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RECORD # 232

TITLE: Enforcement Guidance Concerning "Substantial Potential"

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May 15, 1991

MEMORANDUM FOR: James Lieberman, Director  
Office of Enforcement

THRU: Frank J. Congel, Director  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

FROM: LeMoine J. Cunningham, Chief  
Radiation Protection Branch  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

SUBJECT: ENFORCEMENT GUIDANCE CONCERNING "SUBSTANTIAL POTENTIAL."

Enclosure 1 is the final draft of enforcement guidance concerning what constitutes a 'substantial potential' for over exposure, as used in C.4 of Supplement IV to 10 CFR 2, Appendix C. As you recall, I committed to provide this input to the Enforcement Manual following several recent enforcement actions where the Regions applied a narrow interpretation of 'substantial potential.'

By memo dated March 29, 1991, I solicited comments from the regions on this guidance. This final draft incorporates all comments received, with the exception of the two comments marked up in enclosure 2.

If you have any questions regarding this guidance, please contact Roger Pedersen at (301) 492-3162.

Original signed by LeMoine J. Cunningham  
LeMoine J. Cunningham, Chief  
Radiation Protection Branch  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

Enclosures:  
As stated

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\*See Previous Concurrence

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

May 15, 1991

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Office of Enforcement

THRU: Frank J. Congel, Director *JJC*  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

FROM: LeMoine J. Cunningham, Chief  
Radiation Protection Branch  
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A handwritten signature in cursive script, reading "LeMoine J. Cunningham".

LeMoine J. Cunningham, Chief  
Radiation Protection Branch  
Division of Radiation Protection  
and Emergency Preparedness  
Office of Nuclear Reactor Regulation

Enclosures:  
As stated

ENCLOSURE 1  
ENFORCEMENT MANUAL INPUT

6.4 Supplement IV  
Health Physics

6.4.1 Substantial Potential for Overexposure

The Severity Level III examples in C.4 of Supplement IV involve situations that present a "substantial potential for an exposure or release in excess of 10CFR20 whether or not such exposure or release occurs." An event presents a substantial potential when it was fortuitous that the resulting exposure or release did not exceed the limits of 10CFR20. The concern is not the significance of the resulting, or potential, exposure (example C.1 of Supplement IV addresses exposures in excess of Part 20 limits), but whether the licensee provided adequate controls over the situation, as required, to prevent exceeding the Part 20 limits. No credit is given for luck. When taking escalated enforcement action for this example consider if it is possible to construct a reasonable scenario in which a minor alteration of circumstances would have resulted in a violation of the Part 20 limits. The following circumstances should be considered.

a. Timing

Could the exposure period have reasonably been longer?

Example: An individual in the proximity of an unknown source of radiation receives an unplanned excessive exposure. Because of the duration of the exposure, no limits were exceeded; however, the individual could reasonably have stayed in proximity to the source long enough to be overexposed.

b. Source Strength

Could the radiation source have reasonably been stronger?

Example: An inadvertent release results from a worker venting the wrong waste gas decay tank. Although the release did not exceed Part 20 limits, the same mistake could have as easily resulted in venting a decay tank with enough activity to exceed the limits.

c. Distance

Could the person have reasonably been closer to the source?

Example: In the example in "a" above, the individual could have been overexposed by standing closer to the source of radiation.

d. Shielding

Could some unintended shielding have reasonably been removed?

Example: Radioactive source was accidentally left in an office area. Shielding afforded by a desk prevented the overexposure of an individual worker in the office. However, nothing prevented the source from being left in an area of the office, that would not have been shielded by the desk, where the individual would likely have been overexposed.

Technical Contact: Roger Pedersen, NRR  
492-3162



ENCLOSURE 2

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION V

1450 MARIA LANE, SUITE 210  
WALNUT CREEK, CALIFORNIA 94596

April 10, 1991

MEMORANDUM FOR: LeMoine J. Cunningham, Chief  
Radiation Protection Branch  
Division of Radiation Protection &  
Emergency Preparedness  
Office of Nuclear Reactor Regulation

FROM: Gregory P. Yuhas, Chief  
Reactor Radiological Protection  
Branch  
Division of Radiation Safety &  
Safeguards, Region V

SUBJECT: COMMENTS ON "SUBSTANTIAL POTENTIAL"

We have reviewed your memorandum on the above subject dated March 29, 1991. There are a few minor changes that we would like to suggest.

1. Delete the word "programmatic" in the first paragraph. The concept of "substantial potential" can result from the simple oversight on the part of one technician. For example, a technician might forget to ask a woman if she were pregnant or nursing prior to performing a diagnostic administration.

In paragraph 1, delete the phrase "remained within the limits of 10 CFR 20". Replace it with "did not exceed the criteria which would require reporting pursuant to 10 CFR 20.403(b)". This approach would provide a quantitative bench-mark of safety significance. For example, an operator might initiate the release of the wrong waste gas decay tank. Another operator might discover the error and terminate the release before the contents of the tank escaped. If the second operator had not stopped the release, and it would have exceeded 500 times the Appendix B Table II concentration limits when averaged over 24 hours then this should be considered in the category of "significant potential."

*No, Supplement III  
clearly refers to 2.  
the exposure and release  
limit in 10CFR20  
the 24 hr. reporting  
requirements of 20.403(b) not*

3. In paragraph 1, add the adjective "serious" before the noun "violation."

Thank you for the opportunity to comment.

*G. P. Yuhas*

Gregory P. Yuhas, Chief  
Reactor Radiological Protection  
Branch

cc: J. Joyner  
D. Collins  
L. Greger  
A. Beach  
J. Hickey  
R. Pedersen ✓  
J. Wigginton

to be a severity level III violation an event does not have to present the risk of a 'serious' violation of Part 20; there is no reference to serious violations in example C1. An event meets the 'substantial potential' test if the licensee's controls were not effective in preventing a violation of Part 20 and the consequences of the event were a matter of chance.