UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF REACTOR PROGRAM MANAGEMENT
EMERGENCY PREPAREDNESS AND RADIATION PROTECTION BRANCH

SUBJECT: EMERGENCY PREPAREDNESS POSITION (EPPOS[1]) ON REQUIREMENT FOR ONSHIFT DOSE ASSESSMENT CAPABILITY

PURPOSE

To provide guidance to the staff on the requirement for licensees to maintain an onshift dose assessment capability.

INTRODUCTION

During the 1994 Emergency Preparedness (EP) counterpart meeting, EP inspectors stated that the requirements and guidance documents regarding the need for control room personnel to perform dose assessment were not clear and requested the EP Branch to evaluate the requirements. In a memorandum dated August 2, 1994, the EP Branch provided the Regions with its evaluation of the relevant regulations and guidance documents related to dose assessment. This EPPOS reaffirms and clarifies the guidance provided in the August 2, 1994 memorandum.

POSITION

Nuclear power plant licensees must maintain the capability to perform dose assessment using effluent release information and real-time meteorology at all times. It is the licensee's responsibility to determine which on-shift personnel

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[1] ***The EPPOS Process***

- *EPPOS are generated by NRR's EP&RP Branch (PERB) in response to requests for guidance from the Regional Offices or to otherwise address emergent issues.*
- *After drafting by NRR/PERB, EPPOS are sent to the Regions for comment. After incorporation of comments, the EPPOS are issued in final form and placed in the PDR. The need for concurrence from others outside of NRR/PERB, such as the Office of General Counsel and the Office of Enforcement, is considered on case-by-case basis.*
- *EPPOS are intended to be "living" documents, being assigned a revision number and a date of issuance. They will be revised from time-to-time as suggestions for improvement or other comments warrant. Comments may be received on existing EPPOS from NRC staff or from outside individuals or organizations.*

should perform this task (e.g., operators, HP technicians, chemistry technicians, shift technical advisor, etc.). The on-shift dose assessment capability can be in the form of a computer program requiring minimal computer operator input or easy-to-use graphs, charts, etc. in order to minimize the burden on the shift personnel. However, these simplified dose assessment programs, graphs, or charts must take into account effluent release information and real-time meteorological conditions such as wind speed, wind direction, and atmospheric stability. Licensees must be capable of augmenting their staff in order to perform more sophisticated dose assessments within about one hour after declaration of an Alert or higher classification.

There may be events where the on-shift personnel responsible for performing dose assessments are needed to perform actions critical to mitigating the event and are therefore unavailable to immediately perform a dose assessment. This situation is acceptable because licensees are expected to inform the public of the event classification and initial recommended protective actions based upon plant conditions. However, licensees need to have the capability to perform dose assessments on shift and should perform the dose assessments as soon as practicable when conditions warrant that an assessment be performed.

BASIS FOR POSITION

On-shift dose assessment capability is needed to support emergency response efforts during accident situations involving actual or potential releases of radioactive material. The results are used to classify events, evaluate offsite consequences of non-severe accident events involving a release of radioactive materials, and to refine "default PARs" which were issued based upon plant conditions for severe accident events.

> NOTE: Offsite agency notifications and protective action recommendations should not be delayed until a dose assessment can be completed. Plant conditions, that is, the status of the core and systems intended to protect the core, should be used as the basis for determining the initial protective actions for the public for severe reactor accidents involving actual or projected core damage. Followup notifications can address the results of dose assessments.

A list of applicable regulations and guidance upon which this position is based is contained in an appendix which follows.

REGULATIONS AND GUIDANCE
RELATED TO
DOSE ASSESSMENT CAPABILITY

Applicable Regulations

50.47(b)(2) Onshift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times.....

50.47(b)(9) Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Appendix E.II.H (The PSAR shall contain.. info) ... including capabilities for dose projection using **real-time meteorological information** and....(emphasis added)

Appendix E.IV.B (The E Plan shall contain... info) The means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactivity* shall be described....

* The staff defines "impact of the release of radioactivity" to mean radiation dose calculations for a location where a member of the public could reside.

Appendix E.IV.F (The E Plan shall contain ...description of specialized.. training... to) Personnel responsible for accident assessment, including control room shift personnel;...

NUREG-0654

II.I. Accident Assessment [relates to 50.47(b)(9)]

4. Each licensee shall establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.

10. Each organization shall establish means for relating the various measured parameters ... to dose rates for key isotopes and gross

radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates....

Appendix 1 Emergency Action Level Guidelines

Appendix 1 specifies Site Area Emergency and General Emergency EALs which are based upon dose assessment results, for example:

1. a. Effluent monitors detect levels corresponding to 1 rem/hr W.B. or 5 rem/hr thyroid at the site boundary under actual meteorological conditions.

   b. These dose rates are projected based on other plant parameters...

(Note: NUMARC/NESP-007 also contains EALs based upon dose assessments)

Appendix 2 Meteorological Criteria....

Atmospheric Transport and Diffusion Assessment

Appendix E to 10 CFR Part 50 states that "The means to be used for determining the magnitude of ...." To address this requirement, in part, all licensees.. shall provide the description of their system for making current, site-specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release...The purpose of these predictions is to provide an input to the assessment of the consequences of accidental radioactive releases to the atmosphere and to aid in the implementation of emergency response decisions. Near real-time, site-specific atmospheric transport and diffusion models shall be used when accidental airborne radioactive releases occur. Two classes of models are appropriate. The first, Class A, is a model and calculational capability which can produce initial transport
and diffusion estimates for the plume exposure EPZ within 15 minutes following the classification of an incident. The second, Class B, is a numerical model which represents the actual spatial and temporal variations of plume distribution and can provide estimates of deposition and relative concentration of radioactivity within the plume exposure and ingestion EPZs for the duration of the release.

(Note: Section 6.1 of Supplement 1 to NUREG-0737 contains requirements for meteorological monitoring systems)

NUREG-0696

1.4 Activation and Use

Table 1, "Transfer of Emergency Response Functions from the Control Room to the Technical Support Center and the Emergency Operations Facility" lists "radiological effluent and environs monitoring, assessment, and dose projections" as one of the functions to be transferred from the control room as the event escalates.

Other background information

Inspection Procedure 82207 Dose Calculation and Assessment

(Note: this procedure contains inspector guidance for determining whether licensees meet the NRC requirements for dose assessment capability.)

Section 03.04 Dose Assessment

Dose assessment is required by 10 CFR 50.47(b)(9), Part IV of 10 CFR Part 50, Appendix E, and guidance criteria in NUREG-0654, Section I entitled "Accident Assessment," and Appendix 2 entitled "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants." The licensee should be able to perform dose assessments for accident conditions. Dose assessment tasks should not significantly distract shift management from assuring proper event response, classification, and reporting.

Section, 3.05 Training and Organization

a. There are persons on every shift who can operate required systems and get results in a timely fashion.

b. There is a backup manual system employing such devices as tables, nomographs, or plastic overlays.