

EXERCISE DESIGN WORKSHOP

VISUALS

Objectives: At the conclusion of this lesson, the participant will be able to:

1. Define an exercise in an emergency management context.
2. Demonstrate his/her knowledge of the role and purpose of exercising in an emergency management environment.
3. Demonstrate knowledge of a standardized exercise typology and how that typology might be used to satisfy system exercising needs in an emergency management system.
4. Demonstrate that newly acquired knowledge on exercising has provided them with a basis for further investigation on the subject of exercising.

**“Exercising Is A Most Valuable Tool For Use
In Developing A Comprehensive
Emergency Management System”**

AN EXERCISE IS:

A practical tool to be used for testing, evaluating, planning, developing, training and demonstrating emergency management systems, their individual components, and capabilities.

Benefits of a Typology

- Useful in exercise programming by the matching needs with proper exercise type.
- Assists in exercise evaluation – the evaluators can better decide what/how to observe.
- Aids in communication since everyone would be using the same language – helps eliminate localized jargon.
- Aids in exercise design – especially in multi-jurisdictional exercising.

Exercise Typology

EOS – Designed primarily for demonstration, familiarization, selling and training purposes.

Planning Seminar Exercise – Designed primarily for planning and development purposes.

Operational Exercises – Designed primarily for testing and evaluation purposes.

Summary of Exercise Types

Emergency Operations Simulation (EOS)

Planning Seminar Exercises

- A. EOC Procedural Development Seminar Exercise
- B. Emergency Welfare Services Seminar Exercise
- C. Others depending upon needs

Operational Exercises

- A. EOC System Exercise
- B. Subsystem Exercises
 - 1. RADEF
 - 2. Communications
 - 3. Rescue
 - 4. Others tailored to needs
- C. Field Test Exercise
- D. Full Scale Operational Exercise

BEGINNING DESIGN QUESTIONS

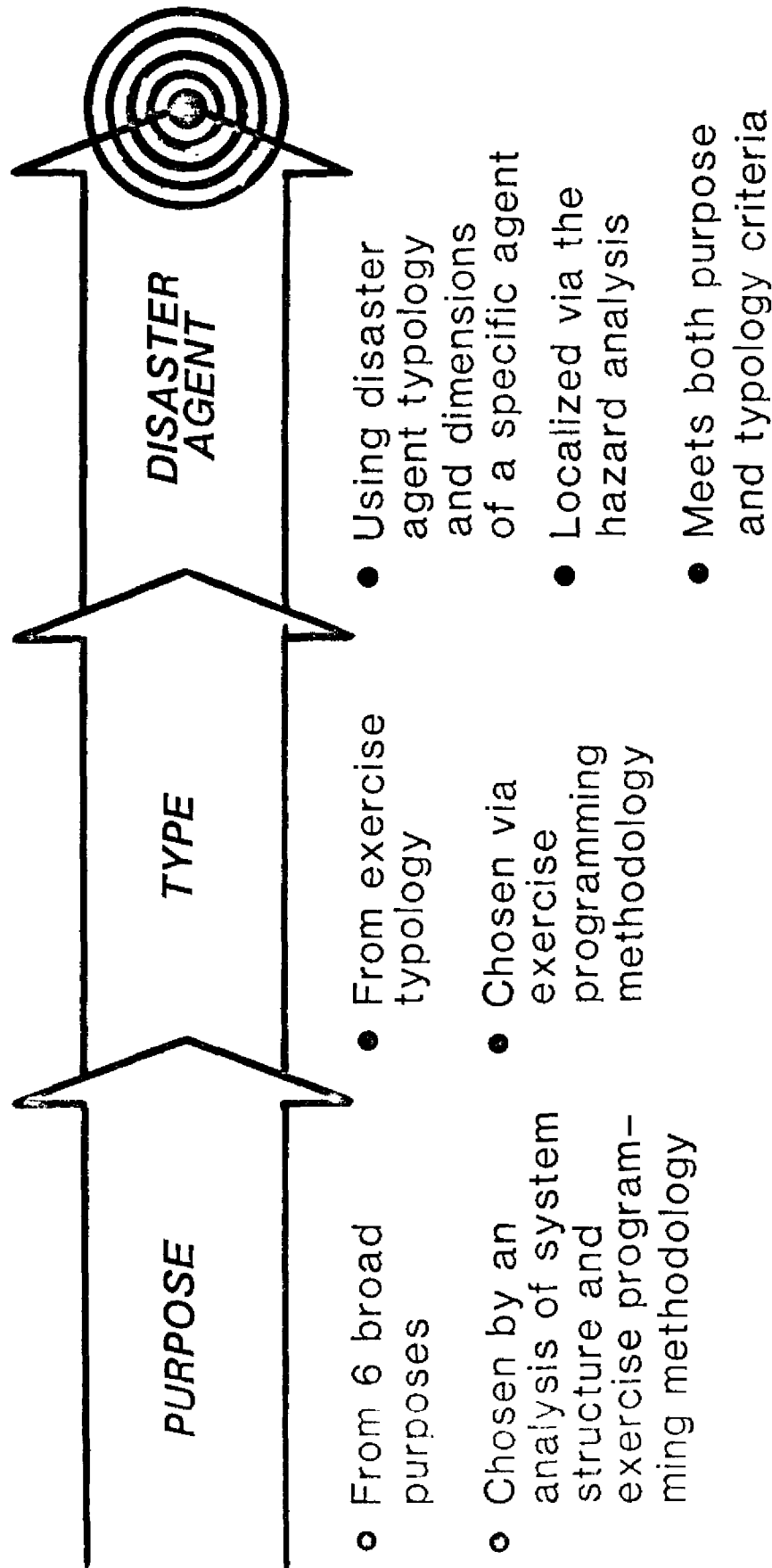
Disaster Agent?

vs.

Exercise Goals?

vs.

Exercise Types?



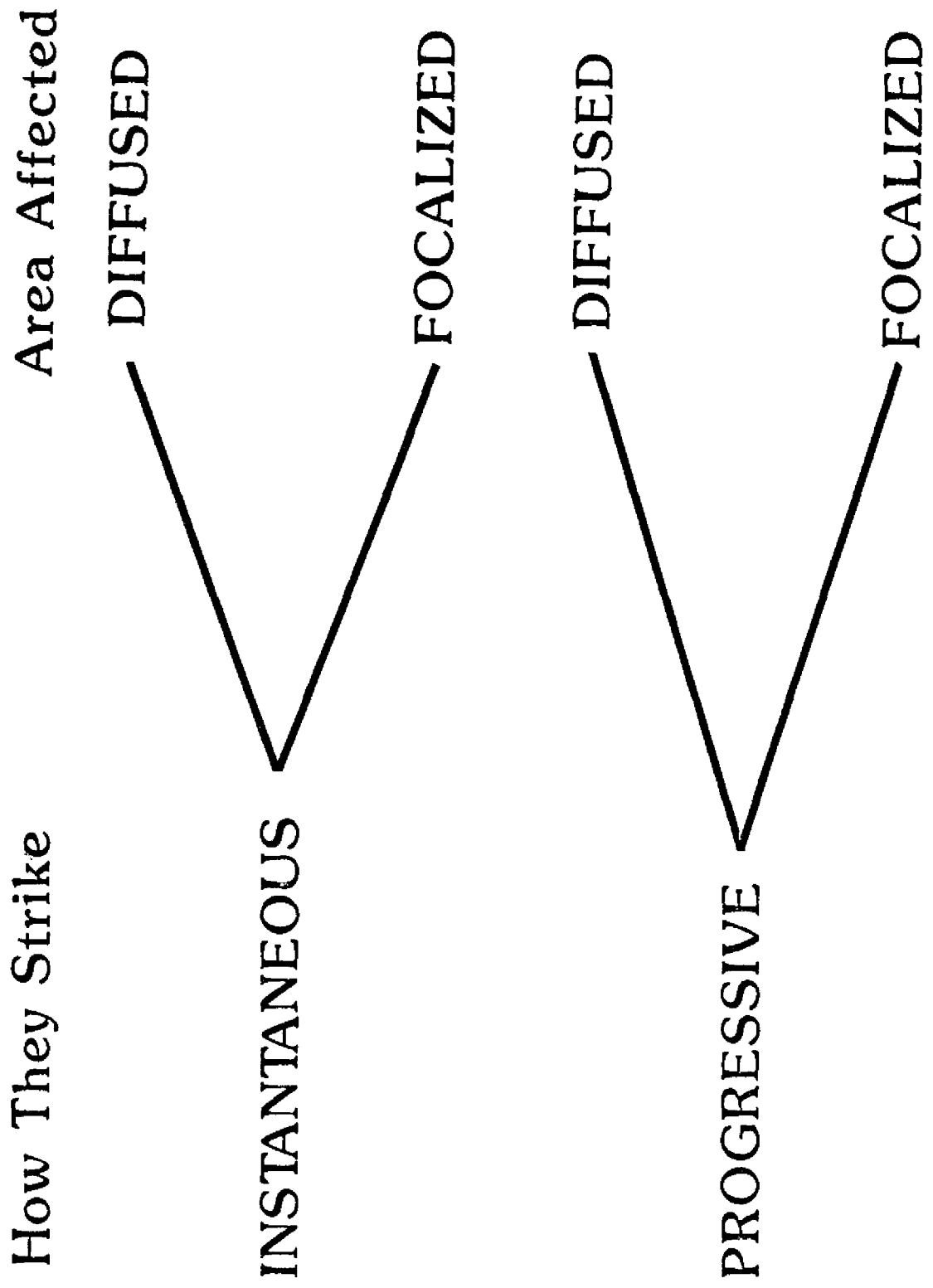
DIMENSIONS OF DISASTER/EMERGENCY AGENTS:

- Predictability
- Frequency
- Controlability
- Speed of Onset
- Forewarning
- Duration of Impact
- Scope of Impact
- Intensity of Impact

The dimensions all have a relationship to the effects produced, and thus will impact upon choice of agent to fit exercise purpose.

TYPOLGY OF DISASTER AGENTS

I-10



EXERCISING TO MEET SYSTEM GOALS

II-1

**OBJECTIVES: AT THE CONCLUSION OF THIS UNIT,
THE PARTICIPANT WILL BE ABLE
TO:**

- 1. RECOGNIZE EXERCISING AS BEING AN
INTEGRAL PART OF THE SYSTEM BUILDING
& SYSTEM RENEWAL PROCESS.**
- 2. DESCRIBE THE ROLE OF EXERCISING IN A
COMPREHENSIVE EMERGENCY MANAGEMENT
ENVIRONMENT.**
- 3. UTILIZE A SYSTEM ADAPTATION MODEL TO
DETERMINE BROAD AREAS OF EXERCISE
NEEDS.**
- 4. DESCRIBE THE RELATIONSHIP AMONG
PLANNING, TRAINING, AND EXERCISING
PROGRAMS, AND BE ABLE TO DEMONSTRATE
AN INTERFACE AMONG THESE PROGRAMS
AS RELATES TO SYSTEM DEVELOPMENT.**
- 5. DEFINE EXERCISE PROGRESSION AND BE
ABLE TO DEMONSTRATE A PROGRESSION
SEQUENCE THAT INSURES CONTINUED SYSTEM
DEVELOPMENT.**
- 6. DESCRIBE THE VARIOUS LEVELS OF EXERCISING
ON A LOCAL LEVEL, MULTI-JURISDICTIONAL
LEVEL, STATE, ETC.**

The Role of Exercising

- Exercising is an integral part of system building & system renewal in emergency management.
- Does not exist in a vacuum.
- Relates to other major problems such as training and planning.

4 PHASES OF COMPREHENSIVE EMERGENCY MANAGEMENT



MITIGATION (LONG TERM)

ANY ACTIVITIES WHICH ACTUALLY ELIMINATE OR REDUCE THE PROBABILITY OF OCCURRENCE OF A DISASTER. IT ALSO INCLUDES LONG-TERM ACTIVITIES WHICH REDUCE THE EFFECTS OF UNAVOIDABLE DISASTERS.

PREPAREDNESS (TO RESPOND)

PREPAREDNESS ACTIVITIES ARE NECESSARY TO THE EXTENT THAT MITIGATION MEASURES HAVE NOT, OR CANNOT PREVENT DISASTERS. IN THE PREPAREDNESS PHASE, GOVERNMENTS, ORGANIZATIONS, AND INDIVIDUALS DEVELOP PLANS TO SAVE LIVES AND MINIMIZE DISASTER DAMAGE. PREPAREDNESS MEASURES ALSO SEEK TO ENHANCE DISASTER RESPONSE OPERATIONS.

RESPONSE (TO EMERGENCY)

RESPONSE ACTIVITIES FOLLOW AN EMERGENCY OR DISASTER. GENERALLY THEY ARE DESIGNED TO PROVIDE EMERGENCY ASSISTANCE FOR CASUALTIES. THEY ALSO SEEK TO REDUCE THE PROBABILITY OF SECONDARY DAMAGE AND TO SPEED RECOVERY OPERATIONS.

RECOVERY (SHORT & LONG TERM)

RECOVERY CONTINUES UNTIL ALL SYSTEMS RETURN TO NORMAL OR BETTER. SHORT-TERM RECOVERY RETURNS VITAL LIFE-SUPPORT SYSTEMS TO MINIMUM OPERATING STANDARDS. LONG-TERM RECOVERY RETURNS LIFE TO NORMAL OR IMPROVED LEVELS.

AN EXERCISE IS:

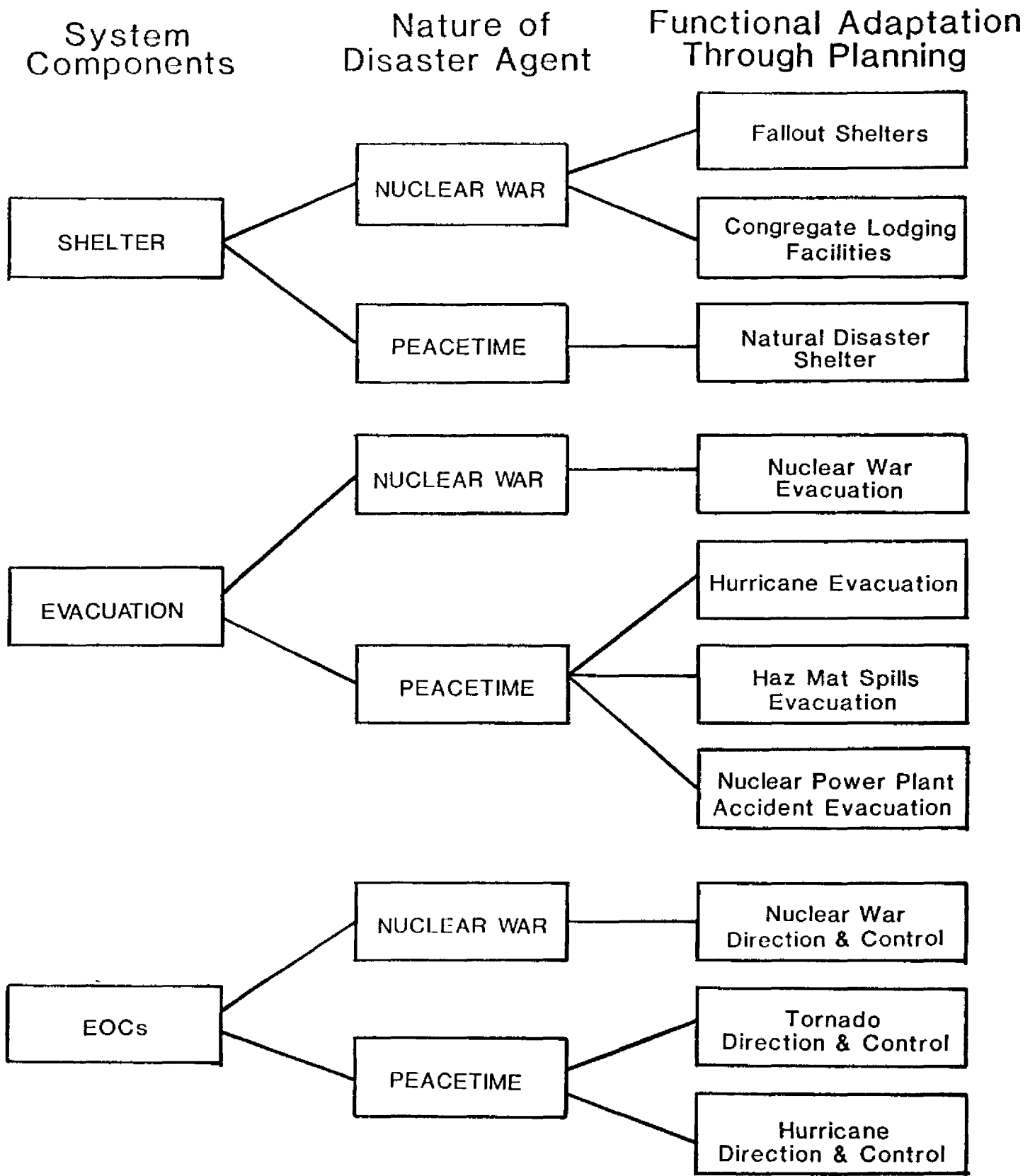
A practical tool to be used for testing, evaluating, planning, developing, training and demonstrating emergency management systems, their individual components, and capabilities.

PREPAREDNESS & RESPONSE PHASES SYSTEM COMPONENTS

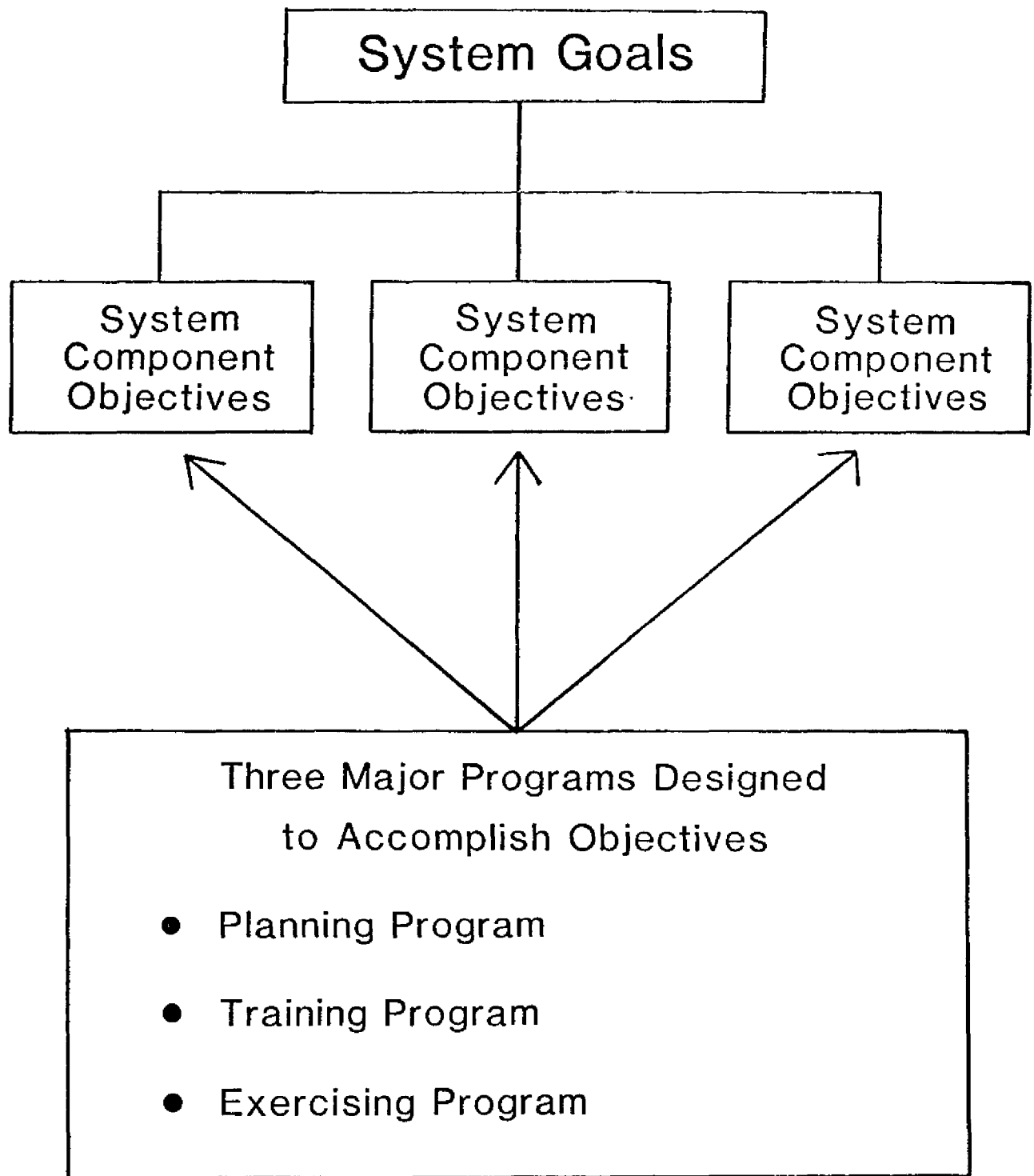
Mitigation	Preparedness	Response	Recovery
	• Shelter • Evacuation • Direction & Control • Communications • Radiological Defense • Radiological Emergency Preparedness • Warning • Emergency Services		
	Law Enforcement, Fire services, etc.		
	• Public Information		
	• _____		
	• _____		
	• _____		

System Adaptation Model

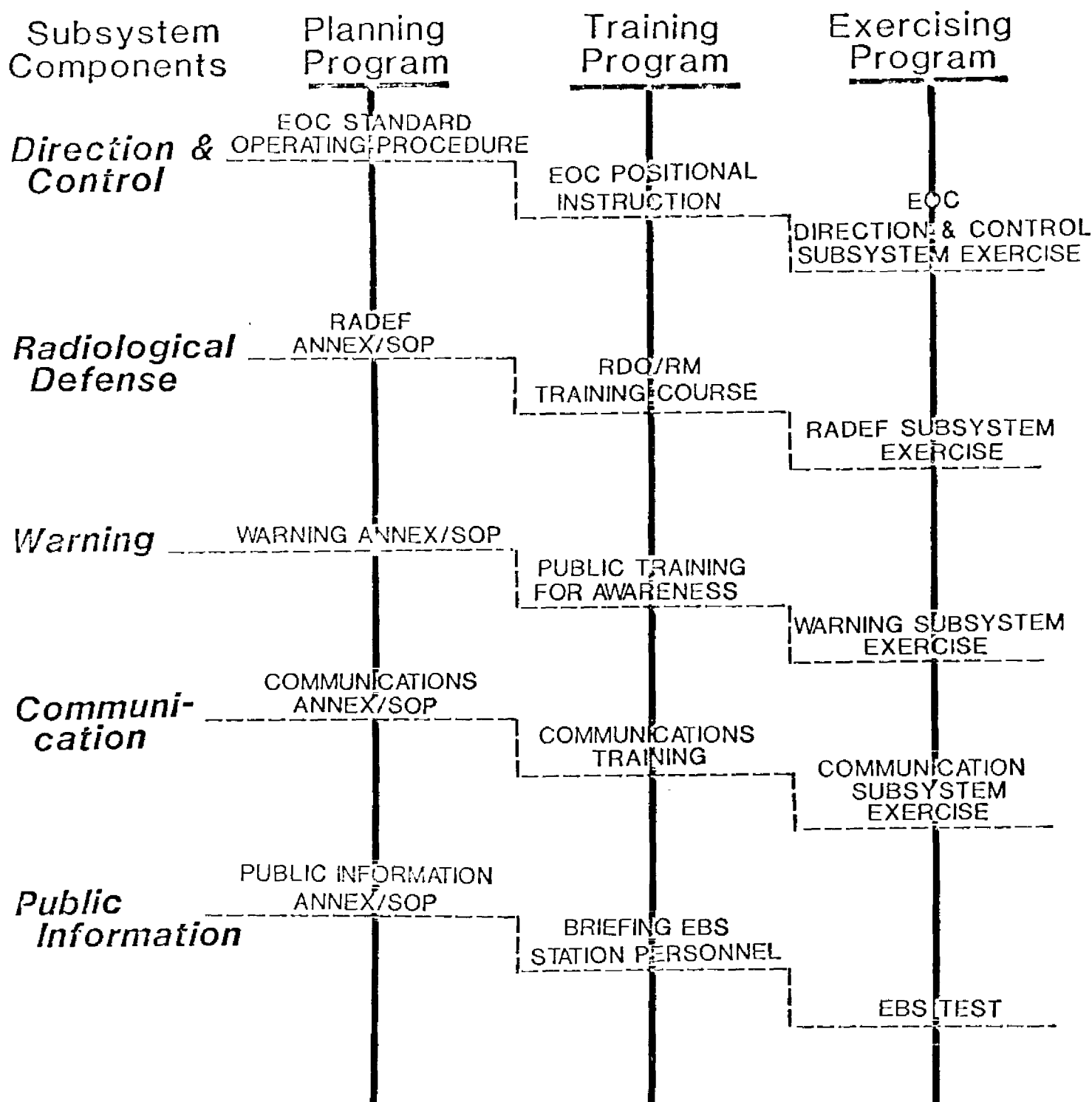
II-7



Interface of System Structure and Programs

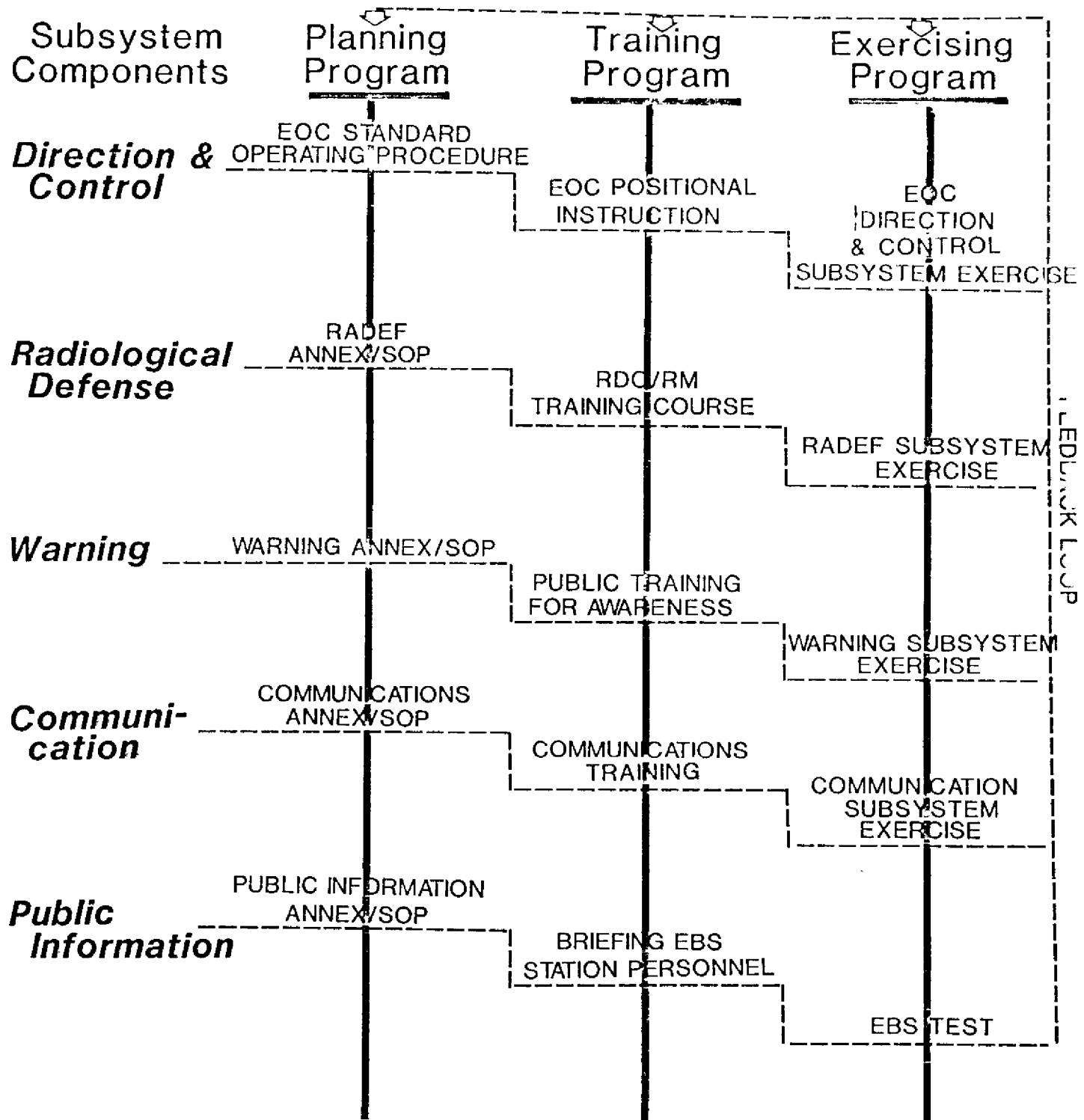


Interface of Planning/Training/Exercising Programs



This subsystem component structure is only a partial structure used as an example.

Interface of Planning/Training/Exercising Programs

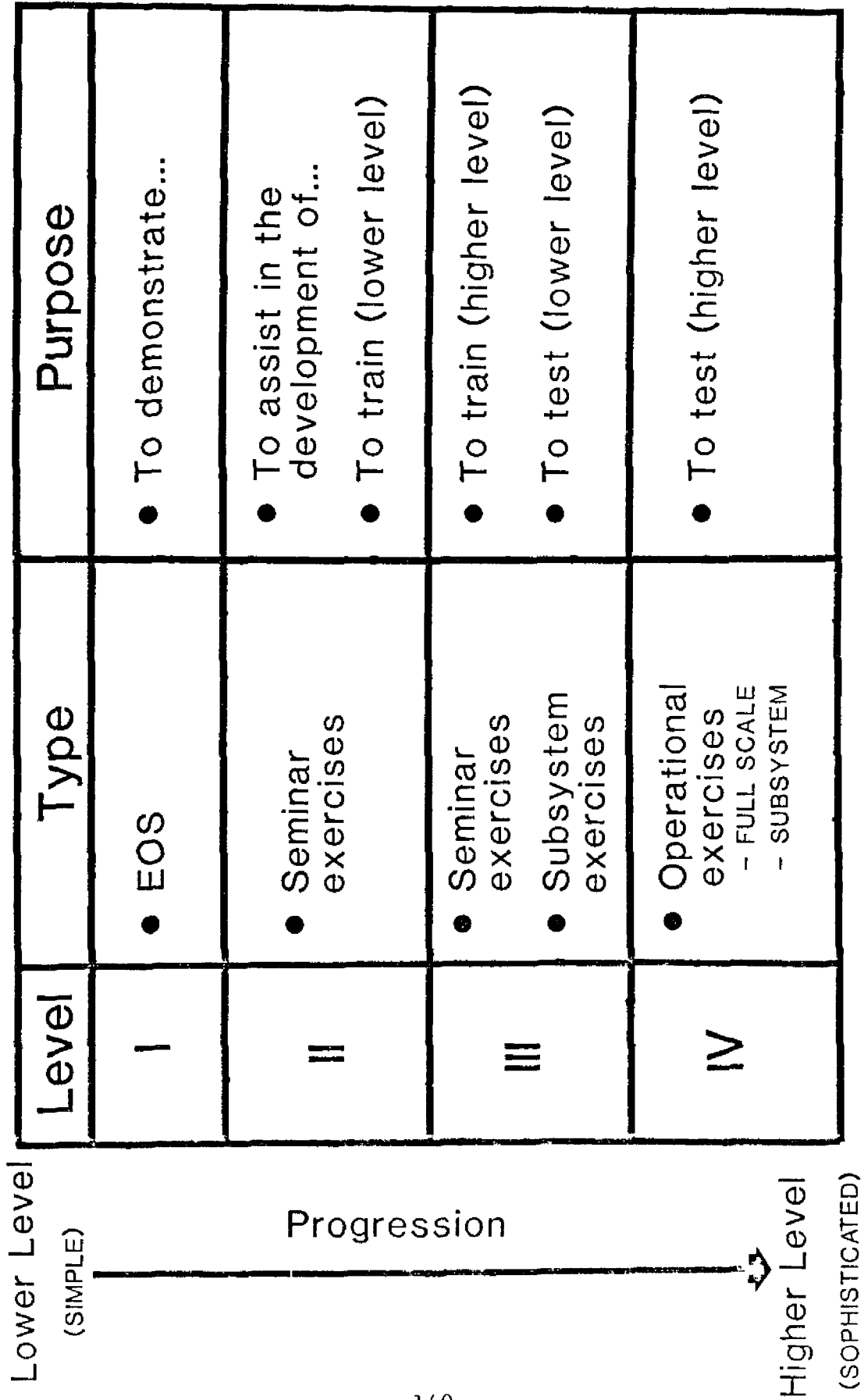


This subsystem component structure is only a partial structure used as an example.

EXERCISE PROGRESSION

- Definition - The process of moving from simple (lower level) to a more sophisticated (higher level) exercise.
- Exercise progression assures that exercising is used in a true system development context and that a wide range of exercises designed to accomplish a full complement of objectives are utilized over a period of time.

Exercise Progression Chart



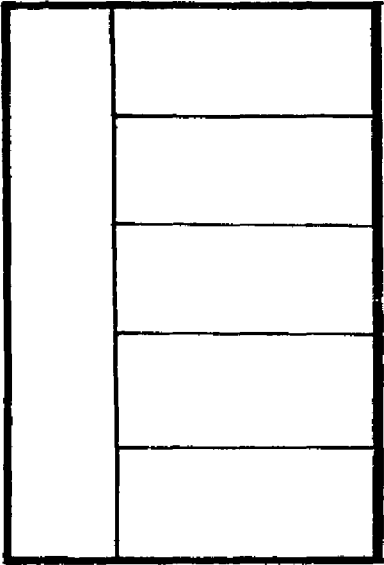
SINGLE JURISDICTION

Direction and Control	Resources
	Reception and Care
	Medical
	Fire
	Police

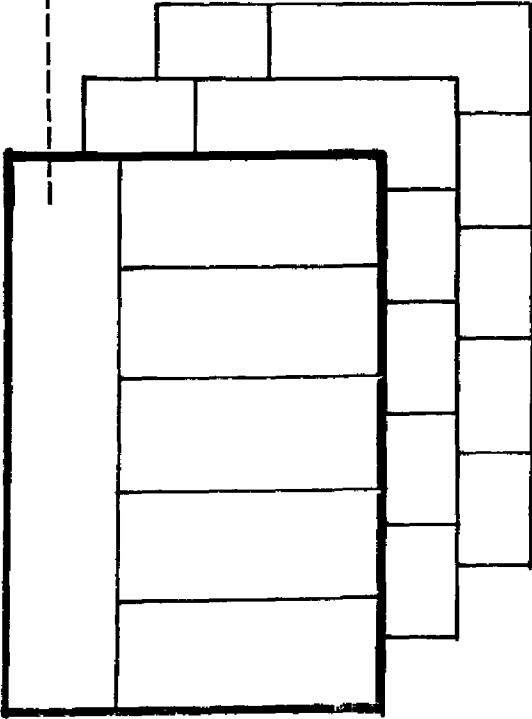
MULTI-JURISDICTIONAL EXERCISING

The participation in an exercise with common objectives of two or more jurisdictions at the same or different jurisdictional levels.

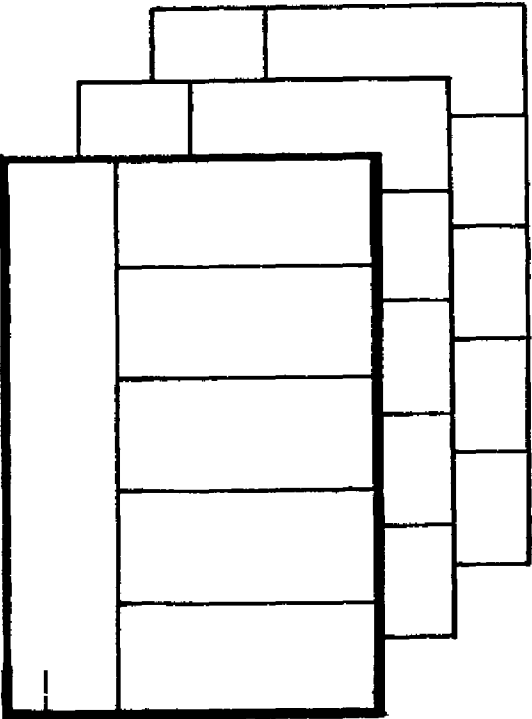
Multi-jurisdiction State



Risk Area Jurisdictions



Host Area Jurisdictions



Multi-jurisdictional Exercises Based on Level of Capability of Participating Jurisdictions

PROGRESSION LEVELS OF PROGRESSION CHART	County A	County B	County C
Level IV			
Level III			
Level II			
Level I			

The chart illustrates the progression levels for three counties. County A has an upward arrow reaching the Level II dashed line. County B has an upward arrow reaching the Level III dashed line. County C has an upward arrow reaching the Level IV dashed line. The progression levels are listed on the left side of the chart, from Level I at the bottom to Level IV at the top.

Participation in multi-jurisdictional exercises should not be based on a Level of Capability as identified in traditional progression charts, rather participation should occur by all communities to the degree to which they are capable. Therefore some counties will participate to a more sophisticated degree than others.

EXERCISE PROGRAMMING

Objectives: At the conclusion of this unit, participants will be able to:

1. Define and describe the purpose of exercise programs.
2. Perform a needs assessment as a basis for designing an exercise program.
3. Utilize various tools such as the hazard analysis, program status profile & local plan to develop a realistic exercise needs assessment for a county.
4. Design an exercise program for his/her particular county utilizing a wide range of exercise types to accomplish particular needs.

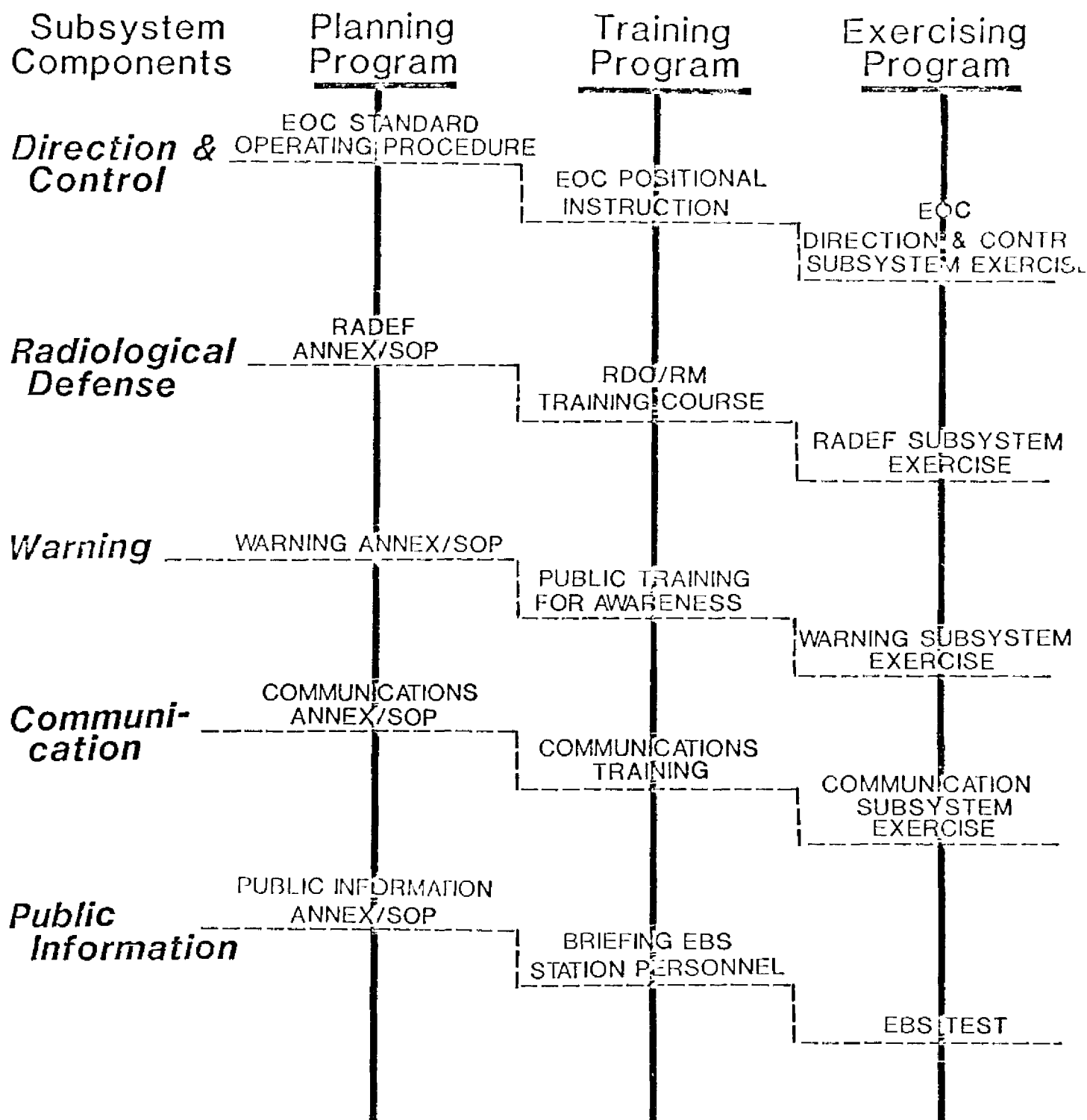
Exercise Programming – Defined

A management term indicating the process of identifying appropriate types of exercises based on a need assessment and sequencing those exercises into a multi-year schedule.

Exercise Programming – Advantages

- Allows for comprehensive review of the use of exercising.
- Requires long range planning and thus better utilization of exercise resources.
- Assures proper consideration of all system components.

Interface of Planning/Training/Exercising Programs



This subsystem component structure is only a partial structure used as an example.

5 Steps in the Need Assessment and Programming Process

STEP I - Determine the status of plans for each component.

STEP II - Determine the status of trained personnel for each component.

STEP III - Determine the best type and level of exercise to be used.

STEP IV - Determine the best disaster agent to be used.

STEP V - Sequencing the exercise.

111-6

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Summary of Exercise Types

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Operational Exercises

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Exercise Progression Chart

III-8

Lower Level

(SIMPLE)

Progression

Higher Level

(SOPHISTICATED)

Level	Type	Purpose
I	EOS	To demonstrate...
II	Seminar exercises	- To assist in the development of... - To train (lower level)
III	- Seminar exercises - Subsystem exercises	- To train (higher level) - To test (lower level)
IV	- Operational exercises - FULL SCALE - SUBSYSTEM	To test (higher level)

DIMENSIONS OF DISASTER/EMERGENCY AGENTS:

- o Predictability
- o Frequency
- o Controlability
- o Speed of Onset
- o Forewarning
- o Duration of Impact
- o Scope of Impact
- o Intensity of Impact

The dimensions all have a relationship to the effects produced, and thus will impact upon choice of agent to fit exercise purpose.

Needs Assessment and Programming Component Radiological Defense

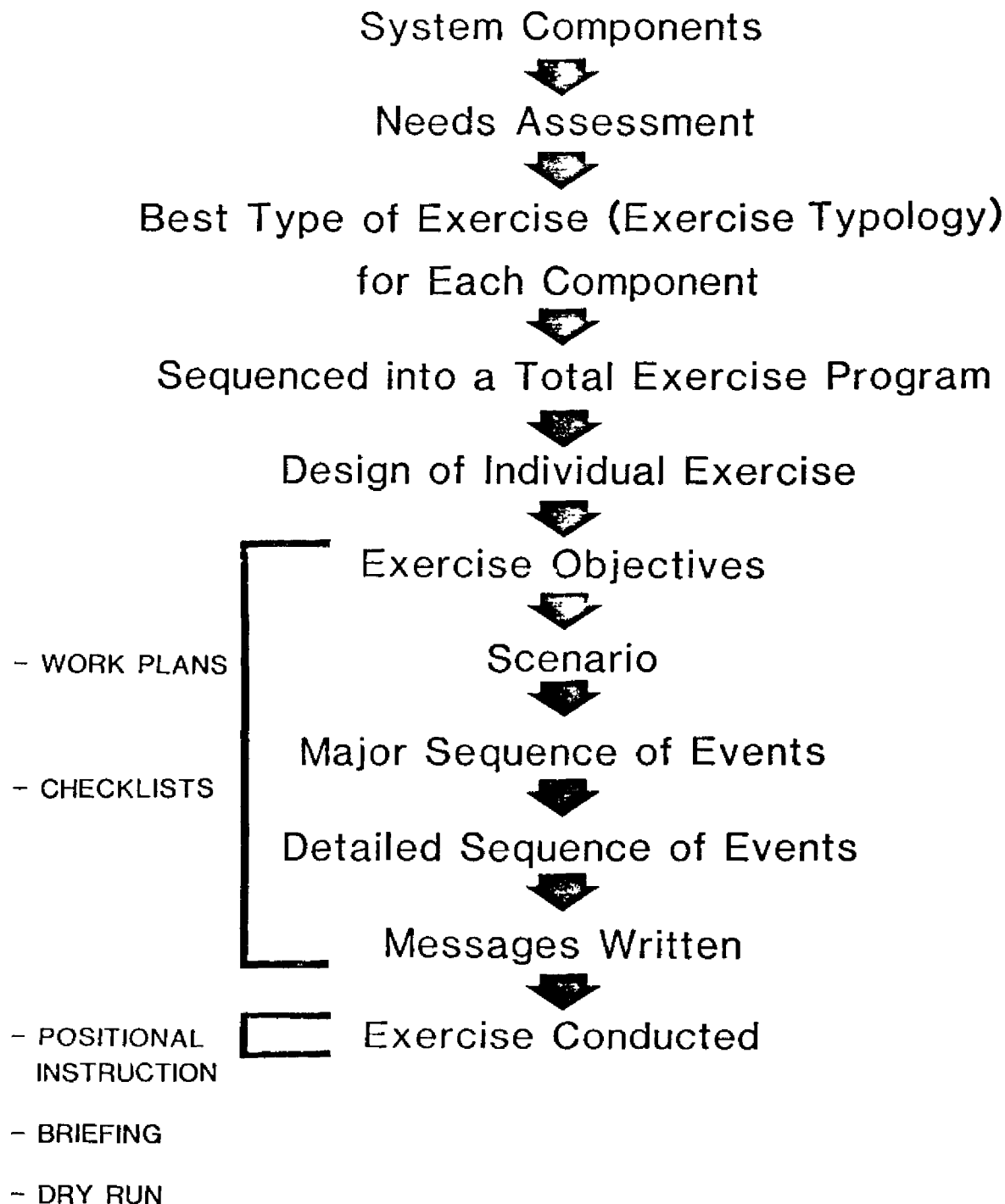
Steps	Analysis Tools	Findings
STEP I - Determine the status of plans for each component.	- PSP - Local Plan - Hazard Analysis - -	- no Radef annex exists - no EOC Radef SOP exists - no WERS/shelter/self-support monitoring SOPs exist - community is a non-risk/host area threatened by fallout
STEP II - Determine the level of trained personnel for each component.	- PSP - Training Records - -	- no RDO is officially designated & trained - no WERS monitors are trained - a small cadre of monitors in the police & fire departments are trained
STEP III - Determine the best type and level of exercise to be used.	- Exercise Typology - Exercise Progression Chart	- level 1 exercise - EOS demonstration purpose
STEP IV - Determine the best disaster agent to be used.	- Disaster Agent Characteristics Typology	- nuclear war fallout only
STEP V - Sequencing the disaster.	- Progression Chart - Time Table -	Refer to Exercise Time Table. (May be done first quarter of this fiscal year.)

Sample #2
Needs Assessment and Programming
Component Radiological Defense

III-12

Steps	Analysis Tools	Findings
STEP I – Determine the status of plans for each component.	- PSP - Local Plan - Hazard Analysis - -	- current Radef annex exists - current Radef EOC SOP exists - WERS/shelter/self-support decon. monitoring SOPs exists - Radef personnel assignment charts exists
STEP II – Determine the level of trained personnel for each component.	- PSP - Training Records - -	- RDO & back-up staff trained - full complement of WERS/self-support/shelter monitors trained
STEP III – Determine the best type and level of exercise to be used.	- Exercise Typology - Exercise Progression Chart	- level 4 - operational exercise - Radef subsystem testing purposes
STEP IV – Determine the best disaster agent to be used.	- Disaster Agent Characteristics Typology	- nuclear war fallout only
STEP V – Sequencing the disaster.	- Progression Chart - Time Table -	Refer to Exercise Time Table. (May be conducted first quarter of this fiscal year.)

The Exercise Development Process



METHODS & TECHNIQUES IN EXERCISE DESIGN

**OBJECTIVES: AT THE CONCLUSION OF THIS UNIT,
THE PARTICIPANT WILL BE ABLE TO:**

- 1. DEMONSTRATE A GENERAL WORKING KNOWLEDGE OF EXERCISE DESIGN METHODS AND TECHNIQUES.**
- 2. EXHIBIT AN UNDERSTANDING OF THE VARIOUS FACTORS WHICH IMPACT UPON COMPLEXITY OF EXERCISE DESIGN.**
- 3. DEMONSTRATE THE ABILITY TO FORMULATE SPECIFIC OBJECTIVES FOR AN EXERCISE IN THE EMERGENCY MANAGEMENT ENVIRONMENT.**
- 4. LIST THE BASIC EXERCISE COMPONENTS.**
- 5. DEMONSTRATE THE ABILITY TO OUTLINE AN ABBREVIATED WORK PLAN FOR USE IN A HYPOTHETICAL EXERCISE DESIGN.**
- 6. LIST THE MAJOR TYPES OF POST-EXERCISE EVALUATION ACTIVITIES AND DIFFERENTIATE BETWEEN THOSE.**

WRITING EXERCISE OBJECTIVES

Exercise Objectives Should:

- Be stated in concise terms
- Set the parameters for conduct/design of the exercise
- Assist in exercise measurement
- Include all emergency management system components
- State procedures to be used and location of exercise
- Specify what levels are to be exercised

SAMPLE EXERCISE OBJECTIVES

1. To demonstrate to state and local officials the concept of centralized operations.
2. Demonstrate the necessity of coordination among emergency services.
3. To provide training for officials and EOC staff personnel.
4. To test the adequacy of current SOPs for the EOC.
5. To test reliability of emergency management subsystems:
 - A. Radeef
 - B. Communications
 - C. Warning
 - D. ReportingAppropriate subobjectives for each.
6. To evaluate the total Emergency Operations Plan and Procedures.

Radef Subsystem

1. To determine if manning procedures for monitoring stations are effective.
2. To evaluate the WERS network monitors' ability to carry out WERS SOPs.
3. To evaluate capability of EOC Radef staff to analyze field Radef information, assemble necessary summaries and provide proper recommendations to decision makers.

Communications Subsystem

1. To determine reliability of point-to-point communication equipment.
2. Determine adequacy of dedicated communications networks for specified functions such as Radef reporting, etc.

Communications Subsystem continued

3. To evaluate procedures for field and next-up communications.

Evacuation Subsystem

1. To test the ability of selected local agencies to control and direct evacuation traffic according to evacuation annex to the BEOP
2. To determine the actual time necessary to evacuate residents from isolated areas if the evacuation annex is implemented.
3. To evaluate the reliability of evacuation plans for handicapped citizens.

EXERCISE TEAM ASSIGNMENT FORM

IV-6

TEAM	TEAM MEMBERS	TYPE OF EXERCISE, SCENARIO, MAJOR SEQUENCE, DE-TAILED SEQUENCE OF EVENTS (General)	FUNCTIONAL AREA ASSIGNMENTS FOR MESSAGE WRITING, FOR PROVIDING POSITIONAL INSTRUCTION, FOR SIMULATION (Special Exercises)	TEAM MEMBER ASSIGNMENTS (Message Writing - All Team Members)
				Positional Instruction- Simulation-
				Positional Instruction- Simulation-
				Positional Instruction- Simulation-
				Positional Instruction- Simulation-

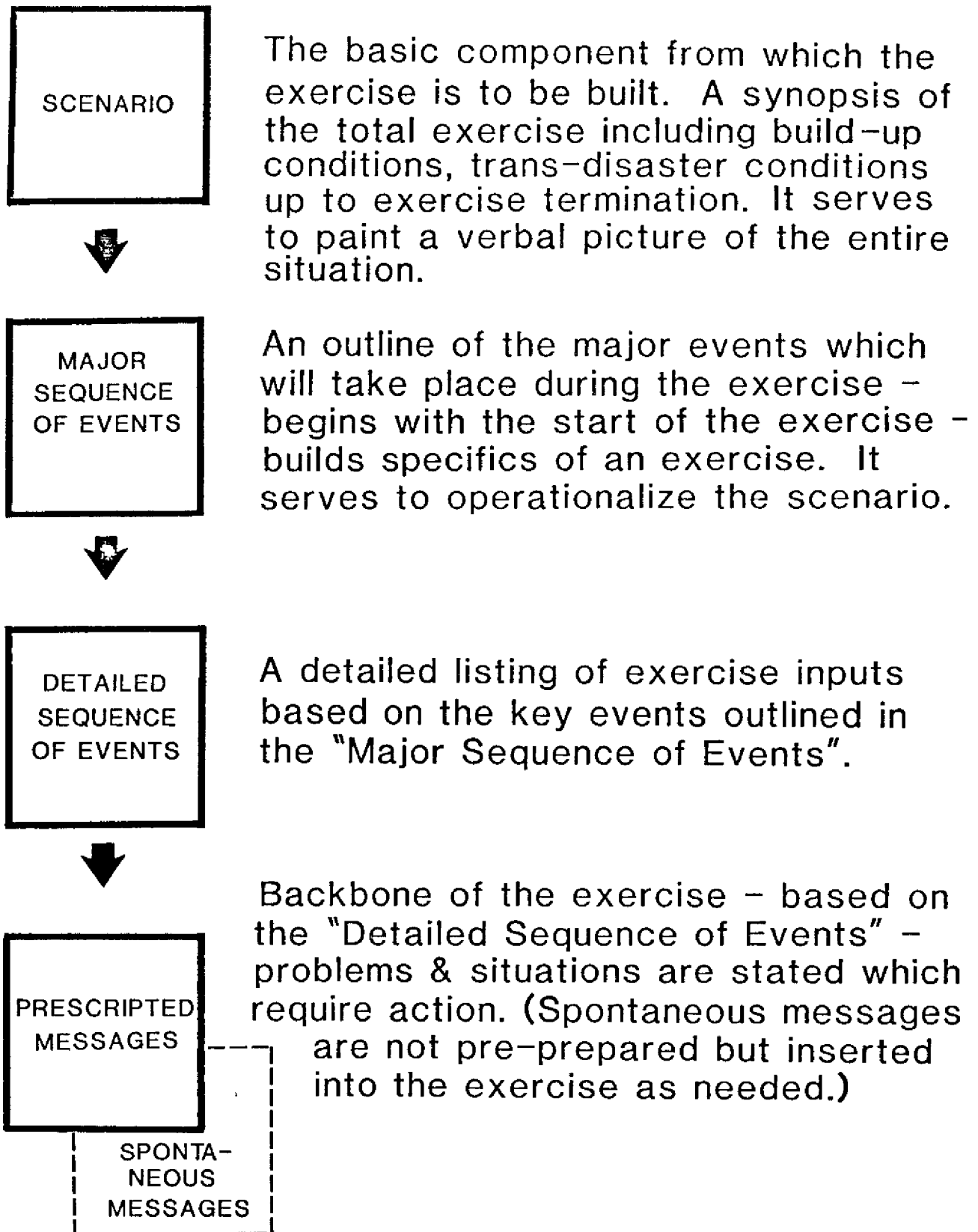
Sample Exercise Work Plan

Jones County Proposed date of exercise: January, 1983

DATE	ACTIVITY	REMARKS
June, 1982	Study & update local hazard analysis, study & update local resource availability listings.	Check with NOAA, local agency heads (esp. those in BEOP).
July, 1982	Meet with local officials to assist in determination of exercise needs, gain approval/support of local officials (can be accomplished via briefing of local officials).	Check with state EM for assistance where necessary.
August 5, 1982	Determination of exercise type in concert with local officials.	
August 10, 1982	Initial exercise objectives set, copies sent to appropriate agency heads to gain concurrence, suspense date for return set.	Coordinate with agency heads for those agencies participating.

EVENT -- WORK PLAN	DAY/BEGINNING/(ENDING)
XERCISE TEAMS ASSIGNED.	2nd 8:30 am (8:45 am)
TEAMS COMPLETE OBJECTIVES FOR HYPOTHETICAL EXERCISE.	2nd 8:45 am (9:45 am)
EAMS COMPLETE HYPOTHETICAL EXERCISE SCENARIOS.	2nd 9:45 am (10:45 am)
EAMS COMPLETE MAJOR & DETAILED SEQUENCES OF EVENTS FOR HYPOTHETICAL EXERCISE.	2nd 10:45 am (12:00 am)
BRIEFING ON ACTUAL EXERCISE FOR SELECTED JURISDICTION.	2nd 1:00 pm (1:30 pm)
EAMS BEGIN WRITING DETAILED SEQUENCE OF EVENTS FOR SELECTED JURISDICTION EXERCISE.	2nd 1:30 pm (4:30 pm)
TEAMS COMPLETE DETAILED SEQUENCE OF EVENTS.	2nd 4:30 pm (5:00 pm)
FINAL DETAILED SEQUENCE CHOSEN AFTER REVISIONS.	3rd 8:30 am (9:30 am)
TEAMS BRIEFED ON FUNCTIONAL AREAS FOR MESSAGE PREPARATION, POSITIONAL INSTRUCTION, & SIMULATION AND BEGIN MESSAGE WRITING.	3rd 9:30 am (4:00 pm)
MESSAGES COMPLETED/REVISED & POSTED ON CONTROL LOG.	3rd 4:00 pm (5:00 pm)
FINAL MESSAGES CHOSEN & POSTED.	4th 8:30 am (9:00 am)
FINAL PREPARATION & EOC SET-UP.	4th 9:00 am (11:00 am)
FINAL PREPARATIONS COMPLETE & POSITIONAL INSTRUCTION FOR LOCAL AGENCIES BEGIN.	4th 11:00 am (12:00 noon)
BRIEFING & CONDUCT OF EXERCISE.	4th 1:00 pm (3:00 pm)
EXERCISE EVALUATION/WORKSHOP CRITIQUE.	4th 3:00 pm (4:00 pm)

Basic Components of an Exercise



SCENARIO

The basic component of the exercise from which the exercise is designed. Written to reflect a synopsis of the total exercise including some jurisdictional background, pre-, trans-, and post-disaster conditions thru exercise termination.

PURPOSE: Serves to paint a verbal picture of entire situation & enables participants to assume their roles...sets the stage for exercise conduct.

MUST: Be based on exercise objectives to enable participants to grasp what is expected to happen.
Reflect accurate data about the jurisdiction, its demography, its hazards.
Specify dates pertinent to exercise play.

First step of "Outline" for exercise play:

I. Scenario

MAJOR SEQUENCE OF EVENTS

A listing of the major events which take place during the emergency/disaster. This listing begins with the buildup conditions (or the actual disaster strike).

PURPOSE: Serves to operationalize the scenario by listing short, concise events statements.

MUST: Contain events tied to the scenario.
Reflect accurate data.
Specify dates and times.
Helps identify specific actions participants must take.

Second step of "Outline" for exercise play:

- I. Scenario

- A. Major Sequence of Events**

DETAILED SEQUENCE OF EVENTS

A more detailed listing of exercise events/inputs that would logically follow the events contained in the major sequence.

PURPOSE: Provides more specific information for design purposes and further precipitates events/actions...magnifies the major sequence.

MUST: Contain events tied to both the scenario & major sequence of events.
Serve dual role of detailed listing and first message for each related set of messages/problems.
Precipitate actions designed to satisfy exercise objectives.
Specify dates and times of events.

Third step of "Outline" for exercise play:

I. Scenario

A. Major Sequence of Events

1. Detailed Sequence of Events

MESSAGES

The specific problems and situations which require action by exercise participants.

PURPOSE: To generate exercise play by providing participants problems, situations and/or information about the simulated disaster conditions.

MUST: Tell what, when, where, who, how.
Be brief, concise and in understandable language.
Provide room for participant response, and yet not provide the solution/response.
Be directed appropriately.
Provide adequate, realistic information.
Be pertinent to the detailed sequence and timed according to same.
Be appropriate to type of exercise and to level of jurisdiction(s) involved.

Fourth step of "Outline" for exercise play:

I. Scenario.

A. Major Sequence of Events

1. Detailed Sequence of Events

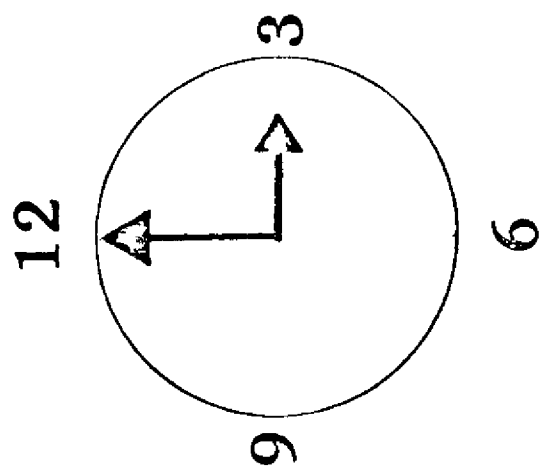
a. Messages

Simulation Procedures/Decisions

- Resource Utilization
- Factors of Time
- Disaster Agent
- Communications, Warning, and Message Input

Simulation Decisions

Actual Time



Exercise Time

