.

DIRECTIONS:

1. Divide class into five groups and read the following scenario.

> *You are the first responder to an airport accident. A shuttle plane was unable to get off the ground at take-off and ran off the runway into an occupied building. You have 30 victims.*

2. Assign each group six victims to triage:

Group 1	=	Victims 1-6
Group 2	=	Victims 7-12
Group 3	=	Victims 13-18
Group 4	=	Victims 19-24
Group 5	=	Victims 25-30

3. Have the students use the following categories:

M	=	Minor
D	=	Delay
I	=	Immediate
D/NS	=	Deceased/Nonsalvagable
WW	=	Walking Wounded

RETIRED CURRICULUM

4. Have each group fill in the shaded box on the worksheet with the correct triage category.
5. Have each group list their reasons for triaging the victims into the categories chosen, as well as any rapid treatment they would deliver during their triage assessment.
6. They have 15 minutes to complete the activity.
7. Each group will choose a spokesperson to explain their decisions.

RETIRED CURRICULUM

Victim	Type Of Injury	Pertinent Information			Category	Reason	Rapid Treatment
		Respriations	Perfusion	LOC			
1	Compound fracture of right femur	32	>2 sec.	Follows commands	I	Respirations >30, perfusion >2 sec.	Control bleeding
2	Chest pain with difficulty breathing	34	<2 sec.	Follows commands	I	Respirations >30	
3	First degree burns over 10% of body	None	<2 sec.	Unresponsive	I or D/NS	"I" if breathing resumes after opening airway "D/NS" if not	Open airway
4	Mouth injury	33	<2 sec.	Follows commands	I	Respirations >30	
5	Unable to move legs	29	<2 sec.	Follows commands	D	Can't move	
6	No apparent injuries	28	<2 sec.	Follows commands	M/D	"WW" if can move Otherwise "Delayed"	
7	Chest injury	31	<2 sec.	Follows commands	I	Respirations >20 Impaired LOC	
8	Separated left shoulder	29	<2 sec.	Follows commands	D	Did not move with WW	
9	No visible wounds	None	None	Unresponsive	I or D./NA	"I" if breathing resumes after opening airway "D/NS" if not	Open airway
10	Scalp wound	33	<2 sec.	Follows commands	I	Respirations >30	
11	Head injury	29	None	Unresponsive	I	No pulse	Control bleeding
12	Abdominal pain	31	<2 sec.	Confused	I	Respirations >30 Impaired LOC	
13	Shrapnel impales in one eye	28	<2 sec.	Follows commands	D	Hesitation to move	
14	Female, 8 months pregnant, with broken lower right leg	27	<2 sec.	Follows commands	D	No movement	
15	Difficulty breathing	32	<2 sec.	Follows commands	I	Respirations >30	

RETIRED CURRICULUM

Victim	Type Of Injury	Pertinent Information			Category	Reason	Rapid Treatment
		Respriations	Perfusion	LOC			
16	No movement or response	26	<2 sec.	Unresponsive	I	Impaired LOC	
17	Amputated arm with bleeding controlled	29	<2 sec.	Follows commands	D	Key is controlled bleeding	
18	Large head wound	None	None	Unresponsive	D/NS	No respirations, pulse LOC	Open airway
19	Skin abrasions	28	<2 sec.	Follows commands	D	Did not move with WW	
20	Bruise on back of head; blood in the ears and nose	29	<2 sec.	Confused	I	Impaired LOC	
21	Third degree burns over both anterior legs	29	<2 sec/	Follows commands	D	Hesitation to move	
22	Compound fracture of left femur	26	<2 sec.	Follows commands	D	Did not move with WW	
23	Rebar impaled in the back	20	>2 sec.	Follows commands	D	Perfusion >2 sec.	Control bleeding
24	First degree burns on arms	34	<2 sec.	Follows commands	I	Respirations >30	
25	Broken nose	28	<2 sec.	Follows commands	D	Did not move with WW	
26	8-month-old infant with no movement	None	None	Unconscious	D/NS	No respirations, perfusion Unconscious	Open airway
27	Object impaled in leg; difficulty breathing	36	>2 sec.	Follows commands	I	Respirations >30 Perfusion >2 sec.	
28	Laying on ground with slurred speech	26	<2 sec.	Confused	I	Impaired LOC	
29	Arterial bleed from arm injury	28	>2 sec.	Follows commands	I	Perfusion >2 sec.	Control bleeding
30	Patient with leg pain	29	>2 sec.	Confused	I	Perfusion >2 sec. Impaired LOC	

RETIRED CURRICULUM

FIRE COMMAND 1B

APPENDIX D

CASE STUDIES

RETIRED CURRICULUM

CASE STUDY #2-1: MULTI-CASUALTY VEHICLE ACCIDENT

FACTS KNOWN PRIOR TO THE EMERGENCY

The intersection involved is controlled by a two-way stop sign. The side street (Elm Lane) is a two-lane residential street with a 25-mph speed limit. The other street (Spruce Parkway) is commercial with many strip malls and individual business occupancies. The speed limit on Spruce Parkway is 45 mph with four lanes and a center turn lane.

INFORMATION UPON DISPATCH

The emergency is reported as a traffic accident with rollover. This will bump up the usual "vehicle accident" response to a "rescue response." The time is 0745 on a Monday morning. The weather is foggy with slight drizzle. The initial response will be one engine, one truck, one medic unit, and one Chief Officer.

OBSERVED UPON ARRIVAL

Upon arrival, the first-in engine finds two passenger vehicles involved. Vehicle #1 has moderate damage with four passengers still in the vehicle. Vehicle #2 has rolled over onto the passenger side with six passengers trapped in the vehicle.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

RETIRED CURRICULUM

RETIRED CURRICULUM

CASE STUDY #2-2: MULTI-CASUALTY SHOOTING

FACTS KNOWN PRIOR TO THE EMERGENCY

A medium sized public high school with six classroom complexes, a gymnasium, library, and administrative offices.

INFORMATION UPON DISPATCH

The emergency is reported as a shooting at a local high school. Dispatch has received numerous calls. School security reports that the assailant has left the scene and the scene is now secure. Security is also reporting multiple victims. The time is 1200, March 20.

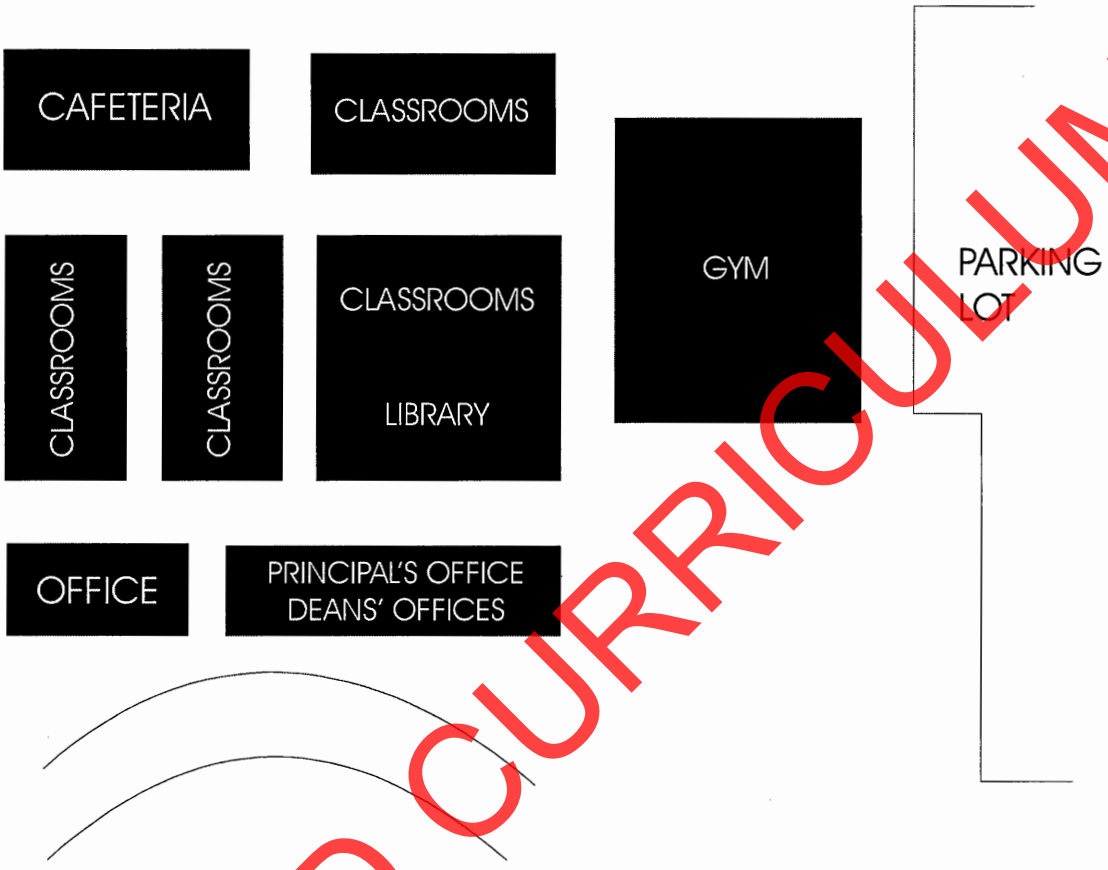
OBSERVED UPON ARRIVAL

The school building has been evacuated, but students are wandering everywhere. You are asked to report to the cafeteria, gym, attendance office, and library. Security cannot be found.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

RETIRED CURRICULUM



RETIRED CURRICULUM

CASE STUDY #2-3: VEHICLE ACCIDENT ON A BRIDGE

FACTS KNOWN PRIOR TO THE EMERGENCY

The Hilltop Bridge has four lanes (two in each direction) and spans the Salmon River for approximately ¾ of a mile. The bridge is heavily traveled during rush hour because it is the way to get to the industrial area of the city.

INFORMATION UPON DISPATCH

The emergency is reported as a traffic accident involving a city commuter bus and a semi-truck. The weather is cold (45°F) and rainy with heavy, thick fog. The wind is out of the west at 15-20 mph. The time is 1715 on a Friday. The initial response is one engine, one medic unit, and one Chief Officer.

OBSERVED UPON ARRIVAL

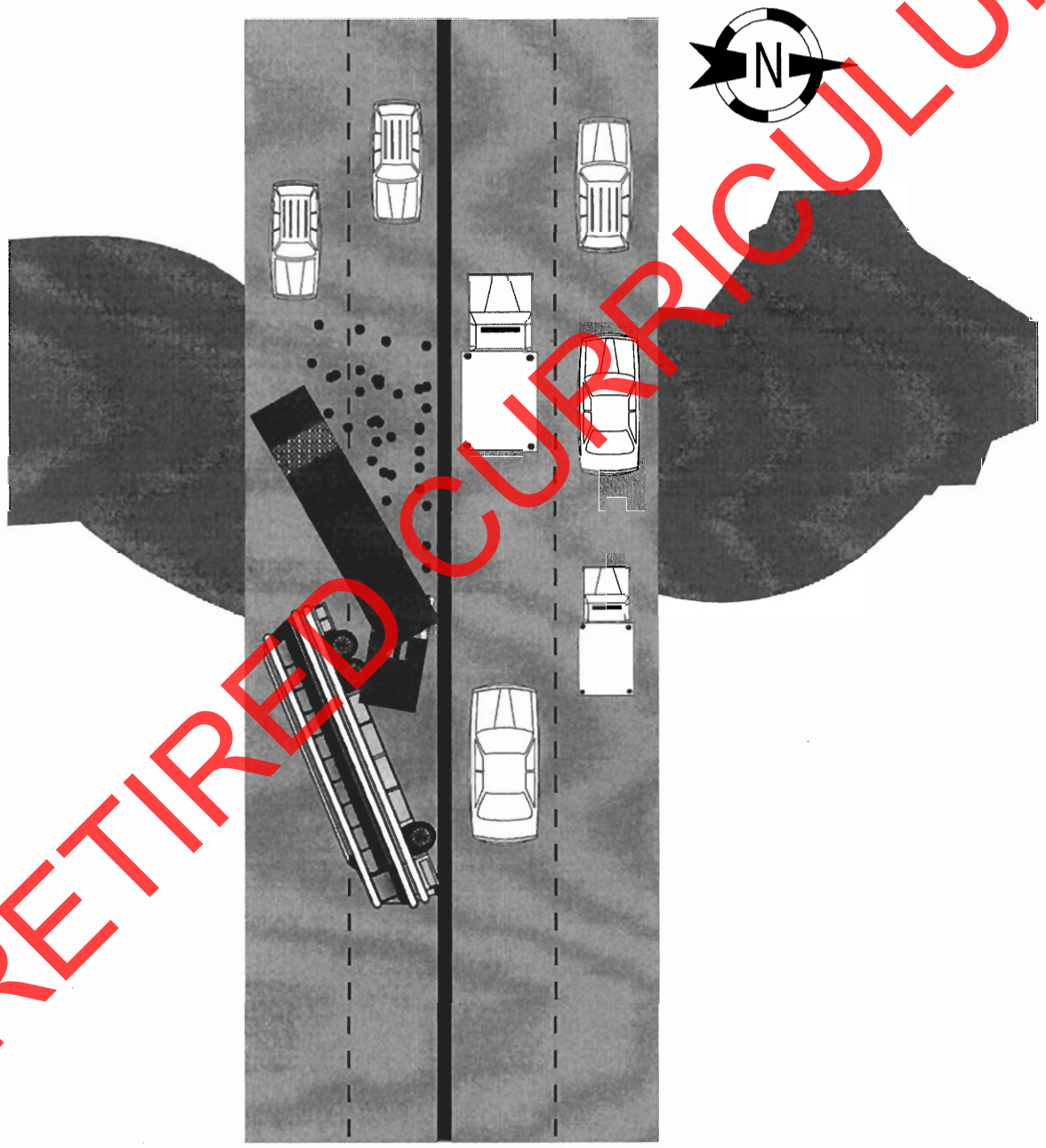
Upon arrival, the first-in engine finds the bus on its side and the truck jack-knifed. The bus carries twenty-five commuters. Eight people in the first six are seriously injured. The remaining passengers are all slightly injured. The bus driver and several of the seriously injured victims require extrication from the bus. Throughout the incident, paint spills from the damaged delivery truck is flowing onto the opposing lanes of traffic causing a severe slippage problem. Police and additional fire units are responding, but are having difficulty getting through the gridlock.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization

RETIRED CURRICULUM

5. Strategic objectives
6. Tactical objectives
7. Potential for escalation



RETIRED CURRICULUM

CASE STUDY #2-4: BUILDING COLLAPSE/MUD SLIDE AT A JUNIOR HIGH SCHOOL

FACTS KNOWN PRIOR TO THE EMERGENCY

A small junior high school sits at the front of a large hill covered with light vegetation. The school normally holds up to 300 students and staff during an average weekday. It has been raining hard, off and on, for two weeks.

INFORMATION UPON DISPATCH

The emergency is reported as a mudslide that has covered up to half of the junior high school. Many students and staff are injured, and some others are trapped or missing. The time is 1500 hours on a cloudy day with light drizzle.

OBSERVED UPON ARRIVAL

A very large number of noninjured students and adults are standing in front of the school wet and cold. The back part of the school has been badly damage by a mudslide. You are met at the curb by the principal who tells you that about two dozen people have various injuries and four people are missing.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

RETIRED CURRICULUM

RETIRED CURRICULUM

CASE STUDY #2-5: TRAFFIC ACCIDENT WITH NUMEROUS INJURIES

FACTS KNOWN PRIOR TO THE EMERGENCY

The intersection of Miller Blvd and Jimott Street is known for major traffic collisions. Each street has four lanes; two in each direction, with a center turn lane. Left turns are controlled at the intersection by a signal light.

INFORMATION UPON DISPATCH

The emergency is reported as a truck versus van. The time is 1435 on a rainy Tuesday. Temperature is 60°F with wind from the northwest at 5 mph. Initial response is a one Type 1 engine, one medic unit, and one ambulance.

OBSERVED UPON ARRIVAL

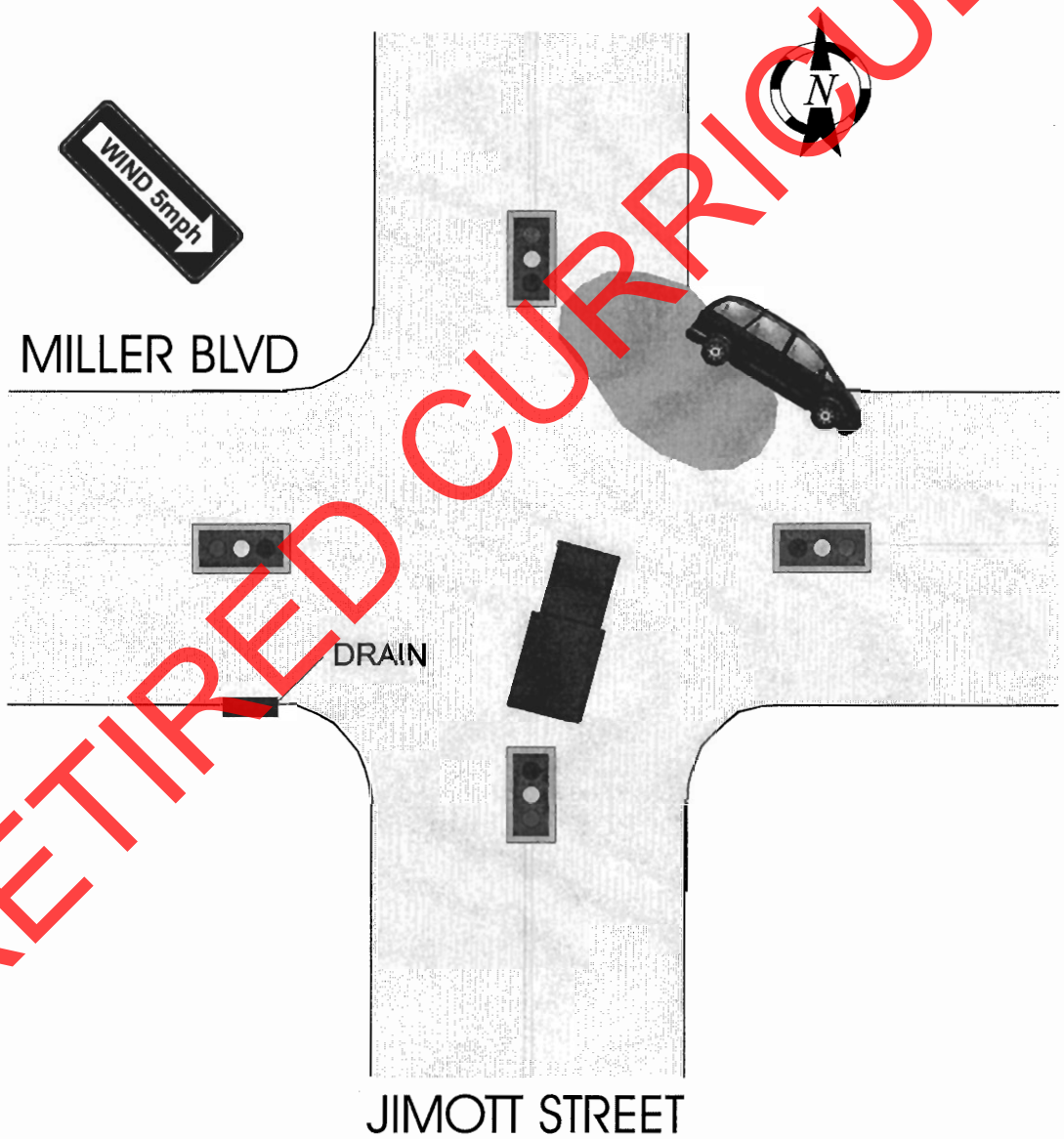
You arrive prior to the police or highway patrol. The intersection is partially flooded with rainwater. You see that a pick-up truck has apparently struck a van midway on the right side. The van has tipped over onto its left side and is lying in the flooded street and partially on the sidewalk. Several people have stopped and are signaling you to the van. You discover that the woman driving the van, Driver #1, is probably dead. There are ten children also in the van. None of the children had been restrained. The pick-up truck driver, Driver #2, appears to be intoxicated. His two passengers also appear intoxicated. As your attention is still with the van, the Driver #2 begins to leave the scene and drive away. You have a total of four immediates, three delays, one minor, and one possible deceased.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources

RETIRED CURRICULUM

3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation



RETIRED CURRICULUM

CASE STUDY #3-1: TRAFFIC ACCIDENT

FACTS KNOWN PRIOR TO THE EMERGENCY

The incident location is the outbound lanes of a major state highway with extremely heavy traffic.

INFORMATION UPON DISPATCH

The emergency is reported as a traffic accident involving a truck and a passenger vehicle. The truck is placarded. The time is 1700 on Friday of the Memorial Day weekend. The skies are clear, 70°F, with winds from the west at 15 mph.

OBSERVED UPON ARRIVAL

After having to fight extremely heavy traffic, you arrive on scene and discover a bobtail-type truck versus a late model sedan. The drivers of both vehicles are still behind the driver's wheel. There are no other victims. Driver #1, the truck driver, is complaining of substernal chest pain radiating down his left arm, neck and back pain, and respiratory distress. Driver #2, a 41-year-old female, is complaining of left arm pain from an apparent fracture and neck and back pain. The truck is emitting a white-to-yellow smoke or haze from the gaps in the rear door after striking the sedan's right front door. A yellow placard with the numbers 2031 is displayed on the truck's back door and on each side. The truck's right saddle tank has also ruptured, spilling all its contents (30 gallons of diesel) onto the road. Your interrogation of the Driver #1 reveals that he is carrying several 55-gallon drums of nitric acid. The first arriving state trooper is very agitated and demands that you immediately open up the freeway.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources

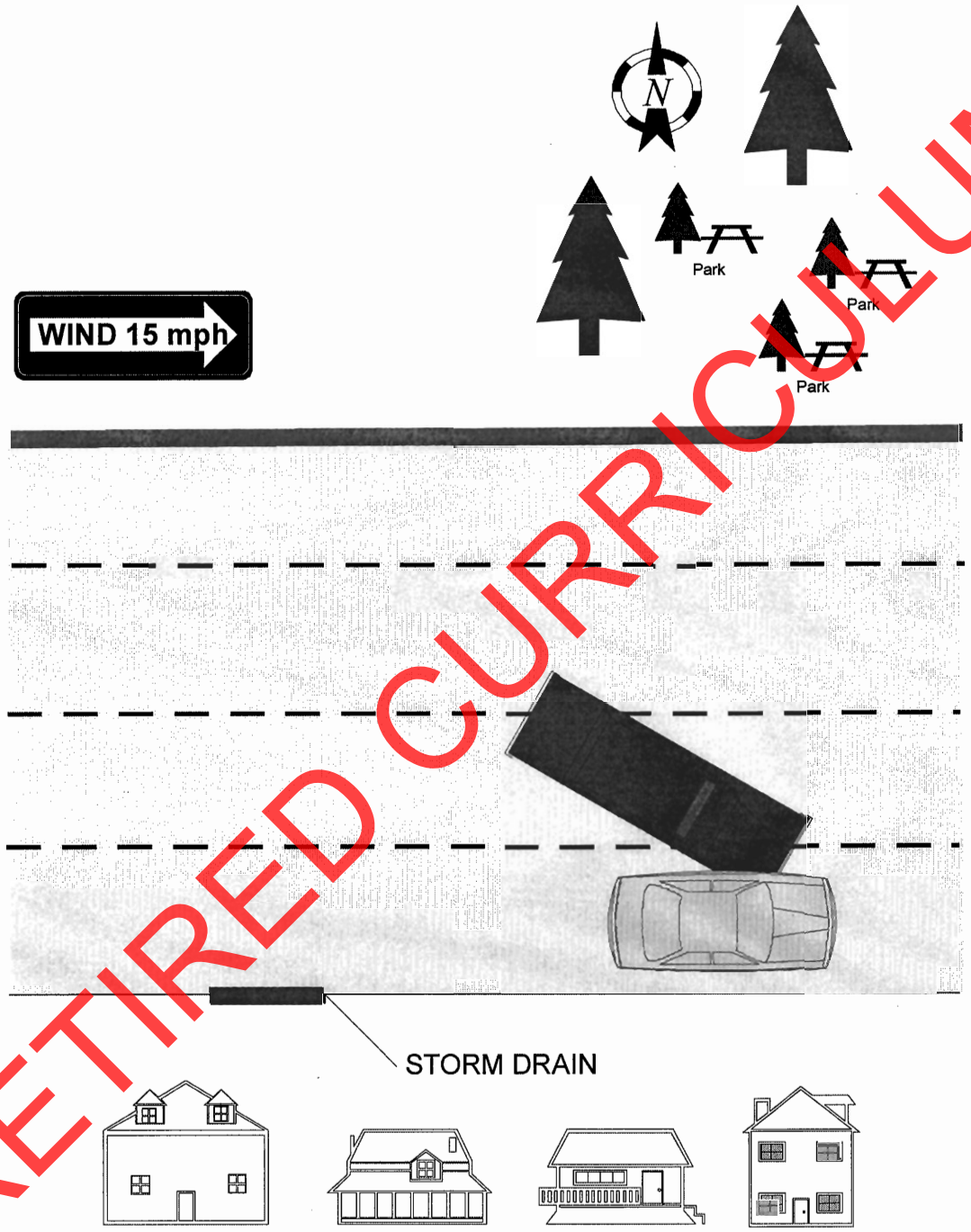
RETIRED CURRICULUM

3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

KEY POINTS

- Driver #1 suffered an apparent heart attack causing the traffic accident and his neck and back pain. His respiratory distress is from the nitric acid fumes.
- First responders should not open the door to the truck.
- Driver #2 should be removed from the vehicle and treated.
- Since nitric acid is an oxidizer, you should be concerned with the acid mixing with the diesel fuel, the asphalt, or the truck's wooden flooring.

RETIRED CURRICULUM



RETIRED CURRICULUM

CASE STUDY #3-2: FIRE ALARM SOUNDING

FACTS KNOWN PRIOR TO THE EMERGENCY

Childress Furniture is housed in a large warehouse. The time is 0200 hours on January 20.

INFORMATION UPON DISPATCH

The emergency is reported as an alarm sounding at Childress Furniture. Dispatch and the alarm company are unable to contact the owner or responsible party.

OBSERVED UPON ARRIVAL

There is light smoke and haze inside the structure. The alarm panel indicates that activated alarm is in the main show room.

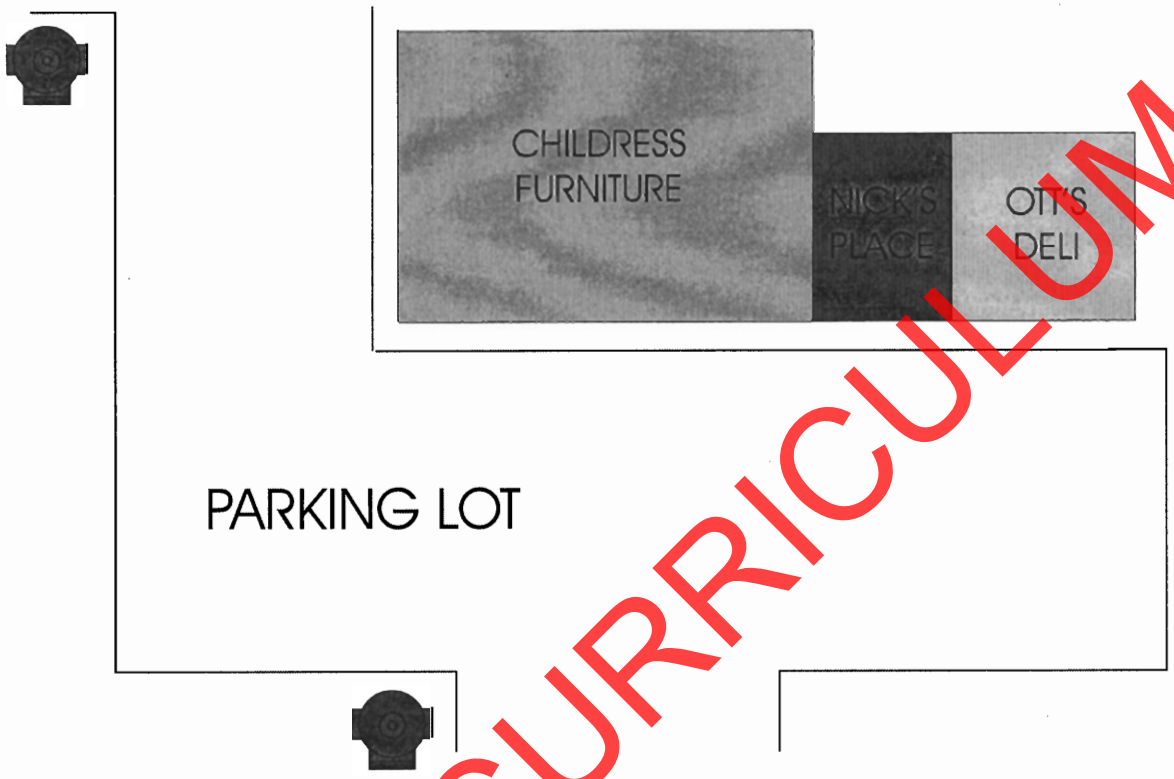
HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

KEY POINTS

- This is fumigation.
- Were SCBAs worn? If not, decontamination and medical aid may be necessary.

RETIRED CURRICULUM



RETIRED CURRICULUM

CASE STUDY #3-3: HAZARDOUS MATERIAL INCIDENT AT AN APARTMENT COMPLEX

FACTS KNOWN PRIOR TO THE EMERGENCY

A large apartment complex sits in a run-down part of town. It has a history of calls for nuisance-type incidents from dumpster fires to health hazards.

INFORMATION UPON DISPATCH

The emergency is reported as a sewer leak at the apartment complex. The time is 1300 hours on a warm summer Tuesday afternoon.

OBSERVED UPON ARRIVAL

No one meets you as you arrive. Several children are in the driveway playing in water and watching you. As you walk up the driveway and into the complex, you smell a particularly bad odor. About this time, the manager approaches and tells you that the "water" you are standing in is actually sewage. It is also around the building and in the middle of the complex. The manager then takes you to the east side of the building where a two-foot geyser of raw sewage is pouring from the ground and flowing freely about the complex.

HOW WOULD YOU SOLVE THIS PROBLEM?

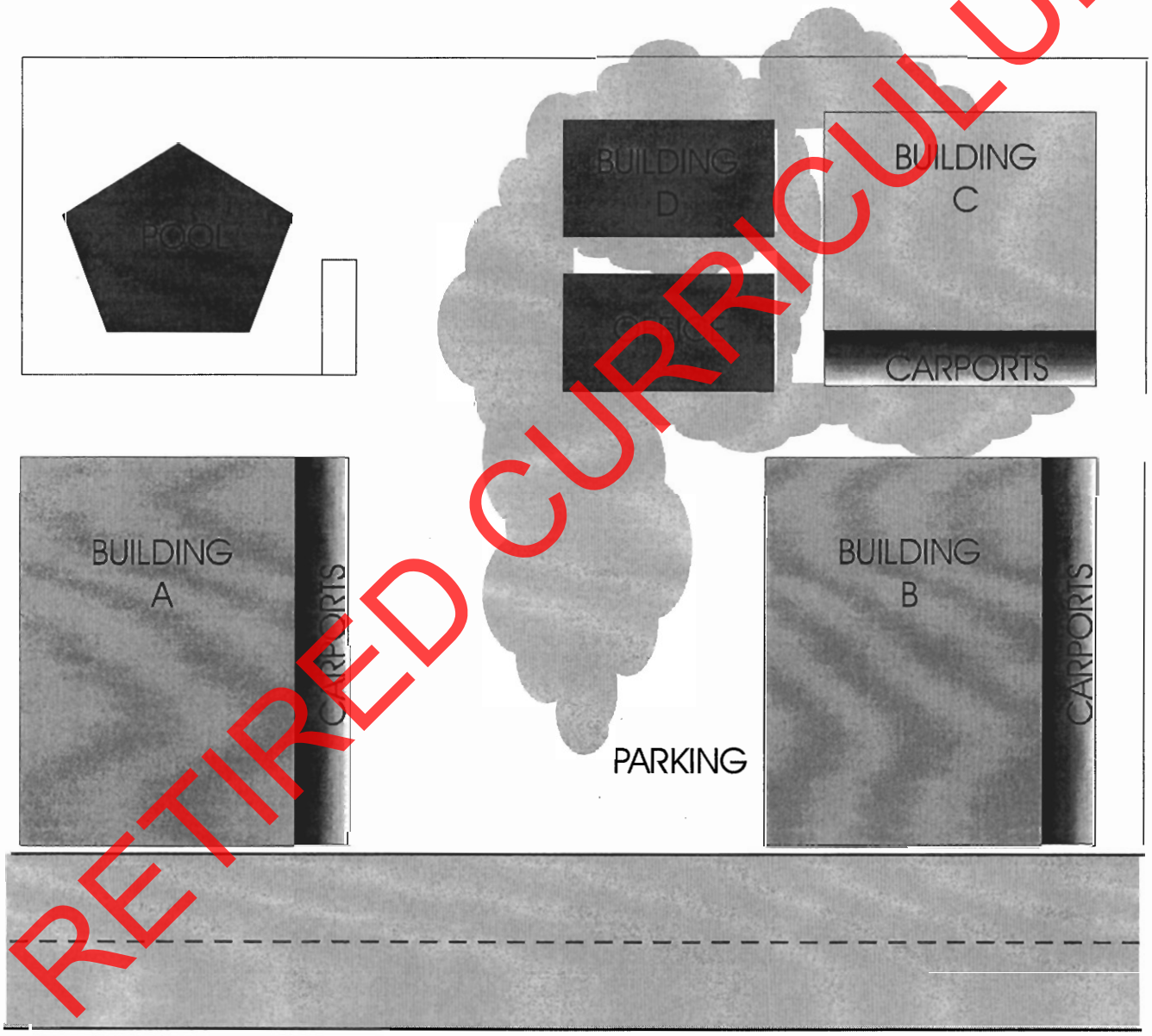
1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives

RETIRED CURRICULUM

7. Potential for escalation

KEY POINTS

- Monitoring spill entry at all areas of exposure.



RETIRED CURRICULUM

CASE STUDY #3-4: TANKER ROLLOVER

FACTS KNOWN PRIOR TO THE EMERGENCY

Pavone Heights is a moderately sized city with a population of 100,000. The area is surrounded by light industrial to the north and residential to the south. The incident area includes a retail strip mall, a service station, a daycare center, and a mobile home park.

INFORMATION UPON DISPATCH

The emergency is reported as a tanker rollover. The tanker has a red placard marked "1203." The time is 1500 on a Tuesday afternoon. The temperature is 87°F with winds out of the northwest at 10 mph. Initial response is one Type 1 engine company.

OBSERVED UPON ARRIVAL

A tractor-trailer has rolled over while executing a left-hand turn. The trailer, a tanker, is placarded with a red 1203. A leak of approximately 15 gallons per minute is coming from the center dome. The leaking material is moving toward, but has not yet reached, a storm drain that empties into a stream in approximately 300 yards There are no injuries at this time.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

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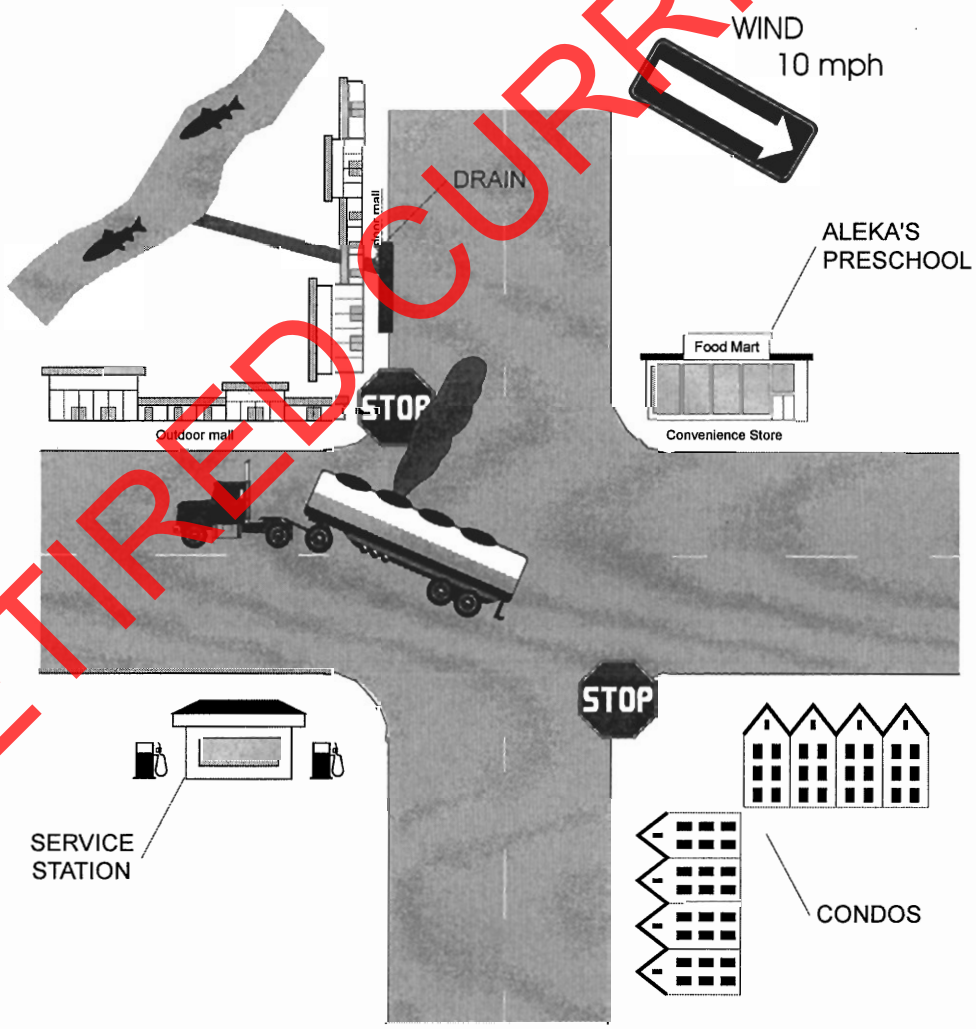
KEY POINTS

- Were the toxic characteristics as well as flammable problems of gasoline identified?
- Was the apparatus positioned properly?
- Evacuation needs met?
- Was foam utilized?
- Diking the storm drain required?



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CASE STUDY #4-1: AUTO FIRE THAT STARTS A WILDLAND FIRE

FACTS KNOWN PRIOR TO THE EMERGENCY

Canyon Road and the surrounding area are in a critical fire danger time of year, "Red Flag." There has been no rain for two months.

INFORMATION UPON DISPATCH

Emergency is reported as an auto fire on Canyon Road. Residents on the ridge top report smelling smoke. The time is 1500 hours on August 20. Temperature is in the mid 90's, with 10 mph wind

OBSERVED UPON ARRIVAL

Upon arrival, you find a fully involved passenger car with fire spreading to the hillside. Canyon Road is 300 feet below the ridge top. The hillside is covered with grass and manzanita and is too steep to climb. Fire spread is moderate.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

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CASE STUDY #4-2: WILDLAND INTERFACE FIRE

FACTS KNOWN PRIOR TO THE EMERGENCY

The wildland area has moderate to heavy brush. Crest Drive follows the canyon bottom sloping upward to a ridge at Skyline Drive. The area between Mountain Drive and Skyline Drive contains a large number of single family dwellings with wood shingle roof coverings. Three wood frame condominiums are under construction on the north side of Skyline Drive (presently in the framing stage).

INFORMATION UPON DISPATCH

The emergency is reported as a vegetation fire with structures threatened. The temperature is 86°F. The humidity is 22%. The wind is from the southeast at 15-18 mph. The time is 1300 hours. Initial dispatch is two Type 3 engines, one Type 1 engine, and 1 Chief Officer.

OBSERVED UPON ARRIVAL

Upon arrival, the first-in engine reports that there is fire on the north side of Mountain Drive above Maple Lane. There is also a roof of a structure on fire on Maple Lane. A second report states that flying brands have also ignited brush on the north side of Maple Lane and the west side of Crest Drive, south of Oak Lane.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

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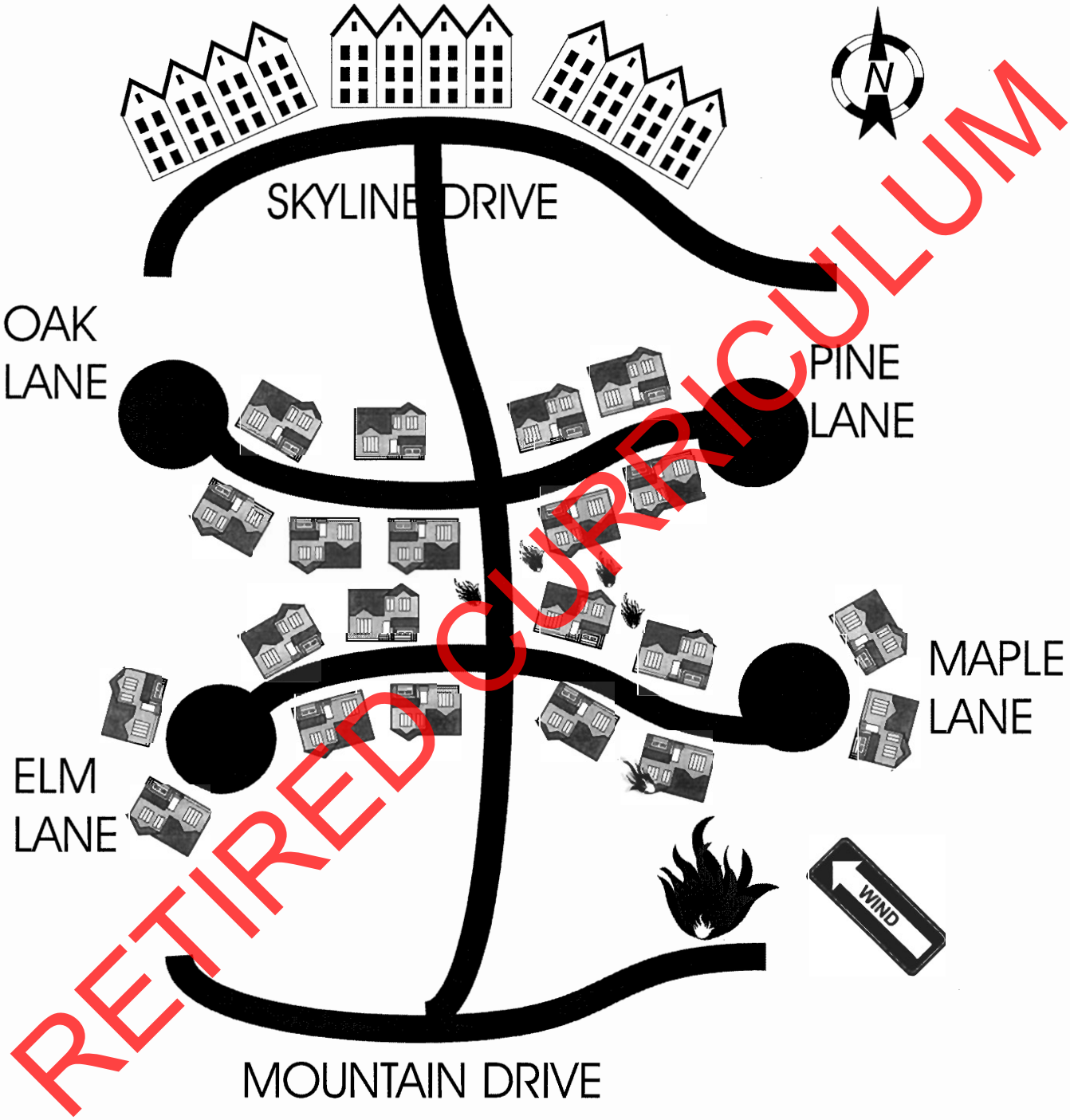

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CASE STUDY #4-3: WILDLAND FIRE IN A COUNTY PARK

FACTS KNOWN PRIOR TO THE EMERGENCY

Ottoman Park is a 64-acre county facility used by families and groups year round. The park contains a small railroad, petting zoo, horseback riding area for children, and a small pond for fishing

INFORMATION UPON DISPATCH

The emergency is reported as a small brush fire on a hill near the southern border of the park. Evacuation is in progress, but not going well. It is a summer day, 90°F with no wind. The time is 1400 hours.

OBSERVED UPON ARRIVAL

A large number of people exiting the park are making travel very difficult. Following the smoke column, the first-in engine finds a 1½-acre fire in light to medium fuel moving from the park road up the hill slowly.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

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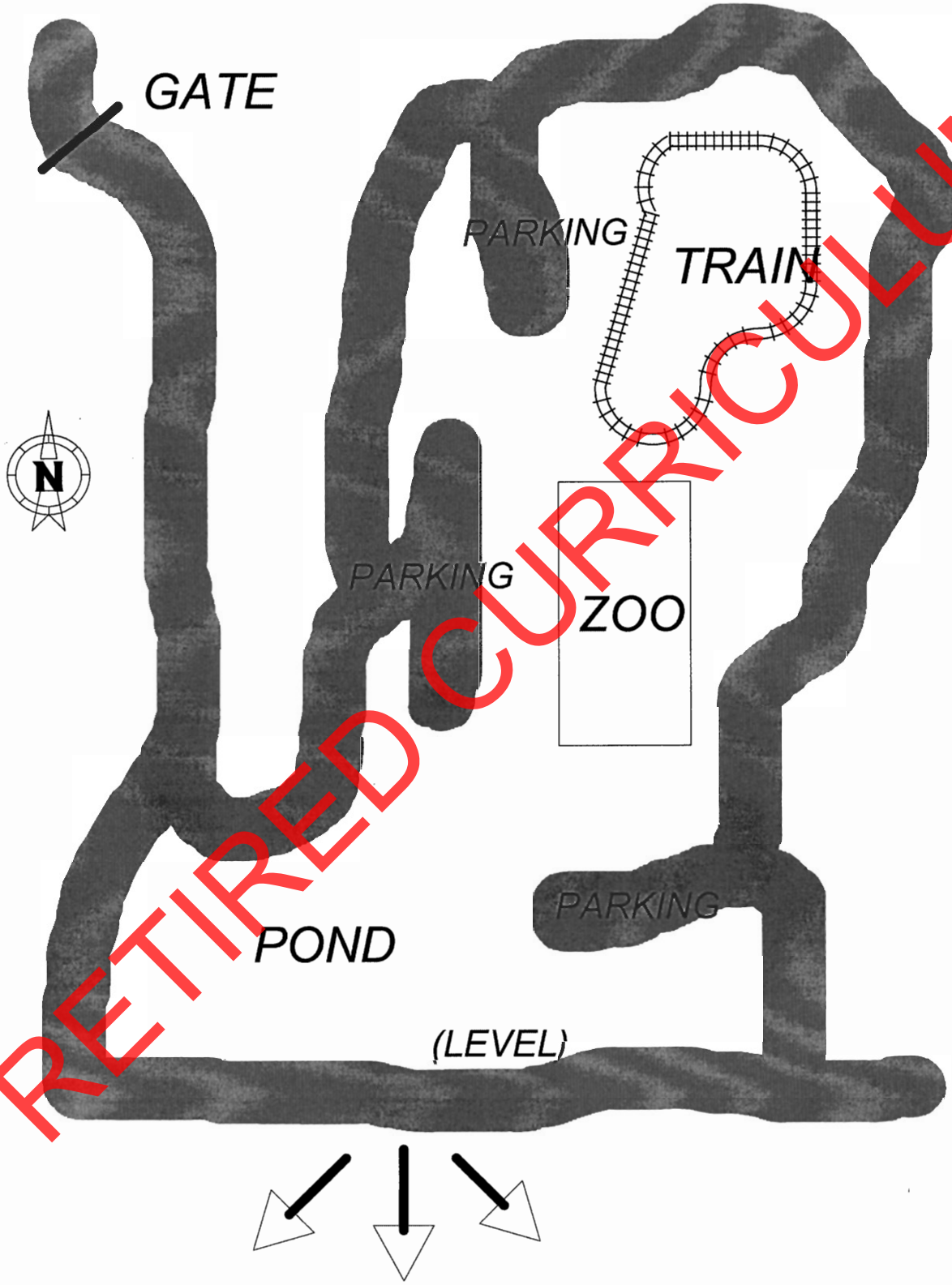

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CASE STUDY #4-4: WILDLAND FIRE ON A HILLSIDE RANCH

FACTS KNOWN PRIOR TO THE EMERGENCY

Santa Ana winds have been blowing for two days. The ranch is owned by a very nice family and employs a number of ranch hands in small houses around the property. The terrain is hilly.

INFORMATION UPON DISPATCH

The emergency is reported by a passerby who came to station and told you of a "glow" in the vicinity of this ranch. The humidity is low and the temperature is in the 80s. The time is 2300.

OBSERVED UPON ARRIVAL

As you pull onto the ranch, you see a brush fire burning with 5' flames in front of one of the small houses that belongs to a ranch hand. The fire is running, with the wind toward you, downhill from the structure. The fire appears to be about ¾ of an acre in light/medium fuels. You know that when this fire reaches the foot of the hill in about 15 minutes, it will really run fast and may not be stopped for some time.

HOW WOULD YOU SOLVE THIS PROBLEM?

1. Report on conditions
2. Additional resources/specialized resources
3. Primary objectives
4. ICS organization
5. Strategic objectives
6. Tactical objectives
7. Potential for escalation

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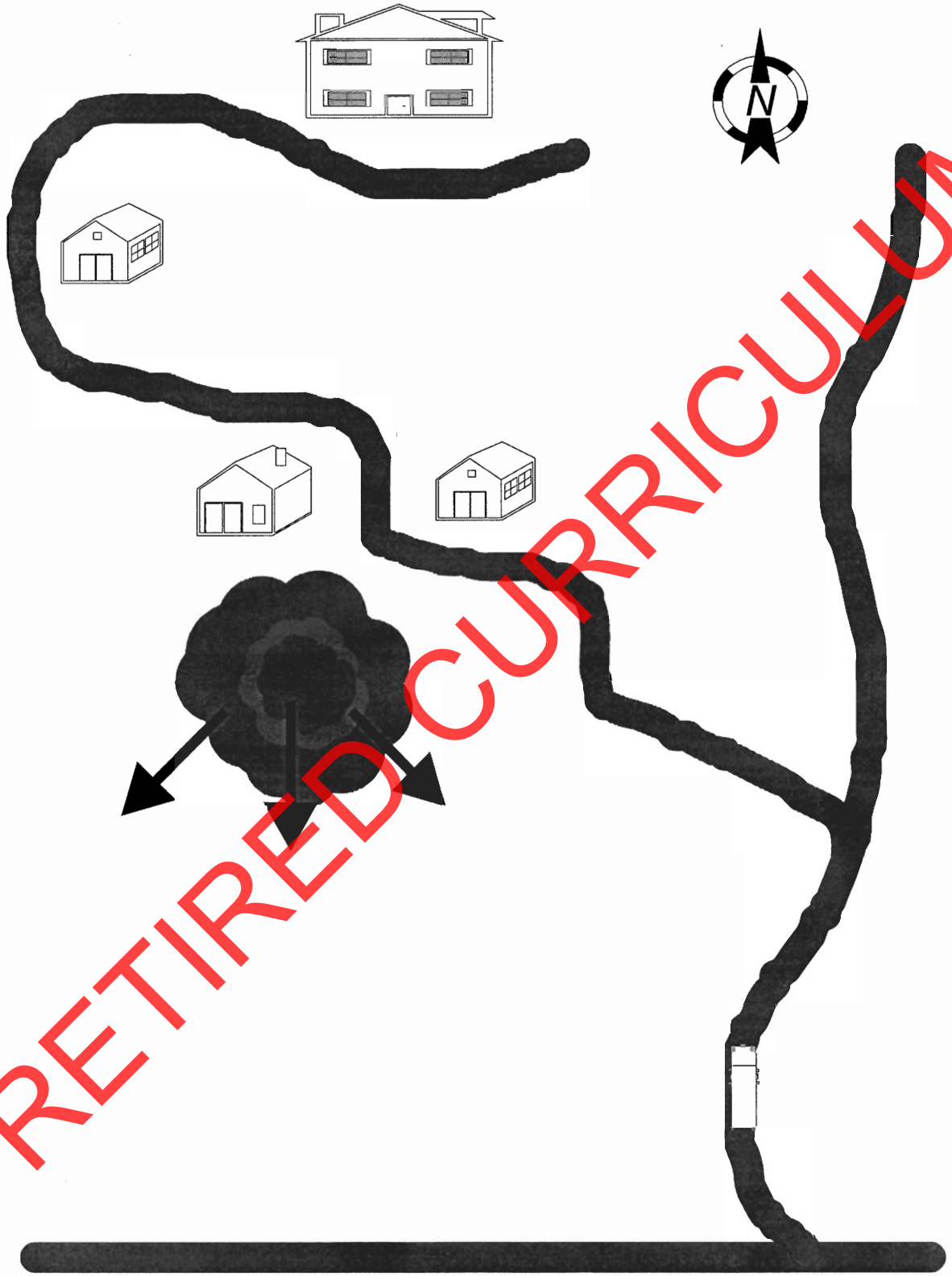

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FIRE COMMAND 1B

APPENDIX E

GLOSSARY OF TERMS

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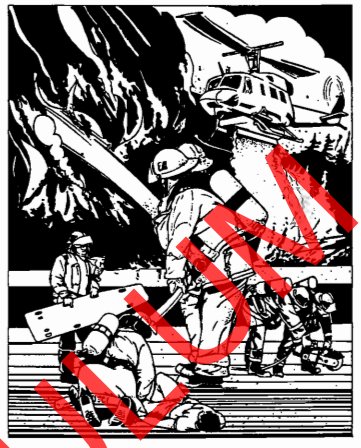

GLOSSARY OF TERMS

Acute: Exposure over a long period of time. Usually of a small dose and low concentration.

Adiabatic (process): A thermodynamic change of state of a system in which there is no transfer of heat or mass, i.e., compression result in warming, expansion in cooling.

AFFIRMS: Administrative and Forest Fire Information Retrieval and Management System. It is a user-oriented computer program which permits entry of fire weather observations, forecasts, and it performs the computation of fire danger indexes.

Air Tanker: Any fixed wing aircraft certified by the FAA as being capable of transport and delivery of fire retardant solutions.

Anchor Point: The point where fire attack crews tie into a barrier to start fire attack.

AQMD: Air Quality Management District

Area Ignition: Ignition of a number individual fires throughout an area either simultaneously or in quick succession. Spaced so that they influence and support each other. Produces fast, hot spread of fire through the area.

Aspects: The direction a slope is facing; its exposure in relation to the sun.

Asphyxiant Chemical: This substance inhibits the uptake of oxygen in the blood system. Such as the action of carbon monoxide which binds to the hemoglobin in the blood, thus inhibiting the transfer of oxygen.

Asphyxiant Simple: This substance actually displaces the oxygen in an area. Such as the action of natural gas.

Available Fuel Energy: Energy released by the fuel that actually burns.

Available Fuels: Those fuels that will burn during a passage of a flaming front under specific burning conditions.

Backfiring: When attack is indirect, intentionally setting fire to fuels inside the control line to contain a rapidly spreading fire. Backfiring is a tactic that makes possible a strategy of locating control lines at places where the fire can be fought on the fire fighter's terms.

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Except for rare circumstances meeting specified criteria, backfiring is executed on command decision made through line channels of authority.

Barrier: Any obstruction to the spread of fire; typically an area or strip devoid of flammable fuel.

Blowup: Sudden increase in fire intensity or rate of spread sufficient to preclude direct control or to upset existing control plans. Often accompanied by boiling convection and may have other characteristics of a firestorm.

Boiling Point: The temperature at which the vapor pressure is equal to atmospheric pressure.

Burn: The burned area inside the fire perimeter.

Burn Index: Number taken from an arithmetic scale determined by fuel moisture content, wind speed, and other select factors affecting burning rate.

Burning Out: When attack is direct, or parallel with the control line tied at points of the fire, intentionally setting fire to fuels inside the control line to strengthen the line. The control line is complete when there is no fuel between the fire and the line.

Calculation of Probabilities: Evaluation of all existing factors pertinent to probable future behavior of a going fire and of the potential ability of available forces to carry out control operations on a given time schedule.

Canopy: The stratum containing crowns of tallest vegetation (living or dead) usually above 20 feet.

CHP: California Highway Patrol

Chronic: Exposure over a long period of time. Usually of a small dose and low concentration.

Cold Front: The leading edge of a relatively cold air mass that displaces warmer air. The heavier cold air may cause some of the warm air to be lifted. If the lifted air contains enough moisture, cloudiness, precipitation and even thunderstorms may result. In cases where both air masses are dry there may be no cloud formation. Following a cold front passage, westerly winds of 10 to 20 mph, or more, often continue for 12 to 24 hours. Heavier cold air may cause some of the warm air to be lifted.

Cold Trailing: A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand to detect any fire, digging out every live spot, and trenching any live edge.

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Combustion Period: Total time required for a specified fuel component to be completely burned.

Compactness (porosity): The spacing between fuel particles. This can be especially important in the surface layer of fuels where the amount of air circulation affects the rate of drying or the rate of combustion, etc.

Conflagration: A raging, destructive fire. Often used to connote such fire with a moving front as distinguished from a firestorm.

Continuity: The distribution of fuel particles or extent of the fuel bed, thus affecting a fire's ability to sustain combustion and spread. This applies to aerial fuels as well as surface fuels.

Convergence: Net horizontal inflow of air into a layer, if at the surface, vertical motion results. Associated with low-pressure system.

Convection Column: The thermally produced ascending column of gases, smoke, and debris produced by a fire. Note: On multiple-headed fires, more than one convection column may be present.

Copter: A rotary winged aircraft.

Counter Fire: Fire set between main fire and backfire to hasten spread of backfire. Also called draft fire. The act of setting counter fires is sometimes called front firing or strip firing.

Creeping: Fire burning with a low flame and spreading slowly.

Critical Burnout Time: Total time a fuel can burn and continue to feed energy to the base of a forward traveling convection column.

Crown Fire: A fire that advances from top to top of trees or shrubs more or less independently of the surface fire.

Crowning Out: Fire burning principally as a surface fire that intermittently ignites the crowns of trees or shrubs as it advances.

Cumulonimbus: The ultimate growth of a cumulus cloud into a mushroom shape, with considerable vertical growth, usually fibrous ice crystal tops, and probably accompanied by lighting, thunder, hail, and storm winds.

Cumulus: A principal low cloud type in the form of individual cells of sharp non-fibrous outline, and vertical development.

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Depth of Slash: The vertical distance from the litter surface to the highest slash particle in a sampling plot. A fuels inventory measures the fuel loading of dead and downed woody materials.

Dew Point: The temperature to which a parcel of air must be cooled to reach saturation.

Direct Attack: A method of suppression that treats the fire as a whole, or all its burning edge, by wetting, cooling, smothering, or chemically quenching the fire or by mechanically separating the fire from unburned fuel.

Diurnal: Daily, especially pertaining to daily cycles of temperature, relative humidity, and wind.

DOHS: Department of Health Services

DOT: Department of Transportation

Energy Release Rate: The rate of heat release (BTU per second) per unit area (square foot) within the flaming front at the head of a moving fire.

Envelopment Action: Fire is attacked from several points in a coordinated effort.

EPA: Environmental Protection Agency

Equilibrium Moisture Content: The level where dead fuels neither gain nor lose moisture with time, under constant weather conditions. The water vapor pressure in the air is equal to the vapor pressure in the fuel.

Extreme Fire Behavior: In this case, "Extreme" implies a level of wildfire behavior characteristics that ordinarily precludes methods of direct control action. One or more of the following is usually involved: high rates-of-spread, prolific crowning and/or spotting, presence of fire whirls, a strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment, behaving erratically, sometimes dangerously.

F& G: California State Fish & Game (Fins & Feathers)

Fine Fuel Moisture: The probable moisture content of fast-drying fuels that have a time lag constant of one hour or less.

Fine Fuels: Fuels such as grass, leaves, draped pine needles, fern, tree moss, and some kinds of slash which ignite readily and are consumed rapidly when dry. Also called flash fuels.

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Fingers: Narrow strips extending out from the main fire. Occur when fire hits both light and heavy fuels. Lighter fuels burn quicker, making fingers.

Firebrand: Any source of heat, natural or manmade, which is capable of igniting wildland fuels. Flaming or glowing fuel particles can be carried naturally by wind, convection currents, or by gravity into unburned fuels.

Firebreak: A natural or constructed barrier utilized to stop or check fires that may occur or to provide a control line from which to work. Sometimes called a fire lane.

Fire Danger Rating: The integration of fuel, site, weather, and risk factors that affect the inception and behavior of wildfires.

Fire Line: The part of a control line that is scraped or dug to mineral soil. Sometimes called fire trail.

Fire Point: The temperature of a substance at which a liquid fuel produces enough vapors to support combustion once ignited.

Fire Retardant: Any substance that, by chemical or physical action, reduces flammability of combustibles.

Firestorm: Violent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface in drafts near and beyond the perimeter, and sometimes by tornado-like whirls.

Fire Whirl: A spinning, moving column of ascending air rising from a vortex and carrying aloft smoke, debris, and flames. These range from a foot or two in diameter to small tornadoes in size and intensity.

Flame Length: The length of flames measured along their axis at the fire front. Flame length is an indicator of fire intensity.

Flaming Front: That zone of a moving fire within which the combustion is primarily flaming. Behind this flaming zone, combustion is primarily glowing. Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front.

Flammability Range: The percentage of gas or vapor in air that will burn if ignited.

Flanking: Attacking a fire by working along the flanks either simultaneously or successively from a less active or anchor point and endeavoring to connect the two lines at the head.

Flanks of a Fire: The parts of a fire's perimeter that are roughly parallel to the main direction of spread. Looking from the rear towards the head, identify as left and right flanks.

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Flare-up: Any sudden acceleration of fire spread or intensification of the fire. Unlike blowup, a flare-up is of relatively short duration and does not radically change exiting control plans.

Flashover: Rapid combustion and/or explosion of unburned gases trapped at some distance from the main fire front. Usually occurs in poorly ventilated topography. More commonly associated with structural fire behavior.

Flash Point: The minimum temperature at which a liquid fuel gives off sufficient vapors to form an ignitable mixture with air near the surface. At this point the ignited vapors will flash, but will not continue to burn.

Foehn: A dry wind with strong downward component, characteristic of mountainous regions. It is usually, but not always, warm for the season. Locally called by various names such as Santa Ana, Mono, and Chinook.

Free Air: That portion of the atmosphere that is not modified by local influence. It normally applies to all levels above 60 feet and is out of the range of surface recording instruments.

Free Burning: The condition of a fire or part of a fire that has not been checked by natural barriers or by control measures.

Friction Layer: The layer of the atmosphere in which the frictional force of the earth's surface exercises an appreciable influence on the winds. Gradient winds are modified by the irregular surface of the earth and are a component of surface winds.

Front: A transition zone between two air masses of different density.

Fuel Energy Available for Convection: Fuel energy that is actually fed into the base of the convection column.

Fuel Loading: The oven dry weight of all existing fuels in a given area. Loading is further analyzed by fuel size (time lag categories, etc.) Loading or mass per unit area is usually expressed in tons/acre.

Fuel Model: A simulated fuel complex for which all the fuel descriptors required for the solution of the mathematical fire spread model have been specified. Usually associated with NFDR System.

Fuel Moisture Content: The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212°F.

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Fuel Type: An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

General Wind: Free air or large-scale wind caused by high and low pressure systems.

Gradient Wind: A wind that flows parallel to the isobars or contours and has a velocity such that the pressure gradient, coriolis and centrifugal forces acting on the air are in balance. It does not occur at the earth's surface due to frictional influence but is realized at a height of roughly 1,500 feet above mean terrain height

Green: The unburned area outside the fire perimeter.

Head: The area where the fire is burning the fastest or hottest. There can be more than one head.

Helibase: A location within the general area of the incident used for parking, fueling, maintaining, and loading helicopters.

Helibase Manager: Manages resources and supplies dispatched to the helibase.

Helicopter: A rotary winged aircraft.

Helicopter Coordinator: Responsible for coordinating tactical or logistical missions at an incident.

Helispot: A location where a helicopter can take off and land.

Helitack Crew: Individuals assigned to operations using a helicopter.

Helitack Mobile Service Unit: Helicopter support unit.

Hot Spots: Spots along the fire's perimeter. Burns more vigorously than the rest of the fire.

Hot Spotting: Checking the spread of fire at points of more rapid spread or special threat. Usually the initial step in prompt control. Emphasis on first priorities.

Ignition Temperature: The minimum temperature to which the fuel in the air must be heated to initiate self-sustained combustion without help from a heat source.

Immediately Dangerous To Life & Health (IDLH): Maximum level from which a worker could escape without suffering any irreversible health effects.

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Indirect Attack: Constructing a line in unburned fuel at a considerable distance from the fire line. Utilized for defensive operations.

Island: An unburned area inside the fire's perimeter.

Lapse Rate: The rate of change of temperature with height. Normal lapse rate is 3.5°F per 1,000 feet. The dry lapse rate is 5.5°F per 1,000 feet.

LCL: Lethal Concentration, Low. That concentration of a substance, that when inhaled, caused the first of the test population to die.

LC50: Lethal Concentration, 50%. The concentration of a substance, that when inhaled, caused death in 50% of the test population. Usually given in reference sources as **LC 50 Inhaled** and measured in milligrams per cubic centimeter (mg/cm3) or in parts per million (ppm).

LDL: Lethal Dose, Low. That amount of a substance, when ingested, were the first of the test population to die.

LD50: Lethal Dose, 50%. The amount of a substance that causes death in 50% of the test population. Usually given in reference sources as **LD50 Oral or LD50 Dermal** and measured in milligrams per kilogram of body weight.

Line Firing: Setting fire to only the border fuel immediately adjacent to the control line.

Local Winds: Winds which, over a small area, might differ from those appropriate to the general pressure distribution.

Long Range Spotting: Large glowing firebrands can be carried high into the convection column, then fall out down wind beyond the main fire. Such spotting can easily occur one-quarter mile or more.

Low Pressure Trough: An elongated area of relatively low atmospheric pressure. The opposite is a ridge. If the term aloft or upper level is not used, reference is to a surface trough. As in the case of a surface low, rising air often causes cloudiness in a trough area. While a Surface Low can be assumed to have a complete (closed) counter-clockwise circulation around it, a trough may be open at one end. That is, a trough may be an elongated portion of a larger low-pressure system. If a Front extends out of a low-pressure center, the accompanying constant pressure lines usually form a trough along the front.

Main Rotor: Blades of a helicopter.

Methods: Individual evolutions conducted to accomplish the tactical objectives.

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Microclimate: A small site or habitat with essentially uniform climate, fuel characteristics, and burning conditions.

Middle Clouds: Clouds of the altocumulus family, usually between 10-20,000 foot elevation.

Mg/cm2: Milligram per square centimeter. That dosage which, when applied to the skin, elicits a response in an organism.

Mg/kg: Milligram per kilogram. That dosage, taken orally, which elicits a response in an organism.

Multi-Casualty: More than five victims requiring first aid.

Mutual Aid: The sharing of resources or aiding another jurisdiction with your own resources.

NRC: National Response Center

OES: Office of Emergency Services

Orographic: Of, pertaining to, or caused by mountains.

Packing Ratio: The fraction of a fuel bed occupied by fuels; or the fuel volume divided by bed volume.

Perfusion: The circulatory systems ability to move blood into areas of the body.

Pincer Action: Attacking the fire from both flanks, not necessarily at same time. Object is to "pinch" fire off at head. Very similar to flanking action.

Pocket: An area of unburned fuel between two fingers. An area between a finger and the main fire perimeter.

PPM: Parts per million. In describing **1ppm**, some use the analogy of a drop of vermouth in a swimming pool filled with Vodka (one dry martini!!). PPM is used to describe either an airborne concentration or concentrations in water.

Radiational Cooling: The cooling of the earth's surface suffers a net loss of heat due to terrestrial cooling.

Rate of Spread: The relative activity of fire in extending its horizontal dimensions. This can be expressed in chains/hour of forward spread, chains/hour of perimeter increase, etc.

Rate of Spread Factor: A factor usually in a scale of 1 to 100 which represents a relative rate of forward spread for a specific fuel condition and fixed weather conditions (or fuel

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model). Factors can be used as multipliers, arguments for entering tables, or provide a ratio of values between two fuels.

Rear: May also be known as the heel or point of origin. Usually burns slowly and quietly. Good spot for an anchor point.

Reburn: Subsequent burning of an area in which fire has previously burned but has left flammable fuel that ignites when burning conditions are more favorable. For example, a surface fire might dry the aerial fuels but not ignite them during early hours. When temperature and winds increase later in the day fire might carry through the crowds of the same area.

RECEO: An acronym meaning rescue, exposures, confinement, extinguishment and overhaul.

Red Flag Warning: A term used by fire-weather forecasters to call attention to weather of particular importance to fire behavior. The purpose is to call attention; to forecast users to special conditions of limited duration which may result in extreme burning conditions. In addition to being used when extreme burning conditions are expected, the terms may be employed when a rapid weather change is expected to cause an important increase in danger without actually reaching the extreme stage.

Relative Humidity (Humidity): The ratio of the actual amount of water vapor in the air to the possible amount the air could hold at that temperature.

Resistance to Control: The relative difficulty of constructing and holding a control line as affected by resistance to line construction and by fire behavior.

Respiration: Breathing. The intake and exhalation process.

Retardant Line: Fire line that results from a retardant drop. Must be followed up by ground suppression activities.

Rigid tank (bucket): Apparatus used to carry retardant or water.

Routes of Exposure: Inhalation or respiratory, Ingestion or eating, absorption (through the skin), injection.

Running: Behavior of a fire spreading rapidly with a well-defined head.

Safety Island: An area for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety island close at hand, allowing the fuels inside the control line to be consumed before going ahead.

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Salvage: The saving of property from harm. As in covering a table where water was dripping on it.

Scratch Lines: An unfinished preliminary control line. Established or constructed as an emergency measure to check the spread of fire.

Short Range Spotting: A fire producing sparks or embers that are carried by surface winds to start new fires beyond the zone of direct ignition by the main fire. The range of such spotting is usually less than one-quarter mile.

Size and Shape: Fuel characteristics which affect the fuel moisture time lag, the amount of heat required for ignition, and to sustain combustion and the burnout time of fuels. The surface area to volume ratio is a representation of size and shape.

Size-Up: The mental evaluation made by the officer in charge of a fire or other emergency which enables him to determine the best course of action.

Skids: Helicopter landing gear.

Solubility: Refers to the ability of a liquid to mix with a particular host or solvent. Water solubility refers to a liquid's ability to mix with water. Alcohol solubility refers to the ability of a liquid to mix with alcohol and so on.

Specific Gravity: Refers to the weight of a solid or liquid compared to an equal volume of water. Terms greater than one will sink; terms less than one will float unless the material is miscible in water in which case they will mix.

Spread Index: A number related to the relative rate of forward movement of surface fires.

Slash: Branches, bark, tops, chunks, cull logs, uprooted stumps, and broken or uprooted trees left on the ground after logging, also debris resulting from thinning, wind, or fire.

Slope: The natural incline of the ground, usually measured in percent of rise (vertical rise divided by horizontal distance).

Smoldering: Behavior of a fire burning without flame and barely spreading.

Snag: A standing dead tree or part of a dead tree from which at least the leaves and smaller branches have fallen. Often called stub, if less than 20 feet tall.

Spot Fires: Fires that start outside the fire's main perimeter. Ignited by hot embers from the main fire. Can be indicators for changing fire behavior.

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Spot Weather Forecast: A special forecast issued to fit the time, topography, and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts.

Squall Line: A nonfrontal line; usually a narrow band of thunderstorms extending across the horizon. Of importance to fire behavior due to accompanying strong gusty winds and due to possibility of such a line passing between regular weather observation stations without being reported. (Used by some authorities interchangeably with "Line Squall"; the latter, however, is most frequently used to denote thunderstorms along a typical front.)

Staging: A collection point for emergency resources. Can be equipment or personnel.

START: Simple Triage and Rapid Treatment. Used in multiple victim incidents to sort and treat the injured.

Storm Center: The center of an individual disturbance with a complex of pressure, wind, clouds, precipitation. Usually refers to widespread low-pressure system that has intensified sufficiently to produce destructive or unpleasant weather. This definition does not include such local features (storms) as individual thunderstorms or rain squalls; however, such individual features may be part of a larger storm system.

Strategy: A basic plan which identifies major goals and prioritizes objectives.

Strip Firing: Setting fire to more than one strip of fuel and providing for the strips to burn together. Frequently done in backfiring against a wind where inner strips are fired first to create drafts which pull flames and sparks away from the control line.

Subsidence: A descending motion of air in the atmosphere, of particular importance due to the heating and drying of the air as it contracts.

Surface Fire: A fire that burns surface litter, debris, and small vegetation.

Tactics: Specific individual objectives that must be completed to accomplish the overall goal or strategy.

Tandem Action: May be used on flanking or pincer. Two units work together to extinguish a flank of the fire. First unit aggressive fire suppression, second unit cleans up what was missed.

Thermal Belt: An area of mountainous slopes that typically experiences the least variation of diurnal temperatures, has the highest average temperatures, and thus, the lowest average relative humidity.

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Threshold Limit Value-Ceiling (TLV-C): Can NOT be exceeded at any time, even instantaneously.

Threshold Limit Value Short term Exposure Limit (TLV-STEL): A 15 minute exposure (excursion) repeated not more than once per hour, and not more than four times per day.

Threshold Limit Values (TLV): A term describing exposure limits set in the work place. It represents a condition where nearly all workers may be repeatedly exposed day after day without adverse effects.

Threshold Limit Value-Time Weighted Average (TLV-TWA): The average concentration of a chemical, which a worker may be exposed to during a 40-hour week/8 hour per day without showing any adverse effects.

Time Lag: The time necessary for a fuel particle to lose approximately 62 percent of the difference between its initial moisture content and its equilibrium moisture content. Fuels are usually grouped into 1-hour, 10-hour, 100-hour, or greater time lag categories.

Tinder: Low density, commonly amorphous solids or aggregates of particles; includes duff, peat, and rotten wood.

Topography: The configuration of the earth's surface including its relief and the position of its natural and manmade features.

Triage: "Sorting" out wounded victims by injury category.

Triage Tag: A record of injury level found on a victim. A small paper tag of information as to rescuer's findings.

TSDF: Transfer, Storage, and Disposal Facility

Unified Command: When an incident involves more than one jurisdiction. Each agency involved shares command.

USCG: United Stated Coast Guard (Pacific Strike Team)

Vapor Pressure: The pressure exerted by escaping vapor against the sides of the container at equilibrium, the state at which the vapor pressure has stabilized and is no longer rising or falling.

Vertical Arrangement: The relative heights of fuels above the ground and their vertical continuity, which influences fire reaching various levels or strata. Surface fuels vs. aerial fuels, etc.

RETIRED CURRICULUM

Vertical Development of Column: Depending on fire intensity and atmospheric conditions, the smoke or convection column might rise a hundred feet or many thousands of feet. A low intensity fire with a low smoke column might be termed "two-dimensional," whereas, a high intensity fire with a well-developed convection column rising thousands of feet into the atmosphere can be termed a "three-dimensional" fire.

Virga: Water or ice particles falling out of a cloud but evaporating before reaching the ground. Stage 4.

Vortex: Air turbulence caused by air slipping off the wing tips of an aircraft in flight and the action of rotor blades of helicopters.

Walking Wounded: Injured victims who are capable of moving themselves when asked.

Wildfire: An unplanned fire usually requiring suppression action, or a free-burning fire unaffected by fire suppression measures.

Zone Weather Forecast: A weather forecast issued specifically to fit the requirements of fire management needs (i.e., time, areas, and weather elements) issued on a regular basis during the normal fire season. These zones or areas are a combination of administrative and climatological areas, usually nearly the size of an individual forest or district.

RETIRED CURRICULUM

FIRE COMMAND 1B

APPENDIX F

INSTRUCTOR QUIZZES

RETIRED CURRICULUM

RETIRED CURRICULUM

INSTRUCTIONS: This is a multiple-choice test. For each of the following questions or statements, draw a circle around the letter preceding the one best answer.

EXAMPLE:

1. The Incident Command System was created by the

   a. school system
   b. ***fire service***
   c. state legislature
   d. NRA

---

1. Which of the following best describes the program developed in a joint activity after the disastrous wildland fires in 1970?

   a. Mutual aid
   b. ***FIRESCOPE***
   c. Automatic aid
   d. Fire command

2. ICS is designed primarily for wildland fires, and a similar system, MEDs, is applicable for medical aid calls. Is this statement true or false?

   a. True
   b. ***False***

3. Span of control is the basic premise from which we begin grouping responders. The ratio most often associated with this concept is

   a. 1 to 3
   b. ***1 to 5***
   c. 2 to 5
   d. 2 to 7

4. Exterior designations (Divisions) are set up on all sides of a structure in major operations. If Division A is in front, where will Division B be located?

   a. ***Left side***
   b. Rear
   c. Right side
   d. Inside

5. An incident organization may be expanded to fill Command and General Staff positions. Which of the following General Staff positions should be filled first?

   a. Safety Officer
   b. Public Information Officer
   c. Liaison Officer
   d. ***Plans Unit Leader***

6. Which of the following positions in the ICS is responsible for coordinating outside agencies at the scene?

   a. Safety Officer
   b. Plans Unit Leader
   c. Finance Unit Leader
   d. ***Liaison Officer***

7. Which unit is responsible for the action going on during the mitigation of an emergency?

   a. ***Operations***
   b. Plans
   c. IC
   d. Logistics

8. Which of the following is the support mechanism for the organizational structure?

   a. Operations
   b. Plans
   c. ***Logistics***
   d. Safety

RETIRED CURRICULUM

9. On a reasonably large incident, it has been determined that food/meals will be needed. If the complete ICS is set up, who is responsible for this action?

   a. Operations
   b. ***Logistics***
   c. Finance
   d. Liaison

10. At an incident where full ICS is being set up, it is typical that the system be constructed from

   a. the top down
   b. Operations outward
   c. ***the bottom up***
   d. any point

RETIRED CURRICULUM

RETIRED CURRICULUM

INSTRUCTIONS: This is a true-false test. If the statement is true, draw a circle around the "T." If the statement is false, draw a circle around the "F."

EXAMPLE: T (F) The walking wounded are tagged in the "delayed" category.

➧T	F	1.	Triage is a process that will allow emergency personnel to quickly assess all victims and allocate resources according to priorities.
➧T	F	2.	A victim with respirations over 30 per minute should be tagged with a red "immediate" triage tag.
T	➧F	3.	The triage process should take a maximum of two minutes per victim.
T	➧F	4.	A victim with respirations of 32 and perfusion of less than 2 seconds should be tagged with a yellow "delayed" triage tag.
➧T	F	5.	The four categories of medical emergencies are: Expanded Medical, Major Medical, Medical Disaster, and Medical Catastrophe.
T	➧F	6.	An Expanded Medical Emergency involves fifty or more patients.
T	➧F	7.	Advanced Life Support personnel should always be used as triage personnel because of their advanced scope of practice.
➧T	F	8.	Law enforcement personnel may be used as morgue managers.

RETIRED CURRICULUM

➧T	F	9.	The Major Medical Emergency involves 16-50 casualties.
➧T	F	10.	The first arriving ambulance in a multi-casualty incident should establish hospital communications, if not already done.
T	➧F	11.	The Patient Transportation Group Supervisor is responsible for loading all patients into the ambulances.
T	➧F	12.	The Treatment Dispatch Manager is responsible for all incident communications, and is always located at the command post.
➧T	F	13.	Transfer of command should always be face-to-face whenever possible.
T	➧F	14.	The Operations Section Chief is under the Medical Group Supervisor.
T	➧F	15.	CPR may be implemented during the triage process.

RETIRED CURRICULUM

INSTRUCTIONS: This is a multiple-choice test. For each of the following questions or statements, draw a circle around the letter preceding the one best answer.

EXAMPLE:

1. Everyone reacts to chemical exposures

   a. in the same way
   (b.) differently
   c. and will become sick
   d. even if they dose is miniscule

---

1. All chemicals possess only one hazard that we need to concern ourselves with. This statement is

   a. true
   b. ***false***

2. Hazard Class 3 refers to

   a. corrosives
   b. oxidizers
   c. ***flammable liquids***
   d. radioactives

3. A yellow placard refers to

   a. corrosives
   b. ***oxidizers***
   c. flammable liquids
   d. radioactives

4. A material with a pH of 1 is considered to be

   a. caustic
   b. neutral
   c. alkaline
   d. ***acidic***

5. The Site Access Control Officer is responsible for overseeing the placement of the

   a. contamination Control Line
   b. exclusion Control Line
   c. ***both of the above***
   d. none of the above

6. Threshold Limit Value-Ceiling (TLV-C) may

   a. be exceeded for a short duration called an excursion
   b. ***never be exceeded***
   c. pertain to an 8-hour day/40-hour week exposure
   d. be an exposure where the first of the test population dies

7. Systemic toxins

   a. are also referred to as carcinogens
   b. cause damage at the site of contact
   c. are normally a result from high doses
   d. ***attack target organs***

8. The Hot Zone refers to the area where the Safe Refuge Area is located. This statement is

   a. true
   b. ***false***

RETIRED CURRICULUM

9. Only those persons who are trained and properly equipped are allowed in the Hot or CRZ Zones. This statement is

   a. ***true***
   b. false

10. The form of material which generally poses the greatest degree of difficulty is

   a. solid
   b. liquid
   c. ***gas***
   d. frozen

11. One problem with passive type evacuations is transportation needs. This statement is

   a. true
   b. ***false***

12. "We must always intervene with a haz mat incident and take aggressive action to correct the problem." This statement is

   a. true
   b. ***false***

13. The appointment of an Assistant Safety Officer - Hazardous Materials is a requirement. This statement is

   a. ***true***
   b. false

14. The Stand-By Rescue Unit is under the supervision of the Assistant Safety Officer - Hazardous Materials. This statement is

   a. true
   b. ***false***

RETIRED CURRICULUM

15. Injured persons within the Hot Zone

    a. may be treated immediately if they are ambulatory
    b. are under the immediate responsibility of the Medical Unit Leader
    c. ***must always be decontaminated prior to treatment***
    d. are the primary responsibility of the Decontamination Unit Leader

16. When managing a radioactive incident, the primary responsibility of the first responder is to isolate and deny entry. This statement is

    a. ***true***
    b. false

17. Which of the following needs to have the same level of training as the Entry Team?

    a. Stand-By Rescue Unit
    b. Assistant Safety Officer - Hazardous Materials
    c. ***Both of the above***
    d. None of the above

18. Since dilution is a solution, it is an acceptable procedure to wash caustics into a storm drain. This statement is

    a. true
    b. ***false***

19. An acute exposure is usually expressed in terms of small doses over a long period of time. This statement is

    a. true
    b. ***false***

20. Caution should be with an incident involving gas, because the gas may also be a skin-absorbable hazard. This statement is

    a. ***true***
    b. false

RETIRED CURRICULUM

RETIRED CURRICULUM

INSTRUCTIONS: This is a true-false test. If the statement is true, draw a circle around the "T." If the statement is false, draw a circle around the "F."

EXAMPLE: T (F) This quiz is on the wildland section of the Fire Command 1B course.

➧T F 1. A wildland fire, with no outside factors affecting it, will tend to grow in a circle.
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 1

➧T F 2. Topography is a major factor in affecting wildland fire behavior
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 1

T ➧F 3. Crown fires include grass, brush, and small trees.
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 1

T ➧F 4. Heavy fuels burn fast and ignite easily.
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 1

T ➧F 5. There are five generally accepted weather factors that influence wildland fires.
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 2

➧T F 6. Between the hours of 1000 and 1800, all factors of fire intensity are at their highest.
Fire Command 1B Student Manual, SFT, 1998, 4-1, page 7

T ➧F 7. Strategy defines the details of an action required to solve a problem.
Fire Command 1B Student Manual, SFT, 1998, 4-2, page 11

➧T F 8. An offensive attack is used to attack a problem in an attempt to defeat it.
Fire Command 1B Student Manual, SFT, 1998, 4-2, page 11

RETIRED CURRICULUM

T F 9. "Putting the wet stuff on the red stuff" describes a direct attack.
Fire Command 1B Student Manual, SFT, 1998, 4-3, page 15

T F 10. Direct attack eliminates irregularity of control lines.
Fire Command 1B Student Manual, SFT, 1998, 4-3, page 16

T F 11. Parallel attack is an example of an indirect attack.
Fire Command 1B Student Manual, SFT, 1998, 4-3, page 16

T **F** 12. When visiting a flanking action on an incident, the cold flank is attacked first.
Fire Command 1B Student Manual, SFT, 1998, Appendix B, 4-3

T **F** 13. During a tandem attack, the first unit makes sure they extinguish everything prior to moving on.
Fire Command 1B Student Manual, SFT, 1998, Appendix E

T F 14. Backfiring is a tactic that makes possible a strategy of locating control lines at places where the fire can be fought on the fire fighter's terms.
Fire Command 1B Student Manual, SFT, 1998, Appendix E

T **F** 15. Open cab engines are preferred on wildland incidents.
Fire Command 1B Student Manual, SFT, 1998, 4-4, page 20

T F 16. Strike teams have common capabilities, communications, and a leader.
Fire Command 1B Student Manual, SFT, 1998, 4-4, page 22

T F 17. When protecting a structure from a wildland fire, your crew should be divided into two groups to prepare the structure.
Fire Command 1B Student Manual, SFT, 1998, 4-4, page 23

T F 18. The Ten Standard Fire Fighting Orders are divided into four categories.
Fire Command 1B Student Manual, SFT, 1998, 4-5, page 28

T **F** 19. There are 17 situations that shout "Watch Out."
Fire Command 1B Student Manual, SFT, 1998, 4-5, page 31

T F 20. Split, trail, and salvo describe air tanker drops.
Fire Command 1B Student Manual, SFT, 1998, 4-5, page 34

FIRE COMMAND 1B

APPENDIX G

STUDENT QUIZZES

RETIRED CURRICULUM

NAME: _____

DATE: _____

INSTRUCTIONS: This is a multiple-choice test. For each of the following questions or statements, draw a circle around the letter preceding the one best answer.

EXAMPLE:

1. The Incident Command System was created by the

   a. school system
   (b.) fire service
   c. state legislature
   d. NRA

---

1. Which of the following best describes the program developed in a joint activity after the disastrous wildland fires in 1970?

   a. Mutual aid
   b. FIRESCOPE
   c. Automatic aid
   d. Fire command

2. ICS is designed primarily for wildland fires, and a similar system, MEDs, is applicable for medical aid calls. Is this statement true or false?

   a. True
   b. False

3. Span of control is the basic premise from which we begin grouping responders. The ratio most often associated with this concept is

   a. 1 to 3
   b. 1 to 5
   c. 2 to 5
   d. 2 to 7

RETIRED CURRICULUM

4. Exterior designations (Divisions) are set up on all sides of a structure in major operations. If Division A is in front, where will Division B be located?

   a. Left side
   b. Rear
   c. Right side
   d. Inside

5. An incident organization may be expanded to fill Command and General Staff positions. Which of the following General Staff positions should be filled first?

   a. Safety Officer
   b. Public Information Officer
   c. Liaison Officer
   d. Plans Unit Leader

6. Which of the following positions in the ICS is responsible for coordinating outside agencies at the scene?

   a. Safety Officer
   b. Plans Unit Leader
   c. Finance Unit Leader
   d. Liaison Officer

7. Which unit is responsible for the action going on during the mitigation of an emergency?

   a. Operations
   b. Plans
   c. IC
   d. Logistics

8. Which of the following is the support mechanism for the organizational structure?

   a. Operations
   b. Plans
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RETIRED CURRICULUM

9. On a reasonably large incident, it has been determined that food/meals will be needed. If the complete ICS is set up, who is responsible for this action?

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   c. Finance
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10. At an incident where full ICS is being set up, it is typical that the system be constructed from

   a. the top down
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   c. the bottom up
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RETIRED CURRICULUM

NAME: _____

DATE: _____

INSTRUCTIONS: This is a true-false test. If the statement is true, draw a circle around the "T." If the statement is false, draw a circle around the "F."

EXAMPLE: T (F) The walking wounded are tagged in the "delayed" category.

T F 1. Triage is a process that will allow emergency personnel to quickly assess all victims and allocate resources according to priorities.

T F 2. A victim with respirations over 30 per minute should be tagged with a red "immediate" triage tag.

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T F 5. The four categories of medical emergencies are: Expanded Medical, Major Medical, Medical Disaster, and Medical Catastrophe.

T F 6. An Expanded Medical Emergency involves fifty or more patients.

T F 7. Advanced Life Support personnel should always be used as triage personnel because of their advanced scope of practice.

T F 8. Law enforcement personnel may be used as morgue managers.

RETIRED CURRICULUM

T F 9. The Major Medical Emergency involves 16-50 casualties.

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T F 11. The Patient Transportation Group Supervisor is responsible for loading all patients into the ambulances.

T F 12. The Treatment Dispatch Manager is responsible for all incident communications, and is always located at the command post.

T F 13. Transfer of command should always be face-to-face whenever possible.

T F 14. The Operations Section Chief is under the Medical Group Supervisor.

T F 15. CPR may be implemented during the triage process.

RETIRED CURRICULUM

NAME: _____

DATE: _____

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RETIRED CURRICULUM

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RETIRED CURRICULUM

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RETIRED CURRICULUM

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RETIRED CURRICULUM

NAME: _____

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RETIRED CURRICULUM

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T F 18. The Ten Standard Fire Fighting Orders are divided into four categories.

T F 19. There are 17 situations that shout "Watch Out."

T F 20. Split, trail, and salvo describe air tanker drops.

RETIRED CURRICULUM