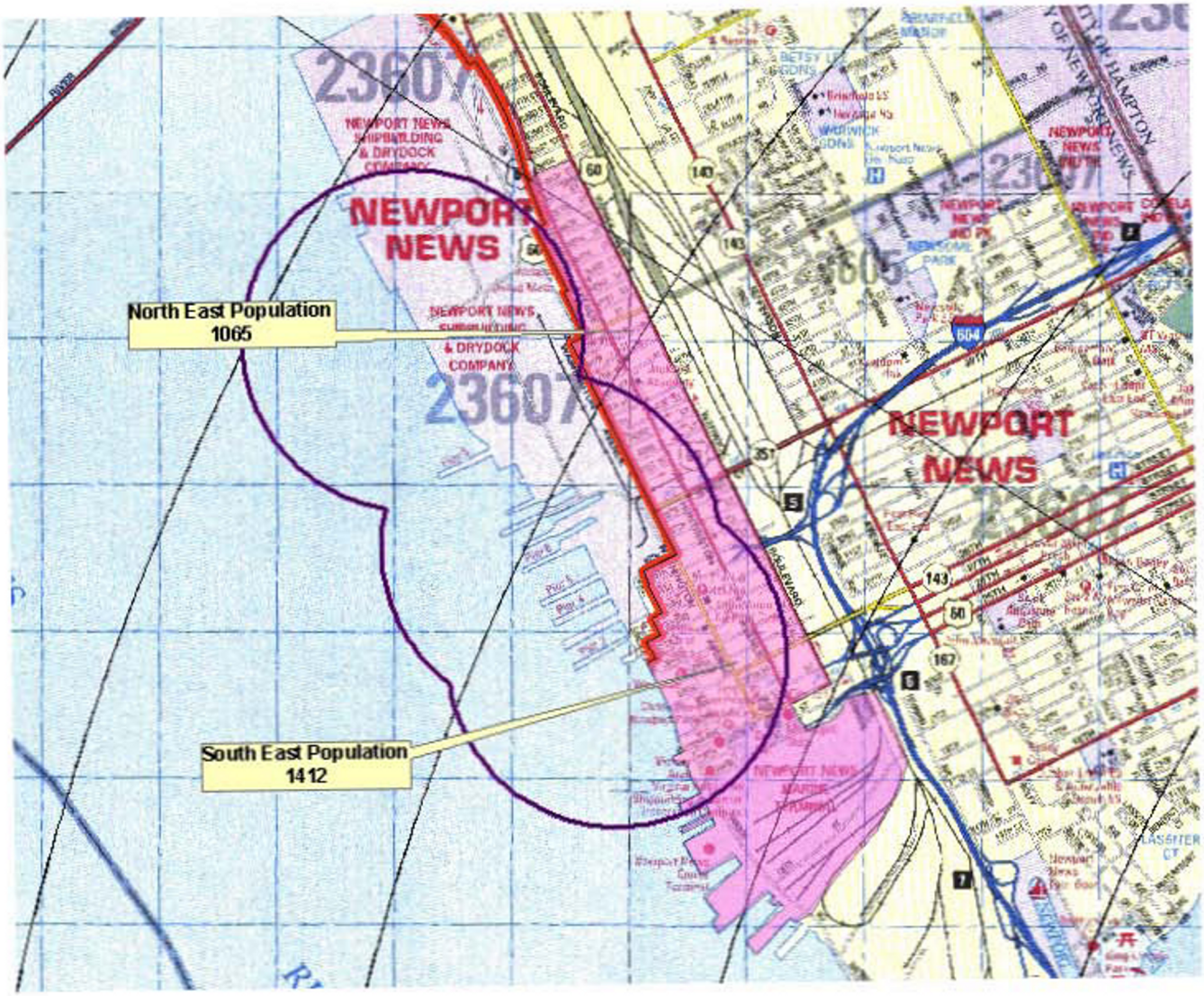
Tab G to Appendix 17
Figure 6

Northrop Grumman Newport News Affected Population in the Area of Planning Attention



Area of Planning Attention
Base Perimeter

Affected Population Area

Tab H to Appendix 17

MEDICAL SERVICES

Medical treatment takes precedence over radiological controls. Treatment of serious injuries (e.g., severe trauma, shock, hemorrhage, and embarrassment of respiration) ***always takes precedence*** over decontamination or containment procedures, treatment of possible symptoms from irradiation and dose estimation procedures. Exposure to radioactive contamination either external or internal, rarely constitutes a medical emergency.

For NNPP emergencies, medical emergency response personnel are not impeded when proceeding to render emergency care. Any radiological concerns and questions posed by medical personnel are quickly addressed by trained NNPP radiological and health physics personnel. NNPP personnel are aware that medical responders may receive limited radiological training. Therefore, trained NNPP radiological monitoring and health physics personnel are provided to assist and advise medical responders at the scene, in the ambulance, and at the hospital.

Injured/contaminated personnel are not normally decontaminated prior to hospital arrival. Under no circumstance should an individual be denied treatment or access to a medical treatment facility because of radioactive contamination. Radiological controls should be implemented only after the patient has been medically stabilized. Both Naval Medical Center Portsmouth and Sentara General Hospital are trained and equipped to handle such emergencies.

During radiological emergencies, health services will: (1) provide emergency medical care and treatment for victims of radiation exposure, and (2) take preventive and remedial measures to minimize the detrimental effects of radiation exposure, to include the special health problems that result. Reference Annex I-J, Emergency Health Services, Volume II, Commonwealth of Virginia Emergency Operations Plan - Peacetime Disasters.

Local governments will respond to radiological emergencies using local resources. If requirements exceed local capabilities, the local health department will obtain assistance from adjacent localities through normal mutual support procedures or by requesting it from the Health Department. Orders will be placed with normal sources of supply. Orders that cannot be filled through normal distribution channels will be forwarded to the State Commissioner of Health. Essential health activities and facilities will be authorized to certify purchase orders. Military hospital assistance will be provided on a reimbursable basis only. Requests for this assistance will be forwarded to the Department of Emergency Management.

The Health Department provides assistance to local health departments, as required, with emphasis on the special requirements for those victims of radiation exposure or possible radiation exposure.

Tab H to Appendix 17 (Continued)

HOSPITALS

The hospitals listed below are the primary hospitals for individuals that are both contaminated and injured during NNPP events. They have facilities to isolate and decontaminate such patients.

For Norfolk Naval Shipyard:
Naval Medical Center Portsmouth
757-953-1365 (Emergency Dispatch), 757-953-5008 (General Information)

For Naval Station Norfolk:
Sentara Norfolk General Hospital
757-668-3551 (ER), 757-668-3000 (General Information)

For Northrop Grumman Newport News:
Riverside Hospital
757-594-2050 (ER), 757-594-2000 (General Information)

Appendix 18:
DEFINITIONS AND ACRONYMS

Absorbed Dose

The energy imparted by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the red and the gray.

Accident

An event occurring by chance.

Aerial Measurement System (AMS)

Performs aerial measurements of ground and airborne radioactivity over large areas by utilizing instrumentation for detecting and recording gamma radiation, both as gross count rates and gamma energy spectra. Equipment for determining the position of the aircraft is integrated into the system.

Air Sampler

A device used to collect a sample of the radioactive particulates suspended in the air.

Airborne Radioactive Material

Radioactive material dispersed in the air in the form of dusts, fumes, particulates, mists, vapors, or gases.

ALARA

Acronym for keeping radiation exposure "As Low As Reasonably Achievable."

Alpha Particle

A particle, identical to the nucleus of a helium atom, that is emitted spontaneously from the nucleus of some radioactive elements. Alpha particles have very little penetrating power; however, they are hazardous if ingested or inhaled.

Anti-Contamination Clothing (Anti-C's)

Clothing types include the following: coveralls, shoe covers, gloves, and hood or hair cap. Anti-contamination clothing provides protection for the user from alpha radiation, and is also a control device to prevent the spread of contamination. A respirator can be worn with the anti-contamination clothing that provides protection against the inhalation of contaminants.

Area Commander

The U.S. Navy command predesignated as having responsibility for implementing and executing actions for immediate and on-site mitigation of a radiological or reactor accident involving NNPP facilities, ships, or equipment.

Area of Planning Attention

The NNPP equivalent of Emergency Planning Zones (EPZ). The Area of Planning Attention extends 0.5 miles around the location where a NNPP nuclear-powered vessel is normally berthed.

Assessment Actions

Those actions taken during an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

Atmospheric Release Advisory Capability (ARAC)

A DOE asset capable of providing a computer generated model of the most probable path of the radioactive contamination releases at an accident site.

Atmospheric Stability Classification System

A system of classification which categorizes the turbulent structure of the atmosphere. Under this system, the most unstable condition where mixing and diffusion of the atmosphere occurs freely is categorized as Class A and the most stable condition is categorized as Class F, i.e., thermal inversion conditions where the least diffusion occurs.

Atom

The smallest particle of an element that cannot be divided or broken up by chemical means.

Background Count

(In connection with health protection). The background count includes radiation produced by naturally occurring radioactivity and cosmic rays.

Background Radiation

Radiation arising from radioactive material other than the one under consideration. Background radiation due to cosmic rays and natural radioactivity is always present.

Backup Route Alerting

Method of alerting the public in the event one or more sirens fail to sound. Methods of backup route alerting include, but are not limited to, the use of vehicles equipped with loudspeakers, door-to-door notification and phone calls.

Bent Spear

A term used in the DOD to identify and report a nuclear incident involving a nuclear weapon/warhead or nuclear components. In the Army and Air Force, this term also includes a "significant incident" as defined in DOD Directive 5100.52.

Beta Particle

A charged particle emitted from a nucleus during radioactive decay. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body.

Broken Arrow

A term used in the Department of Defense (DOD) to identify and report an accident involving a nuclear weapon/warhead or nuclear component. In the Navy this includes a "significant incident" as defined in DOD Directive 5100.52.

BRH

Bureau of Radiological Health.

Buffer Sections

Those parts of the ten-mile EPZ in which immediate protective action is taken during a radiological emergency and corresponds to the two 22.5 degree sectors flanking each side of the 22.5 degree primary sector. Therefore, immediate protective action is taken in a 67.5 degree sector.

CDE

Committed Dose Equivalent, the dose equivalent to organs or tissues that will be received from an intake of radioactive material by an individual during the 50-year period following intake, e.g., thyroid dose from inhalation of Radioiodines.

CEDE

Committed Effective Dose Equivalent, dose incurred from inhalation of radioactive materials. The sum of the products of weighting factors applicable to each of the body organs or tissues that are irradiated, and the Committed Dose Equivalent to these organs or tissues.

CAP

Civil Air Patrol (CAP), Virginia Wing - CAP provides the primary tactical radio communications between the state and local government EOCs as well as CAP field units.

CDWS

Civil Defense Warning System (CDWS) - The total system over which a warning or other emergency information is transmitted throughout the nation. NAWAS is Federal side, while VAWAS is State side. It consists of fully federally funded and/or partially federally funded systems. In Virginia, NAWAS, VAWAS, and WAWAS comprise the in-state components of the Civil Defense Warning System. (Also see VCIN).

COE

Corps of Engineers

Cognizant Federal Agency (CFA)

The Cognizant Federal Agency is that Federal agency having custody of the weapon at the time of the accident. The CFA is responsible to:

- Conduct and manage Federal on-site actions.

- Develop or evaluate recommendations for public protective action measures offsite.

- Present recommendations for off-site protective action measures, in coordination with FEMA, to the appropriate State and local officials.

Commonwealth Telecommunications Network (CTN)

A statewide telephone system used by state agencies for telephone communications.

Contamination

Radioactive material spread on surfaces where it is not supposed to be.

Contamination Control

Procedures to avoid, reduce, remove, or render harmless, temporarily or permanently, nuclear, biological, chemical agent and hazardous materials contamination.

Corrective Actions

Those emergency measures taken to ameliorate or terminate an emergency situation at or near the source of the problem in order to prevent an uncontrolled release of radioactive material or to reduce the magnitude of a release, e.g., shutting down equipment, fire fighting, repair, and damage control.

COV

Commonwealth of Virginia

CPM

Counts Per Minute

CPX

Command Post Exercise

Cumulative Dose (Radiation)

The total dose resulting from repeated exposure to radiation in the same region, or of the whole body.

Curie (Ci)

That quantity of radioactive material that emits 3.7 x 10 of disintegrations per second.

Decay (Radioactive)

The decrease in the radiation intensity of any radioactive material with respect to time.

Decontamination

The removal of radioactive materials from a surface. Usually accomplished by brushing off or washing an area with one of several compounds.

Decontamination Station

A building or location equipped and organized to cleanse personnel and material of chemical, biological, or radiological contaminants.

Deep Dose Equivalent (DDE)

A measure of direct external radiation exposure to the body (e.g., cloud shine, contamination or direct radiation). DDE is assumed equivalent to Effective (external) Dose Equivalent (EDE) with respect to uniform exposure. DDE is the dose equivalent at a tissue depth of 1 cm.

a. Current pocket dosimeters (self-reading, electronic, etc.) do not directly assess EDE, but typically assess body surface dose rate (DDE).

b. Since the sum of the weighting factors is one, and since body tissue attenuation could reduce organ DE, the use of body surface dose rate could slightly overestimate the actual organ EDE.

c. In lieu of determining EDE, the NRC assumes that the DDE, as measured by the TLD, is equivalent to the EDE.

d. The dose recorded by dosimeters for emergency workers will be taken as the DDE (equivalent to EDE) without adjustment for estimating field dose.

Defense Coordinating Officer (DCO)

A military or civilian official of any DOD Component, who has been designated by the DOD Executive Agent to exercise some delegated authority of the DOD Executive Agent to coordinate MSCA activities under this Directive. The authority of each DCO will be defined in documentation issued or authorized by the DOD Executive Agent, and will be limited either to the requirements of a specified interagency planning process or to a specified geographic area or emergency. (The DOD Executive Agent also may delegate authority to designate DCO's to any DoD Planning Agent specified in this Directive.)

Defense-in-Depth

The nuclear power plant design basis used to ensure maximum protection of the environment from an inadvertent release of fission products.

Deposition

Physical settling or placing of radioactive material onto a surface. Fallout may be deposited on surfaces. Material ingested or inhaled by an individual may be deposited in the lungs or other organs.

DHS

Department of Homeland Security

DNA

Defense Nuclear Agency.

DOC

Department of Commerce.

DOD

Department of Defense.

(DOD) Executive Agent

An individual designated by position to facilitate and coordinate MSCA contingency planning (and MSCA operations when ordered) by all DoD Components within an assigned geographic area in accordance with the requirements of this Directive.

DOE

Department of Energy.

DOI

Department of the Interior.

DOS

Department of State.

Dose

A general term denoting the quantity of radiation or energy absorbed. Dose may refer to absorbed dose, the amount of energy deposited per unit mass, or to equivalent dose, the absorbed dose adjusted for the relative biological effect of the type of radiation being measured.

Dose Equivalent

The product of the absorbed dose in tissue, quality factor, and all other necessary modifying factors at the location of interest. The units of Dose Equivalent are the R and Sievert (Sv).

Dose, Projected

Estimated radiation dose which affected population groups may potentially receive if no protective actions are taken.

Dose, Radiation

Quantity of radiation absorbed, per unit of mass, by the body or any portion of the body (R is a unit of equivalent dose measurement).

Dose Rate

The amount of radiation to which an individual would be exposed per unit of time.

Dosimeter

An instrument for measuring and registering total accumulated exposure to penetrating ionizing radiation.

DOT

Department of Transportation.

Dull Sword

Any mishap which could cause damage to a weapon that field units are authorized to correct. Includes any deliberate unauthorized act that degrades weapon reliability or safety such as damage or malfunction of the suspension and release systems, or the failure of

handling, loading, storage, maintenance, transportation, or test equipment involving a nuclear weapon.

EAS

Emergency Alert System (EAS) - A system composed of AM radio, FM radio, and TV commercial broadcast stations (cable) operating on a voluntary, organized basis during emergencies. Its purpose is to provide federal, state, and local government a means of transmitting emergency information and instruction to the public during an actual or simulated emergency.

ECC

The projected site from which NNPP area commanders exercise direction and control in an emergency.

EDE

Effective (external) Dose Equivalent, exposure due to immersion (EDE and DDE are equivalent if the body exposure is uniform).

EICC

Emergency Information and Coordination Center.

Emergency

An event which inflicts or threatens to inflict serious damage to property or people.

Emergency Action Levels

Radiological dose rates (specific contamination levels of airborne, waterborne, or surface-deposited concentrations of radioactive materials) that may be used as thresholds for initiating such specific emergency measures as designating a particular class of emergency, initiating a notification procedure, or a particular protective action.

EMS

Emergency Medical Services.

Emergency Operations Center (EOC)

The projected site from which government officials exercise direction and control in an emergency.

Emergency Operation Facility (EOF)

This facility will be operated by the licensee for continued evaluation and coordination of all licensee activities related to an emergency having or potentially having environmental consequences. The facility will have sufficient space to accommodate representatives from Federal, State, and local governments as appropriate. In addition, the major State and local response agencies may provide for data analysis jointly with the operator at this location. The Local Emergency Operations Facility will provide information needed by Federal, State, and local authorities for implementation of off-site emergency plans in addition to a centralized meeting location for key representatives from the agencies. Recovery operations will be managed from this facility during the emergency phase.

EOP

Emergency Operations Plan.

Emergency Worker

Any person engaged in operations required to minimize the effects of a fixed nuclear facility (or other radiological) emergency.

EPA

Environmental Protection Agency.

EPZ

Emergency Planning Zone.

Equivalent Iodine-131 (Eq. I-131)

The number of curies of I-131 which would cause approximately the same biological effect to the thyroid as the spectrum of radioisotopes released.

Equivalent Xenon-133 (Eq. Xe-133)

The number of curies of Xe-133 which would cause approximately the same biological effect to the whole body as the spectrum of radioisotopes released.

Evacuation

The urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from a plume and/or from deposited activity.

Evacuation Assembly Center (EAC)

A facility located beyond 15 miles of a nuclear power station where the public, evacuated from up to 10 miles of the power station, will be received, monitored for contamination, decontaminated, if necessary, and provided with emergency medical and nursing coverage, clothing, and supplies. EACs are established and operated by local governments or by adjacent political subdivisions through mutual support agreements. In all cases except one, schools are used as EACs. Staffing for these facilities consists of County/City employees and volunteers. The American Red Cross may assume responsibilities for specific functions such as bedding, feeding, registration, and medical support. These functions will be delineated in Statements of Understanding between a specific local government and the American Red Cross.

Evacuation Zone

See Protective Action Zones.

Exclusion Area

The area surrounding the reactor in which the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property from the area.

Explosion

The rapid release of a large amount of energy within a limited space.

Exposure

The total amount of radiation to which an individual is exposed. Similar to "dose."

External Dose

That portion of the dose equivalent received from radiation sources outside of the body.

FAA

Federal Aviation Administration.

Faded Giant

A DOD term to identify a nuclear reactor accident or an accident involving nuclear material.

FBI

Federal Bureau of Investigations

FDA

Food and Drug Administration

Federal Emergency Management Agency (FEMA)

This agency establishes Federal policies for and coordinates all civil defense and civil emergency planning, management, mitigation, and assistance functions of executive agencies. FEMA assists local and state agencies in their emergency planning. Its primary role in a radiological or nuclear accident is one of coordinating Federal, state, local and volunteer response actions.

FNAMS

Federal National Automated Message System (FNAMS) - A landline data system that links the state Emergency Management offices, the FEMA Federal Regional Centers, the FEMA regional offices, and FEMA National Headquarters together.

Film Badge

A photographic film packet or badge carried by personnel, for measuring and recording gamma ray dosage permanently.

Fission

The splitting of an atom resulting in the release of neutrons, energy, and two or more smaller atoms.

Fission Product

An atom produced through the splitting (fissioning) of a larger atom.

Fixed Nuclear Facility

A nuclear power station, nuclear reactor, fuel fabrication or reprocessing plant, test research or university reactor, or any other facility using or producing large quantities of radioactive materials.

FRC

Federal Response Center. The on-site focal point established by the Senior FEMA Official (SFO), as required, for coordinating the Federal response to a nuclear weapon accident or significant incident. Representatives of other Federal, state, local, and volunteer agencies may be located in the center. A Disaster Field Office (DFO) may be established in lieu of the FRC.

FRMAC

Federal Radiological Monitoring Assessment Center. A center established near the scene of a radiological emergency responsible for off-site radiological response from which the FRMAC Director conducts the FRMAP response. This center need not be located near the on-site or Federal-State operations centers as long as its operations can be coordinated with them. Staffed by DOE NV.

FRMAP

Federal Radiological Monitoring Assessment Plan.

FTS

Federal Telecommunications System.

Gamma Rays

Radiations of high energy originating in atomic nuclei and accompanying many nuclear reactions. Gamma rays do not consist of particles, have no mass, travel at the speed of light, are highly penetrating, and may cause damage to living tissue.

Half-Life

The time required for the activity of a given radioactive species to decrease to half of its initial value due to radioactive decay. The half-life is a characteristic property of each radioactive species and is independent of its amount or condition. The effective half-life of a given isotope in the body is the time in which the quantity in the body will decrease to half as a result of both radioactive decay and biological elimination.

Hazardous Materials

Any material that is flammable, corrosive, an oxidizing agent, explosive, toxic, poisonous, etiological, radioactive, nuclear, unduly magnetic, a chemical agent, biological research material, compressed gases, or any other material that, because of its quantity, properties, or packaging, may endanger human life or property.

HF

High Frequency.

HHS

Department of Health and Human Services.

HUD

Department of Housing and Urban Development.

ICC

Interstate Commerce Commission.

Incident

An occurrence of a situation, accidental or otherwise (ex., sabotage).

(IND) - Improvised Nuclear Device Incident

Any event, resulting from a deliberate act, involving nuclear weapons or nuclear materials, which includes: (1) sabotage, seizure, theft or loss of a nuclear weapon or radiological nuclear weapon component, or (2) fabrication and employment of an IND.

Ingestion

The term used when radioactive materials are taken into the body through the mouth, such as by eating or drinking. Also applies when breathing results in the inhaled materials being swallowed.

Ingestion Exposure Pathway EPZ

An area delineated by a circle around a nuclear facility and used in preplanning of protective actions due to potential internal exposure from the ingestion of radioactive material through the food pathway. The time of potential exposure could range from hours

to months. The principal exposure from the ingestion exposure pathway would be from ingestion of contaminated water or foods, such as milk or fresh vegetables.

Inhalation

The term used when radioactive materials are taken into the lungs by breathing.

Instaphone

Instaphone - The telephone company terminology used to identify the installed telephone terminal equipment used at a local communications point. Instaphone circuits are specially designed to allow "instant" communications between all points on the circuit, without having to dial a number or depend upon normal commercial telephone circuits.

Internal Dose

That portion of the dose equivalent received from radioactive material taken into the body.

Ionization

The process of adding or removing one or more electrons to/from, atoms or molecules, thereby creating ions.

Ionizing Radiation

Any gamma rays, x-rays, alpha or beta particles, high-speed electrons, protons, or nuclear particles that displace electrons from atoms or molecules as they pass through matter thereby producing ions. Ionizing radiation may produce skin, tissue, or organ damage.

JIC

Joint Information Center.

JNACC

Joint Nuclear Accident Coordinating Center

KI

Potassium Iodide.

Label

A standard device or sign attached to the outside of a package of radioactive materials to identify the radiological hazards associated with it. See "Placard."

LFA

Lead Federal Agency.

Licensed Material

Source material, special nuclear material, or byproduct material received, possessed, used, or transferred under a general or specific license issued by the U.S. Nuclear Regulatory Commission (NRC).

Meltdown

The melting of nuclear fuel.

Member of the Public

An individual in a uncontrolled or unrestricted area. However, an individual is not a member of the public during any period in which the individual receives an occupational dose.

(MSCA) - Military Support to Civil Authorities

Those activities and measures taken by the DOD Components to foster mutual assistance and support between the Department of Defense and any civil government agency in planning or preparedness for, or in the application of resources for response to, the consequences of civil emergencies or attacks, including national security emergencies.

Milli-

The prefix used to designate one one-thousandth.

Millirem (MR)

A one-thousandth (0.001) of a Rem (R) (See Rem).

Milliroentgen

A one-thousandth (0.001) of a roentgen (See Roentgen).

Monitoring

The act of detecting the presence of radiation and the measurement thereof with radiation measuring instruments.

NAPS

North Anna Power Station.

NARP

Nuclear Weapon Accident Response Procedures Manual.

NASA

National Aeronautics and Space Administration.

NARAC

National Atmospheric Release Advisory Capability

National Defense Area (NDA)

An area established on non-Federal lands located within the United States, its possessions or territories, for the purpose of safeguarding classified defense information, or protecting DOD equipment and/or material. Establishment of a National Defense Area temporarily places such non-Federal lands under the effective control of the DOD and results only from an emergency event. The senior DOD representative at the scene will define the boundary, mark it with a physical barrier, and post warning signs. The landowner's consent and cooperation will be obtained whenever possible; however, military necessity will dictate the final decision regarding location, shape, and size of the NDA.

National Response Plan (NRP)

The NRP establishes a comprehensive, national, all-hazards approach to domestic incident management across a spectrum of activities including prevention, preparedness, response, and recovery.

National Security Area (NSA)

An area established on non-Federal lands located within the United States, its possessions, or territories, for safeguarding classified and/or restricted data information, or protecting DOE equipment and/or material. Establishment of an NSA temporarily places such non-Federal lands under the control of the DOE and results only from an emergency event. The senior DOE representative having custody of the material at the scene will define the boundary, mark it with a physical barrier, and post warning signs. The landowner's consent and cooperation will be obtained whenever possible; however, operational necessity will dictate the final decision regarding location, shape and size.

Naval Nuclear Ships

Nuclear powered naval ships under the technical direction of the Naval Nuclear Propulsion Program, which include submarines and aircraft carriers. The Commander of the affected naval nuclear ship is responsible for executing in-hull reactor plant casualty control actions and the ship's emergency response procedures.

Naval Nuclear Propulsion Program (NNPP)

The NNPP is a joint program of the U.S. Department of Energy and the U.S. Navy. The NNPP has regulatory authority for radioactivity pertaining to naval nuclear propulsion at all NNPP facilities and on all Naval Nuclear ships pursuant to the Atomic Energy Act and Executive Order 12344 (enacted as permanent law in 42 USC 7158).

Naval Nuclear Propulsion Program (NNPP) Facility

A Naval or Private facility that repairs, overhauls, and maintains nuclear-powered ships, or, a Naval facility that berths nuclear-powered ships. Minor repair work may be performed on nuclear-powered ships while berthed. All activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program (NNPP) at NNPP Facilities.

NCS

National Communications Center.

NDA

National Defense Area.

NAWAS

National Warning System (NAWAS) - The Federal portion of CDWS. (See I).

NEI

Nuclear Energy Institute (formerly Nuclear Management Resources Council, NUMARC) is the organization of the nuclear power industry that is responsible for coordinating the combined efforts of all utilities licensed by the NRC to construct or operate nuclear power plants, and of other nuclear industry organizations, in all matters involving generic regulatory policy issues and on the regulatory aspects of generic operational and technical issues affecting the nuclear power industry. Every utility responsible for constructing or operating a commercial nuclear power plant in the US is a member of NEI.

NEST - DOE Nuclear Emergency Search Team

The NEST was established in January 1975 under the management of the DOE Nevada Operations Office to enhance DOE's ability to search for and identify lost or stolen weapons and special nuclear materials, and to respond to nuclear bomb threats or radiation dispersal threats.

Neutron

A small particle possessing no electrical charge typically found within an atom's nucleus.

NMCC

National Military Command Center.

NNPP

Naval Nuclear Propulsion Program

NOAA

National Oceanic and Atmospheric Administration.

Nuclear/Radiological Incident Annex, National Response Plan

This provides an organized and integrated capability for a timely, coordinated response by Federal agencies to terrorist incidents involving nuclear or radioactive materials (Incidents of National Significance), and accidents or incidents involving such material that may or may not rise the level of an Incident of National Significance.

Nuclear Weapon

A device in which the explosion results from the energy released by reaction involving atomic nuclei, either fission of fusion, or both.

Nuclear Weapon Accident

An unexpected event involving nuclear weapons or nuclear components that results in any of the following:

- Accidental or unauthorized launching, firing, or use by U.S. forces or U.S. supported allied forces of a nuclear capable weapons system,
- An accidental, unauthorized, or unexplained nuclear detonation,
- Non-nuclear detonation or burning of a nuclear weapon or nuclear component,
- Radioactive contamination,
- Jettisoning of a nuclear weapon or nuclear component,
- Public hazard, actual or perceived.

Nuclear Weapon Incident

An unexpected event involving a nuclear weapon, facility, or component resulting in any of the following, but not constituting a nuclear weapon(s) accident:

- An increase in the possibility of explosion or radioactive contamination.
- Errors committed in the assembly, testing, loading, or transportation of equipment, and/or the malfunctioning of equipment and material which could lead to an unintentional operation of all or part of the weapon arming and/or firing sequence, or which could lead to a substantial change in yield, or increased dud probability.
- Any act of God, unfavorable environment, or condition resulting in damage to a weapon, facility, or component.

Nuclear Weapon Significant Incident

An unexpected event involving nuclear weapons or nuclear weapon components or a nuclear weapon transport or launch vehicle when a nuclear weapon is mated, loaded, or on board that does not fall in the nuclear weapon accident category, but:

- Results in evident damage to a nuclear weapon or radiological nuclear weapon to the extent that major rework, complete replacement, or examination or re-certification by the DOE is required.
- Requires immediate action in the interest of safety or nuclear weapons security.
- May result in adverse public reaction (national or international) or inadvertent release of classified information.
- Could lead to a nuclear weapon accident and warrants that senior national officials or agencies be informed or take action.

Nuclear Radiation

Particulate and electromagnetic radiation emitted from atomic nuclei in various nuclear processes.

Nuclear Reactor Accident

An uncontrolled reactor criticality resulting in damage to the reactor core or an event such as loss of coolant that results in significant release of fission products from the reactor core.

NRC

Nuclear Regulatory Commission.

NSA

National Security Area.

NTS

Nevada Test Site.

NUWAX

Nuclear Weapon Accident Exercise.

Nuclear Weapon Accident

An unexpected event involving nuclear weapons or nuclear components.

Nuclear Weapon Significant Incident

An unexpected event involving nuclear weapons, nuclear components, or a nuclear weapon transport or launch vehicle when a nuclear weapon is mated, loaded, or on board, that does not fall into the nuclear weapon accident category.

NWS

National Weather Service.

Off-Site

That area beyond the boundaries of a DOD installation or DOE facility, including the area beyond the boundary of an NDA or NSA, that has been, or may become affected as a result of a radiation accident or nuclear incident.

On-Site

That area around the scene of a nuclear accident or incident under the operational control of the licensee, and including a fixed nuclear facility, DOD or DOE installation or facility manager. The on-site area also includes any area which has been established as a NDA or NSA.

On-Site Operational Support Center (Assembly Area)

An on-site Operational Support Center (OSC) shall be established and be separate from the control room. The Operational Support Center shall be the place to which the operations support personnel report in an emergency situation. Communications will be provided with the station control room, Technical Support Center, and the operator's near-site Emergency Operations Facility.

On-Site Technical Support Center

Each operating nuclear power station shall maintain an on-site Technical Support Center (TSC). The TSC shall be separate from, but in very close proximity to, the control room. The TSC shall have the capability to display and transmit station status to those individuals who are knowledgeable of and responsible for engineering and management support of reactor operations in the event of an accident and those persons who are responsible for the management of the accident. Upon activation, this facility will provide the main communication link between the station, the Operational Support Center, the Nuclear Regulatory Commission, and the operators of the near-site Emergency Operations Facility.

PAR

Protective Action Recommendation.

Pathway

The potential routes through which people may be exposed to radiation or radioactive materials. Typical radiation exposure pathways include external exposure to penetrating radiation, inhalation of airborne materials, and ingestion of materials contained in surface contamination, food products, or drinking water.

Physical Security

That part of security concerned with physical measures designed to safeguard personnel, to prevent unauthorized access to equipment, facilities, material, and documents, and to safeguard them against espionage, sabotage, damage, and theft.

PAO

Public Affairs Office.

Placard

A standard device or sign attached to the outside of a vehicle to identify the hazards associated with the cargo. See "Label."

Plume Exposure Pathway EPZ

An area delineated by a circle around a nuclear facility and used in preplanning of protective actions due to potential exposure from airborne radioactive material. The time of potential exposure could range from hours to days. The principal exposure sources from the plume exposure pathway are whole body exposure to gamma radiation and inhalation exposure.

Plutonium (Pu)

An artificially produced fissile material. The Pu-239 isotope is primarily used in nuclear weapons.

Population Center Distance (Urban Area)

The distance from the reactor to the nearest boundary of a densely-populated center containing more than 25,000 residents.

Pressurized Water Reactor

A type of reactor system which maintains cooling water at a very high pressure which prevents water from boiling in the reactor core during normal operation.

Primary Commander

The U.S. Navy command predesignated as having responsibility for controlling, directing, and coordinating all Navy activity responses to a nuclear or radiological accident in areas under its operational control. For reactors, other equipment, and other radioactive material used or generated in connection with the NNPP, primary command responsibility for radiological or reactor accidents is assigned to Commander, Atlantic Fleet (COMLANTFLT). COMLANTFLT has designated Commander, Submarine Forces Atlantic (COMSUBLANT) as Deputy Primary Commander.

Primary Route Alerting

Method of alerting the public in an area not covered by a siren. Methods of primary route alerting include, but are not limited to, the use of vehicles equipped with loudspeakers, door-to-door notification and phone calls.

Protected Area

The immediate area surrounding units which have construction completed and enclosed by a fence or other barriers.

Protective Action Guide (PAG)

The projected radiological dose to individuals in the population which warrants taking protective action. The Guide in no way implies an acceptable level of risk.

Protective Actions

Emergency measures taken for the purpose of preventing or minimizing radiological exposure (projected dose) that would be likely to occur if the actions were not taken.

Protective Action Recommendation (PAR)

Advice to the State on emergency measures it should consider in determining action for the public to take, avoid, or reduce exposure to radiation.

Protective Action Zone (PAZ)

A Geographical area which permits flexible and selective dissemination of information and guidance to the public in the event of a radiological emergency requiring the implementation of protective actions.

Proton

A small particle typically found within an atom's nucleus which possesses a positive electrical charge.

Quality Factor

The modifying factor that is used to derive dose equivalent from absorbed dose.

RACES

Radio Amateur Civil Emergency Service (RACES) – An organized government radio communication system using Amateur Radio operators established to provide radio communications support to federal, state, and local governments in time of an emergency.

Rad

Old unit of absorbed dose radiation. One rad represents the absorption of 0.01 joule of nuclear (or ionizing) radiation energy per kilogram of the absorbing material or tissue.

Radiation Dosimeter

A portable device that measures total radiation dose received.

Radiation (Ionizing Radiation)

Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other nuclear particles.

Radiation Survey Instrument

A portable battery-powered device used to detect and measure the dose rate at the spot where the instrument is held.

Radio Amateur Civil Emergency Service (RACES)

An organized government radio communication system using Amateur Radio operators established to provide radio communications support to federal, state, and local governments in time of an emergency.

Radioactive Materials

Any solid, liquid, or gas that emits radiation spontaneously.

Radioactivity

The spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays from the nuclei of an unstable isotope.

Radiological Emergency

Any situation, excluding events from nuclear warfare, leading to a release of radioactive materials at a fixed nuclear facility to a magnitude that exceeds or may exceed protective action guides.

Radiological Exposure Control

Actions that can be taken to protect the general public, emergency workers, livestock, food, water, or property from radiation.

Radiological Monitor

An individual trained in the use of field radiation detection instruments and assigned radiological monitoring duties.

Radiological Survey

The directed effort to determine the distribution of radiological material and dose rates in an area.

Range

As related to nuclear radiation, the typical distance which a type of radiation will travel before all of its energy is absorbed.

RASCAL

Radiological Assessment System for Consequence Analysis.

REAC/TS

Radiological Emergency Assistance. A treatment and consultative team for radiation emergencies, which provides training courses, at Oak Ridge, Tennessee.

Recovery

The process of reducing radiation exposure rates and concentrations in the environment to acceptable levels for unconditional occupancy or use.

Recovery Actions

Those actions taken after the emergency to restore the station as nearly as possible to its pre-emergency condition.

Re-entry

Temporary entry into a Restricted Zone under controlled conditions.

Re-entry Recommendations (RER's)

Advice provided to the State concerning guidance that may be issued to members of the public on returning to an area affected by a radiological emergency, either permanently or for short-term emergency actions.

Relocation

The removal or continued exclusion of people from contaminated areas to avoid chronic radiation exposure.

Rem (R) (Acronym for Roentgen Equivalent Man)

The unit of dose of any ionizing radiation that produces the same biological effect as a unit of absorbed dose of ordinary x-ray.

RERP

Radiological Emergency Response Plan.

RERT

Radiological Emergency Response Team.

Restricted Zone

An area with controlled access from which the population has been relocated.

Return

The re-occupation of Restricted Zones which have been cleared for unrestricted residence or use.

Roentgen

A obsolete unit of exposure of gamma (or X-ray) radiation in field dosimetry. One roentgen is essentially equal to one Rad.

Roentgen Equivalent Man/Mammal (Rem)(R)

One R is the quantity of ionizing radiation of any type which, when absorbed by man or other mammals, produces a physiological effect equivalent to that produced by the absorption of one (1) roentgen of X-ray or gamma radiation. The SI unit replaced the R.

SAFE HAVEN

An agreement that delineates the responsibilities of DOD and DOE when temporary storage of DOE shipments at DOD facilities is necessary to assure the safety and security of nuclear materials or non-nuclear classified materials. Under the agreement, DOE is authorized to utilize available DOD facilities for safety and security of authorized DOE couriers and vehicles when a shipment is jeopardized.

Scenario

A combination of radiation exposure pathways used to model conceptually the potential conditions, events, and processes that result in radiation exposure to individuals or groups of people.

SCO

State Coordinating Officer.

SECORD

Secure Cord Switchboard.

SFO

Senior Federal Officer.

Shielding

Any material or obstruction that absorbs (stops) radiation.

SOP

Standing Operating Procedures.

SOSC

State On-Scene Coordinator.

SPS

Surry Power Station.

Supplemental Route Alerting

Method of alerting the public in areas which are adequately covered by sirens, but for some reason it has been decided that an additional method of alerting is desireable. Methods of backup route alerting include, but are not limited to, the use of vehicles equipped with loudspeakers, door-to-door notification and phone calls.

TEDE

The sum of external and internal dose.

a. Regarding Emergency Worker Dose, TEDE is defined as the sum of the DDE and the CEDE.

b. Regarding PAG's, TEDE is defined as DDE + CEDE + 4-day ground shine.

c. TEDE will be estimated using dosimetry readings multiplied by a TEDE/DDE conversion factor, where:

- Deep Dose Equivalent (DDE) is assumed equivalent to Effective Dose Equivalent (EDE).

- Neither four-day ground shine nor skin dose will be included in field worker dose estimates.

- Conversion factors will be accident-type dependent. Accident-type isotopic fractions will be based on SWEC calculations used for MIDAS input.
- For estimating emergency worker exposure, TEDE is defined at DDE + CEDE (Committed Effective Dose Equivalent).
- The ratio TEDE/DDE is unitless.
- DDE Dose Conversion Factors (DCF) from EPA-400, Table 5-3 (or RTM-92, Table H-5) will be applied to the accident-type dependent isotopic mix fractions.
- CEDE DCFs from EPA-400, Table 5-4 (or RTM-92, Table H-5) will be applied to the accident-type dependent isotopic mix fractions.
- Resulting DDE and CEDE DCFs will be summed in order to derive the TEDE DCF for specific application to estimating emergency worker dose.
- EPA emergency worker exposure limits are based on the sum of the external EDE and the internal CEDE.
- For PAG's and Emergency Classifications, TEDE (with 4-day ground shine) or Thyroid CDE is calculated by Health Physics at time of event using actual monitor indications and meteorology.

Thyroid Blocking Agent

A pill or liquid containing non-radioactive iodine which, when taken before or immediately after exposure to radioactive iodine, saturates the thyroid gland to prevent excessive uptake of radioactive iodine. See KI.

Thyroid CDE

Thyroid Committed Dose Equivalent (CDE), radiation exposure to the thyroid through inhalation or ingestion of radioactive material assuming a 50 year exposure period from uptake.

Thyroid Exposure

Radiation exposure to the thyroid through inhalation or ingestion of radioactive materials.

TSC

Technical Support Center.

uCi/m3

Microcuries per cubic meter.

UHF

Ultra High Frequency.

Uranium

A type of atom used to fuel nuclear reactors due to its ability to undergo fission with a free neutron creating a nuclear chain reaction and resulting in heat.

USCINC

U.S. Commander-in-Chief.

USDA

U.S. Department of Agriculture.

USFORSCOM

U.S. Army Forces Command.

USMC

U.S. Marine Corps.

VCIN

Virginia Criminal Information Network (VCIN) - A computer controlled, data communications system operated by the Virginia State Police. VCIN is used to disseminate warnings and emergency information to regional and local warning points and local governments. Its primary use is law enforcement communications.

VDEM

Virginia Department of Emergency Management.

VHF

Very High Frequency.

VPI&SU

Virginia Polytechnic Institute and State University.

VAWAS

Virginia Warning System (VAWAS) - The state portion of CDWS used to disseminate warnings and other emergency information from federal and state warning points to regional and local warning points located throughout the state. (A type of insta-phone circuit).

Whole Body Exposure

Direct external radiation exposure to the body from airborne radioactive materials or soil contamination.

X Rays

Penetrating electromagnetic radiation originating in the electron field of an atom. X rays are similar in wavelength and frequency to gamma rays, which originate in the nucleus of an atom.