

25-Year Evolution of the DOE Operational Emergency

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25-Year Evolution of the DOE Operational Emergency

PROLOGUE

“It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us...”

Charlie D.

“You don’t need a weatherman... To know which way the wind blows”

Bobbie D.

25-Year Evolution of the DOE Operational Emergency

OBJECTIVES

Review the evolution of the Operational Emergency (OE) concept over ~25 years:

- ***OE definition***
- ***Categorization***
- ***Role of the OE***
- **EXAMPLE: OEs Requiring Classification**

OPERATIONAL EMERGENCY

Definition - 1991

Operational Emergencies (OEs):

- **WHAT** ...significant *accidents, incidents, events, or natural phenomena*
- **IMPACT** ...have, or potentially can, *seriously degrade* the safety or security of DOE facilities.

OPERATIONAL EMERGENCY

Definition - 1995

Operational Emergencies (OEs):

- **WHAT** ...*unplanned*, significant *events or conditions*
- **IMPACT** ...caused by, involve, or affect DOE facilities, sites, or activities
...represent a significant degradation in the level of safety at a site/facility
 - Serious health and safety impacts to workers and the public
 - Serious detrimental effects on the environment
 - Direct harm to people or environment as a result of degradation of security or safeguards
 - Loss of control over hazardous materials
- **RESPONSE** ...time-urgent response from *outside* the immediate/affected site/facility or area of the incident

OPERATIONAL EMERGENCY

Definition - 2005

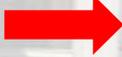
Operational Emergencies (OEs):

- **WHAT** ... *major* unplanned or abnormal events or conditions
- **IMPACT** ...involve or affect DOE/NNSA facilities and activities
...causing or having the potential to cause serious health and safety or environmental impacts; **AND**
- **RESPONSE** ...resources from outside the immediate/affected area or local event scene to *supplement* the initial response;
AND
...time-urgent notifications to initiate response activities at locations *beyond the event scene*.

OPERATIONAL EMERGENCY

Review Definition: 1986 - 2011

Evolution of OE Definition:

- **WHAT** ... significant  **MAJOR**
- **IMPACT** ... degrade level of safety or security  **health and safety or environmental impacts**
- **RESPONSE** ... **No RESPONSE Characterization**
 -  ...time-urgent response from **outside** the immediate/affected site/facility or area
 -  ...resources from outside the immediate/affected area or local event scene to **supplement** the initial response;
AND
...time-urgent notifications to initiate response activities at locations **beyond the event scene**

OPERATIONAL EMERGENCY

Impact of Definition: 1986 - 2011

- Impact on ***Categorization***
 - Increased emphasis on **OE** as a **MAJOR** event ***versus*** a “worker safety incident”
 - Increased emphasis on ***response characteristics*** of an **OE**
- Clarification of ***Role in Emergency Management***
 - Increased emphasis on ***response characteristics*** of an **OE**

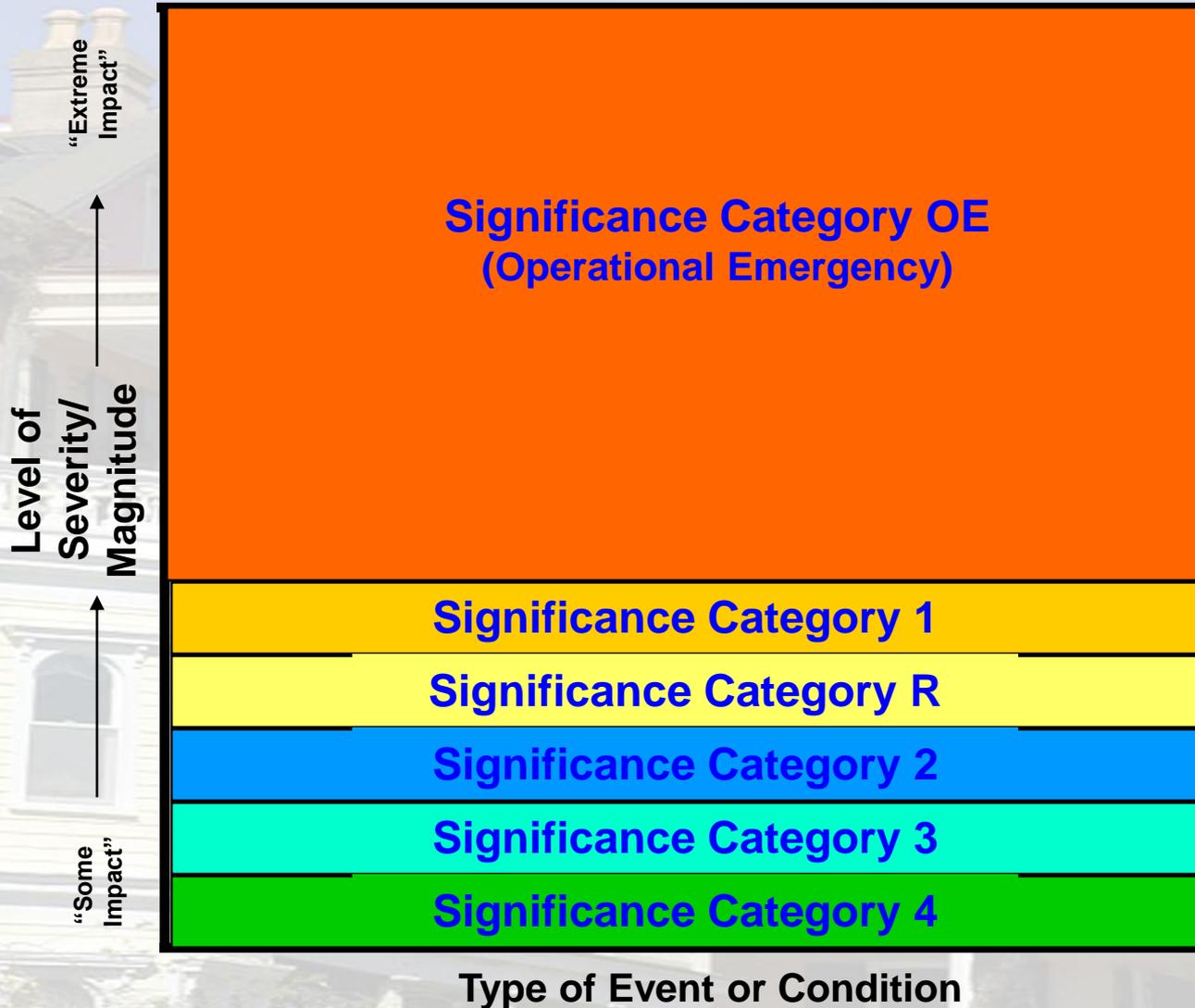
OPERATIONAL EMERGENCY Categorization

- In **1995** a number of Operational Emergencies **NOT** requiring classification were defined in DOE O 151.1
 - Involved severe events that impact **health and safety** or the **environment**
- With these definitions, **occurrence criteria groups** were merged with appropriate OEs to develop a **spectrum of event severity** for selected groups (e.g., Environmental, Personnel Safety, etc.)

OPERATIONAL EMERGENCY Categorization

- By **2005**, the **OEs** are *fully integrated* within the *significance category structure* in the Occurrence Reporting System
 - **Operational Emergency (OE)** is a Significance Category (i.e., SC OE)
- **Significance Category OE** occurrences are more serious than Significance Category 1 - 4 Occurrences, **require more/diverse resources for response** and “*an increased alert status for onsite personnel and, in specified cases, for offsite authorities.*”

SPECTRUM OF OCCURRENCES



OPERATIONAL EMERGENCY Categorization

NOT EVERY EVENT

that involves a functional response (fire, medical, HAZMAT, security, etc.)

is an **Operational Emergency**

OPERATIONAL EMERGENCY Categorization

What events are (generally) **NOT** intended to be OEs?

- Incidents that can be **controlled by employees or maintenance personnel** in the immediate/affected facility or area
- Incidents that **do not pose a significant hazard** to safety, health, and/or the environment and that **do not require a time-urgent response**

DOE O 151.1C

OPERATIONAL EMERGENCY Categorization

What events are (generally) **NOT** intended to be OEs?

- **NOT** a usual ambulance run, fatality or no;
- **NOT** a typical fire department response, mutual aid standing-by or no;
- **NOT** a typical security response to an alarm;
- **NOT** the normal response of HAZMAT spill control or RADCON personnel to an event;
- **NOT** the outage/unavailability of a safety system or response asset

OPERATIONAL EMERGENCY Categorization

- The **categorization decision** needs to consider the **OE definition** in its entirety, with no one aspect of the definition dominating the decision process
- The **process of OE categorization** involves *judgments* on a number of subjective issues, including:
 - Perceptions of the **magnitude** of the event
 - **Unique** circumstances of the specific event
 - General **need** for “**emergency management**” (i.e., multiple skills, additional resources, etc.)
 - The site’s **political situation** and its relationship with its neighbors
 - A sense of what DOE/NNSA **Headquarters** needs to be informed of promptly in order to interface with other Federal agencies at the highest levels

Role of the OPERATIONAL EMERGENCY

- Over the past ~25 years the Operational Emergency (OE) has **evolved** ...
 - **from** a significant event
 - **to** a MAJOR event that reflects characteristics of an “**emergency management**” response
- At the same time, the **role of the OE** has been clarified to reflect its **link to “emergency management”** response

Role of the OPERATIONAL EMERGENCY

- In the DOE Comprehensive Emergency Management System, the **Operational Emergency** is intended to denote an actual or potential emergency event that ...

 Requires “*emergency management*” to ensure a timely and effective response

- Supplement initial response units
- Multiple units and/or response skills
- Interfaces, coordination, communication
- Offsite response activities
- Impacts ***beyond*** local event scene

Role of the OPERATIONAL EMERGENCY

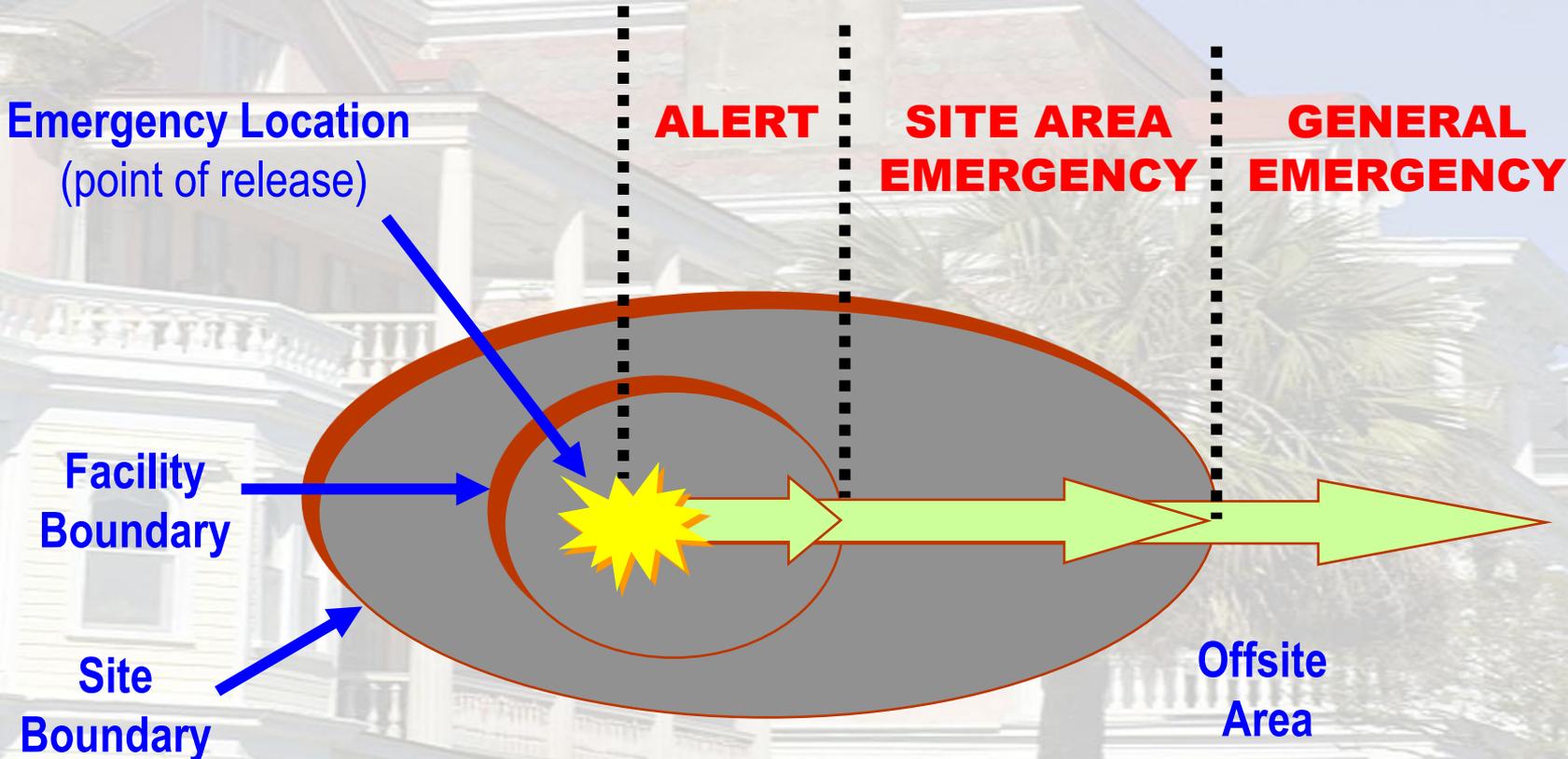
Operational Emergencies are intended
to initiate an **EMERGENCY**
MANAGEMENT response
“commensurate with hazards”

OPERATIONAL EMERGENCY Requiring Classification

EXAMPLE

- If the emergency is an airborne Hazardous Material Release Operational Emergency, it is **classified** according to the following options in order of increasing severity: **Alert**, **Site Area Emergency**, and **General Emergency**
- Operational Emergencies Requiring Classification are intended to initiate an “*emergency management*” response ... “*commensurate with the hazards*”
- Differentiation of these classes by **severity** is intended to **specify** appropriate emergency actions

OPERATIONAL EMERGENCY Requiring Classification



OPERATIONAL EMERGENCY Definition

- Combined with the evolved concept of an OE, the **classification (categorization)** of OE events is *intended* to be a subjective decision process involving a **holistic** assessment of both:
 - *Qualitative* criteria (i.e., response characteristics)
 - *Quantitative* criteria [i.e., OE definitions – Alert, Site Area Emergency (SAE), General Emergency (GE)]
- Consideration of these criteria is *intended* to enable the decision-maker to distinguish an **OE Requiring Classification** from a “worker safety incident”

OPERATIONAL EMERGENCY Classification

- **ALERT:**

- **1991:**

- Any release of hazardous materials is expected to be limited to **small fractions** of the appropriate PAG or ERPG **onsite**

- **1995:**

- The radiation dose or a concentration in air is expected to exceed either:
 1. The applicable PAG or ERPG at or beyond **30 meters** from the point of release or
 2. **Small fraction** of the applicable PAG or ERPG at or beyond the facility boundary **or exclusion zone boundary**
 - It is not expected that the PAG or ERPG will be **exceeded at or beyond** the facility boundary or exclusion zone boundary

OPERATIONAL EMERGENCY Classification

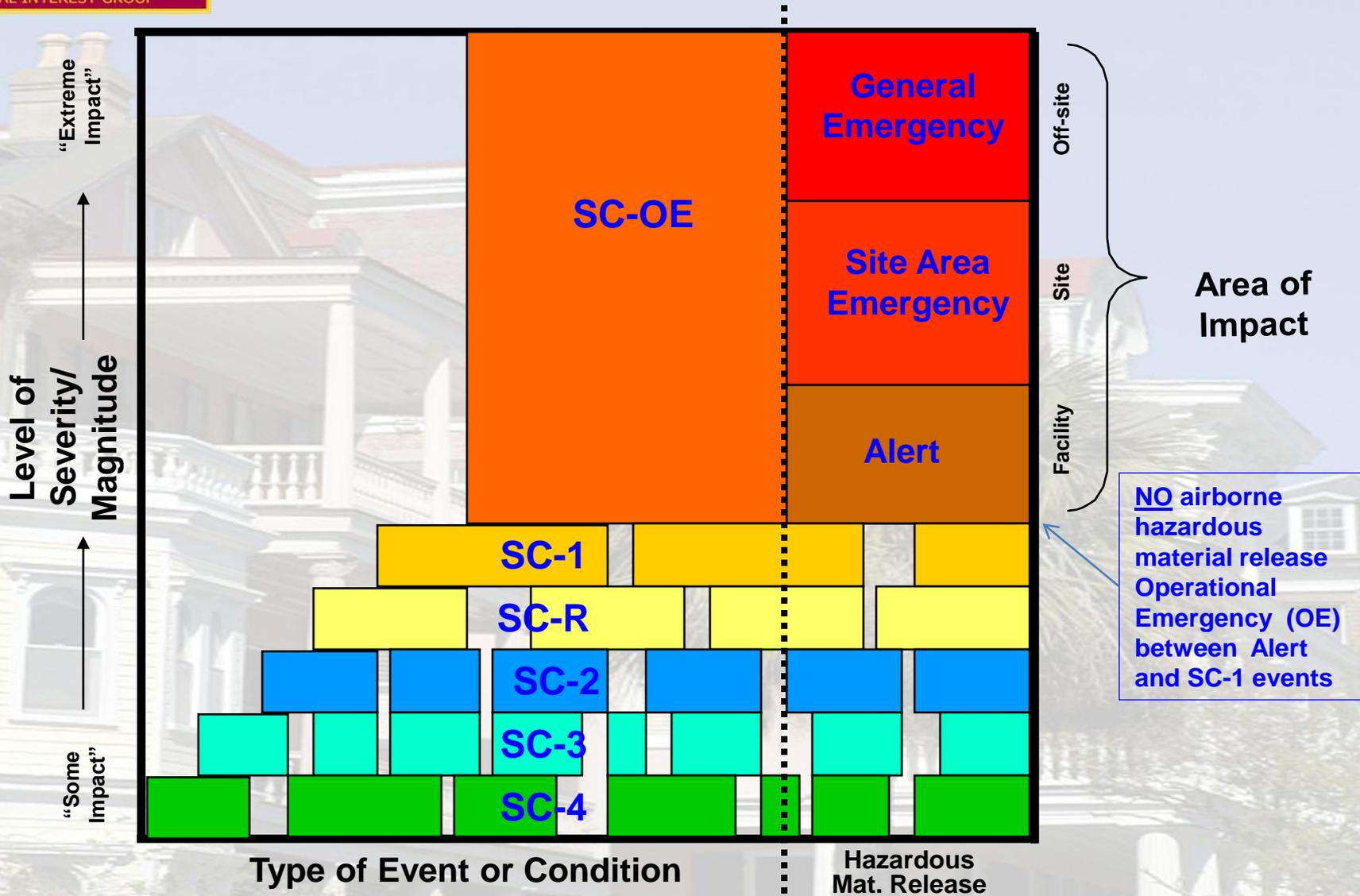
- **ALERT:** (cont'd)
 - **2005:**
 - The radiation dose or a concentration in air is expected to exceed either—
 1. **10 percent** of the applicable **PAC** at or beyond the facility boundary, or
 2. the applicable **PAC** at or beyond **30 meters** from the point of release to the environment
 - It is not expected that the applicable **PAC** will be exceeded at or beyond the facility boundary

OPERATIONAL EMERGENCY Classification

1986 → 2011

- Quantitative **classification criteria**:
 - Evolved to more precise boundary constraints
 - Lower limit for Alert definition added, producing “donut” area using **30m** (alternative **0.1PAC** at Facility boundary yields *similar* result)
 - Distinguished “worker safety incident” from “Operational Emergency”
 - PAC replaced “PAG or ERPG”
- **NOTE**: There is ***no*** *OE not requiring classification* for an airborne hazardous material release ***between Alert and SC-1 events.***
 - ***However, there may be special, site-specific circumstances that could override this general policy guidance***

SPECTRUM OF OCCURRENCES



Role of the OPERATIONAL EMERGENCY

Other than to ***JUST*** satisfy ***another*** “DOE HQ requirement”

WHY O WHY

DO WE CLASSIFY?

... and promptly at that!

! WARNING !

EMERGENCY CLASSIFICATION

IS SECONDARY

**TO PERSONNEL AND FACILITY
SAFETY**

**Unspecified Site
Circa 2000**

Role of the OPERATIONAL EMERGENCY

Reminder ... 1986 to 2011

The purpose of an event **classification** system is:

- To initiate a set of **pre-planned response actions** appropriate to all events of a given class or severity (e.g., notification, mobilization of resources, and protective actions)
 - **Accurate event classification is key to achieving a graded “emergency management” response**
- To **activate** necessary analytical and decision-making capabilities to make sound determinations of the need for other actions
- To enhance the likelihood that **mitigative actions** will be taken to prevent conditions from becoming more severe

Role of the OPERATIONAL EMERGENCY

Reminder ... 1986 to 2011

The purpose of an event **classification** system is: (cont'd)

- **Mobilization** of resources to better manage the event or arrest degradation of safety
- To provide sufficient lead time to activate facilities and prepare for **protective actions**
- ***Protection of the public and employees at some distance from the event site***
- Prompt and accurate **flow of information**

Role of the OPERATIONAL EMERGENCY

ALERT:

- **Response** does *not* necessarily require the **activation of response centers**, but does require **availability** of personnel and resources to—
 - **Continuously** assess pertinent information for DOE/NNSA decision makers, offsite authorities, the public, and other appropriate entities;
 - **Conduct** appropriate assessments, investigations, or preliminary sampling and monitoring;
 - **Mitigate** the severity of the occurrence or its consequences; and
 - **Prepare** for other response actions should the situation become more serious, requiring EROs to mobilize or activate resources.

Role of the OPERATIONAL EMERGENCY

SITE AREA EMERGENCY:

- **Response** same as for an *Alert...*
PLUS—
 - Initiation of predetermined protective actions for onsite personnel;
 - Notification and assembly of emergency response personnel and equipment to **activate response centers** and to establish communications, consultation, and liaison with offsite authorities;
 - Provision of information to the **public and the media**;
 - Implementation of or assistance in any **evacuations and sheltering**; and
 - **Mobilization** of appropriate emergency response groups or protective/security forces for immediate dispatch should the situation become more serious.

Role of the OPERATIONAL EMERGENCY

GENERAL EMERGENCY:

- **Response** same as for a *Site Area Emergency*...
PLUS—
 - Notification, mobilization, and dispatch of **all appropriate emergency response personnel and equipment**, including appropriate DOE emergency response assets, and
 - **Liaison with offsite authorities** for the recommendation of predetermined public protective actions.

25-Year Evolution of the DOE Operational Emergency

SUMMARY

- **General**

- **OE Definition**

- Emphasis on OE as MAJOR event
 - **Spectrum** of severity defined
 - Distinguish OE from “worker safety incident”
 - Emphasis on response characteristics of OE

- **Categorization**

- Categorization involves subjective decision based on **quantitative** (i.e., OE definition) and **qualitative** criteria (i.e., response characteristics)

- **Role of OE**

- OE requires **“emergency management”** response (“commensurate with hazards”)

25-Year Evolution of the DOE Operational Emergency

SUMMARY (cont'd)

- **OEs Requiring Classification**
 - **OE Definition**
 - ALERT definition defines “**worker safety incident**” versus **Operational Emergency** event (“donut area” using 30m cutoff)
 - No OE between ALERT and Significance Category 1-4
 - **Classification (Categorization)**
 - Quantitative criterion (Alert, SAE, or GE) provides **ONE** criterion for classification and OE response characteristics provide **OTHERS**
 - **Role of OE**
 - Initiates pre-planned, graded “**emergency management**” response by **level of severity** – Alert, SAE, GE
 - Protection of public and employees
 - at “**some distance from the event**”
 - Initiated with an **SAE** or **GE**

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EPILOGUE

“Ah you’ve been with the professors and they’ve all liked your looks
With great lawyers you have discussed lepers and crooks
You’ve been through all of F. Scott Fitzgerald’s books
You’re very well read, it’s well known
But something is happening here and you don’t know what it is
do you, Mr. Jones?”

Bobbie D.

*“It is a far, far better thing that I do, than I have ever
done; it is a far, far better rest that I go to, than I have
ever known.”*

Charlie D.

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THE END