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MEMORANDUM FOR: Chairman Carr
FROM: Harold R. Denton, Director *HR Denton*
Office of Governmental and Public Affairs
SUBJECT: QUESTIONS ON SECY-90-253

The following is in response to your questions in your August 15, 1990 memorandum to Mr. Chilk on the proposed Illinois amendment to its Agreement.

With respect to the possibility of differentiating between programmatic and site-specific determinations, this goes to the heart of Kerr-McGee's hearing request and should be discussed with OGC.

As we stated in SECY-90-253:

"The staff is finding several of the sections discussed . . . more stringent and in accord with Section 274o of the Act only for the purpose of finding the Illinois program adequate, compatible and in compliance with statutory requirements so that authority may be relinquished lawfully to the State. In making the findings, NRC staff exercised a programmatic judgment that, in the majority of reasonably foreseeable circumstances, the sections would achieve a level of stabilization and containment, and a level of protection of the public health, safety, and the environment from radiological and nonradiological hazards, which is equivalent to, to the extent practicable, or more stringent than the level that would be achieved by NRC's and EPA's requirements. The staff offers no opinion whether, as applied to any particular site, the findings required by the last paragraph of Section 274o can necessarily be made."

Thus we have made no evaluation of the effects of applying Illinois' regulations to the West Chicago site. With this understanding, the answers to your specific questions are:

1. With respect to the effect of more gentle slopes required by Section 332.220b)1) of the Illinois standards on groundwater quality beneath the tailings disposal embankment, NRC's Appendix A, Criterion 4(c), states:

"Embankment and cover slopes must be relatively flat after final stabilization to minimize erosion potential and to provide conservative factors of safety assuring longterm stability. The broad objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade:

this could, for example, lead to slopes of about 10 horizontal to 1 vertical (10h:1v) or less steep. In general, slopes should not be steeper than about 5h:1v. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable should be identified."

Illinois regulation Section 332.220b(1) states:

"Embankment and cover slopes shall be relatively flat after final stabilization to minimize the potential from erosion and to provide conservative factors of safety assuring long-term stability. Final slopes shall be contoured to grades that are as close as possible to those which would be provided if byproduct material were disposed below grade. Slopes shall not be steeper than 10 horizontal to 1 vertical."

As presented in NRC's criterion, the slope standard allows flexibility for the licensee to propose final slopes steeper than 10h:1v and, when appropriately justified, the licensee can propose slopes steeper than 5h:1v. The Illinois regulation does not provide for any slope steeper than 10h:1v unless the State applied the general exemption provision in Section 330. For this reason, the staff considered this Section of the Illinois regulation to be more stringent than NRC's regulation. The less steep slopes do provide a more stable tailings impoundment, however, the less steep slopes may not be practicable at a given site and the State of Illinois has not included the flexibility in NRC's regulation.

Since neither the NRC's nor the Illinois slope standard is based on the impacts to groundwater, the staff did not specifically address the groundwater impacts in comparing the slope standards. The slopes used at many tailings impoundments currently in reclamation use gentle slopes for the tops of the impoundments and the steeper slopes are used on the embankment slopes. Only in those cases where the embankment is made of tailings would the differences in the standards be of potential groundwater concern. In all other cases, the lengthened slope required by the Illinois standard would be over areas where there are no tailings and, therefore, longterm stability is the area which is changed by the Illinois standard.

With respect to the effect of chemical treatment of tailings required by Section 332.250b) on containment of hazardous constituents within the tailings, NRC's Appendix A, Criterion 5E, states:

"In developing and conducting groundwater protection programs, applicants and licensees shall also consider the following:
(4) Neutralization to promote immobilization of hazardous constituents."

Illinois' regulations Section 332.250b) states:

"Byproduct material shall be chemically and physically treated to immobilize or remove the contaminants."

As stated in the Illinois' regulations, a licensee is required to chemically or physically treat all tailings to immobilize or remove the contaminants. This requirement to treat the tailings, in most cases, will decrease the mobility of most hazardous constituents. See GEIS, Appendix B, Section 4.3. The staff considered this section of the Illinois' regulations, as worded, to be more stringent in that it requires the chemical or physical treatment of tailings even if there is no benefit to such treatment. The feasibility of such treatment at either acid or alkaline leach circuit should be made on a site-specific basis not generically as has been done by Illinois.

2. We examined the Illinois program and singled out for evaluation all requirements that appeared to differ from NRC's in any significant respect. For those which differed, the staff exercised its professional judgement as to their technical merit and effect upon stabilization and containment and protection of the public health and safety and environment.

3. Illinois did not perform a technical analysis to support their differing requirements as meeting Section 274o. However, the staff did do an evaluation. Since we did not consider effects on West Chicago, we did not examine alternative sites for West Chicago wastes. This evaluation will need to await an actual proposal from Illinois regarding what to do with the waste.

cc: Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
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