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MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Licensing, DL

and

Gus C. Lainas, Assistant Director
for Operating Reactors, DL

FROM: Daniel R. Muller, Assistant Director
for Radiation Protection, DSI

SUBJECT: GUIDANCE ON REPORTING DOSES TO MEMBERS OF THE PUBLIC FROM NORMAL OPERATIONS

The standard radiological effluent technical specifications (RETS) require the reporting of radiation doses to members of the public (in addition to reporting radioactivity releases and meteorological measurements). A few licensees will be reporting doses for the 1982 calendar year. Generally, plants licensed since 1979 and operating reactors with recently updated RETS have requirements for reporting doses; see Enclosure 1.

Inquiries from licensees indicate that guidance is needed on the reporting of doses to members of the public. Regulatory Guide 1.21 addresses the issue but is inadequate because it is not explicit and because it implies that the reports should provide more information immediately. Interim guidance (Enclosure 2) was developed to meet this immediate need.

It is requested that, as soon as practicable, the interim guidance be transmitted to the licensees for plants listed in Enclosure 1. This guidance should be of value to other licensees and applicants as well.

Original signed by
Daniel R. Muller

Daniel R. Muller, Assistant Director
for Radiation Protection
Division of Systems Integration

Enclosures:
As stated

cc: R. Mattson
W. Gammill
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*SEE PREVIOUS WHITE FOR CONCURRENCES

OFFICE	DSI:RP:METB	DSI:RP:METB	DSI:RP:RAB	DSI:RP			
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DATE	02/15/83	02/16/83	03/03/83	03/10/83			

Enclosure 1

PLANTS WITH TECHNICAL SPECIFICATIONS REQUIRING REPORTING OF OFF-SITE DOSES FOR 1982

Diablo Canyon 1

Farley 1/2

Grand Gulf 1

LaSalle 1

McGuire 1

San Onofre 2/3

Sequoyah 1/2

Susquehanna 1

Summer 1

Three Mile Island 1

Enclosure 2

INTERIM GUIDANCE ON REPORTING OFF-SITE RADIATION DOSES FROM NORMAL OPERATION OF NUCLEAR POWER PLANTS

Purpose

Off-site radiation doses from normal operation of some nuclear power plants must be reported annually to satisfy the requirements of the technical specifications. The reports are intended to demonstrate compliance with (1) the dose design objectives of 10CFR50 Appendix I, and (2) the requirements of 40CFR190. The purpose of this document is to provide guidance on the reports to simplify reporting, assure that minimum requirements are met, and provide consistency in reports from different licensees.

Criteria

The dose design objectives of 10CFR50 Appendix I are met if

1. the dose or dose commitment to a member of the public from radioactive materials in liquid effluents from each reactor do not exceed:
   a. during any calendar quarter, 1.5 mrem to the total body or 5 mrem to any organ, or
   b. during any calendar year, 3 mrem to the total body or 10 mrem to any organ;
2. the air dose due to noble gases in gaseous effluents from each reactor do not exceed:
   a. during any calendar quarter, 5 mrad from gamma radiation or 10 mrad from beta radiation, or
   b. during any calendar year, 10 mrad from gamma radiation or 20 mrad from beta radiation; and

3. the dose to a member of the public from radioiodines and particulates in gaseous effluents from each reactor do not exceed:
   a. 7.5 mrem to any organ during any calendar quarter, or
   b. 15 mrem to any organ during any calendar year.

The requirements of 40CFR190 are met if the dose or dose commitment to any member of the public from uranium fuel cycle sources in a calendar year does not exceed

1. 75 mrem to the thyroid, or
2. 25 mrem to any other organ or to the total body.

The 40CFR190 requirements differ in significant ways from the Appendix I criteria. Specifically, for 40CFR190 purposes, consideration must include the following (as well as doses from effluents):

1. Direct radiation doses
2. Doses from other fuel cycle facilities*, including other reactors.

The term "members of the public" includes all persons who are not occupationally associated with the plant. The term does not include employees of the utility, its contractors, or vendors. Also excluded are people who enter the site to inspect, service equipment, or make deliveries. This term does include people who use portions of the site for recreational, occupational, or other purposes not associated with the nuclear plant.

*Fuel cycle facilities are uranium mills, conversion plants, enrichment plants, fabrication facilities, power reactors, reprocessing plants, and waste disposal sites.

"Direct radiation" is radiation which reaches unrestricted areas even though its source is retained within the plant. Examples are gamma rays from the decay of nitrogen-16 in BWR turbine buildings and gamma rays from low level radioactive wastes stored on site. Direct radiation dose is not addressed in Appendix I, but is limited by 40CFR190.

Report Content

The purpose of the annual report is to summarize the calculations performed during the year to show compliance with Appendix I and with 49CFR190 related tech specs. Consequently, only the maximum calculated doses to individuals need to be reported. Appendix I dose design objectives are stated both for calendar quarters and for years; thus, both should be reported. Appendix I states criteria for 3 categories of effluents (liquid, airborne iodines and particulates, and airborne noble gases); the doses should be reported accordingly. The information should be presented as indicated in Table 1.

Where doses reported in Table 1 exceed the Appendix I criteria, an explanation should be provided.

Compliance with the 40CFR190 dose limits must be addressed explicitly. If the doses reported in Table 1 clearly are below the 40CFR190 limits, all that needs to be added are statements addressing doses from other fuel cycle facilities. In most cases, this requirement is satisfied by statements that there are no other fuel cycle facilities within 8 km.

Plant Name _____ _____
Year _____ _____

Table 1

MAXIMUM* OFF-SITE DOSES AND DOSE COMMITMENTS
TO MEMBERS OF THE PUBLIC

Source	Dose***, Millirems				
	1st Q	2nd Q	3rd Q	4th Q	Year**
Liquid Effluents	(1	(5	(9	(13	(17
Airborne Effluents					
Iodines & Particulates	(2	(6	(10	(14	(18
Noble Gases	(3	(7	(11	(15	(19
Direct Radiation	(4	(8	(12	(16	(20

Based on meteorology data provided in _____

*"Maximum" means the largest fraction of the corresponding Appendix I dose design objective.

**"Maximum" dose for the year may not equal the sum of the quarterly maximum doses because the doses may be to different organs or may occur at different places.

***The numbered footnotes briefly explain how each maximum dose was calculated, including the organ and the predominant pathway(s).

Example of Numbered Footnote:

1. Total body dose, primarily by fish pathway. Calculated using the reported activity and dilution volume with the assumptions of Regulatory Guide 1.111.