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November 21, 1978

Dr. Joseph M. Hendrie, Chairman
Dr. Victor Gilinsky, Commissioner
Mr. Peter A. Bradford, Commissioner
Mr. Richard T. Kennedy, Commissioner
Mr. John F. Ahearne, Commissioner
United States Nuclear Regulatory
Commission
Washington, D.C. 20555

In the Matter of Uranium Fuel Cycle Impacts
from Spent Fuel Reprocessing and Radioactive
Waste (Docket No. RM 50-3)

Gentlemen:

Pursuant to this Commission's Order of October
19, 1978 in the above-captioned proceeding^{1/}, we submit
this written statement on behalf of Commonwealth Edison
Company, Detroit Edison Company, Exxon Nuclear Company,

^{1/} We have been advised by E. Leo Slaggie, Office of the
General Counsel, that the five-day period allowed by 10
C.F.R. §2.710 (43 Fed. Reg. 17,798 (1978)) applies to
comments on the Hearing Board's Conclusions and Recommenda-
tions, which were served by mail on October 26, 1978.

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Niagara Mohawk Power Corporation, Omaha Public Power District, Power Authority of the State of New York, Public Service Company of Indiana, Inc., and Rochester Gas and Electric Company ("Commonwealth Edison, et al.").

Commonwealth Edison, et al., support the Board's recommendation that the Interim Rule, with the modifications suggested by the Staff, should be adopted by the Commission although it conservatively states (i.e., exaggerates) the actual impacts of reprocessing and waste management.

In line with this Commission's Order, these written comments address, first, the Commission's consideration of requests for oral presentation and, second, our position on some issues addressed by the Hearing Board in the Hearing Board's Conclusions and Recommendations of October 26, 1978 ("Board's Conclusions and Recommendations").

Conditional Request for Oral Presentation

With respect to further oral argument, the Commission stated in its Order of October 19 that it may allow oral presentations after it has had an opportunity to review the written statements of the participants and their requests for such oral presentations, including the "intended scope". While we wish to request the opportunity to make an oral presentation in the event that the Commission deems

such oral presentations advantageous, we suggest that such oral presentations to the Commission in this proceeding are not necessary, and would not be helpful to the Commission but rather would be an inefficient use of the Commission's valuable time.

In its recent decision, the Supreme Court stated pellucidly that the uranium fuel cycle rulemaking is a classic Section 553 rulemaking requiring only notice and written comment. Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, 435 U.S. 519, 547-48 (1978) ("Vermont Yankee"). Therefore, no oral hearing before this Commission is necessary. Further, this rulemaking presents issues calling for a considerable exercise of judgment in making technical determinations (or estimates) on a national scale, in contrast to the usual function of oral argument to elucidate subtle legal points^{2/}. These technical issues have been discussed at great length, both in writing and orally, before this Commission's Hearing Board, and further summarized and evaluated by the Hearing Board for the Commission. Therefore, it is not immediately apparent to us how "oral presentations" would be helpful in

^{2/} Of course, the Commission may wish to hear from participants on the legal policy issues which underly its decision on the scope of this rule as opposed to argument of particular judgmental factual issues.

further defining the factual issues, or the participants' positions on these issues, for the Commission. Finally, the Commission has many responsibilities in the area of nuclear regulation, including quasi-judicial responsibilities in adjudicatory proceedings, which require its attention somewhat more than a repetitive oral presentation (on the range of three hours) of issues that have already been exhaustively discussed in the record.

Nonetheless, if other participants do convince the Commission that oral presentations would be useful, we request the opportunity to respond to any oral criticisms of Board's Conclusions and Recommendations and/or the record and suggest to the Commission that such an opportunity to respond be given to those participants who support the Board's analysis of the record and its recommendation of the adoption of the Interim Rule as modified. Those participants should be allowed to identify topics appropriate for response after the topics for criticism have been identified and oral presentation allowed by the Commission. Of course, depending upon the nature of the criticism, we suggest that it may be more appropriate for the response to be presented by a scientific or technical consultant to the Commonwealth Edison, et al., group or any

one of those entities^{3/}.

General Comments on the Rule's Scope and Purpose

In general, it is important that the Commission, in its Statement of Consideration on the forthcoming rule, explicitly recognize the purpose of Table S-3 and this rulemaking. Table S-3 is not intended to be an environmental impact statement on the uranium fuel cycle or any other subject. See, e.g., Natural Resources Defense Council v. NRC, 547 F.2d 633, 642 n.20 (D.C. Cir. 1976), rev'd and remanded, Vermont Yankee, supra page 3 ("NRDC v. NRC"). Rather, it is intended to be a final determination of the impacts which the rule addresses so that those impacts may be included as parts of individual environmental impact statements without further litigation. Therefore, if some particular impact is not covered by the rule, the question is whether its assessment is needed for an adequate environmental impact statement and, if so, whether it is included in that environmental impact

^{3/} In this respect we note that Commonwealth Edison, et al., has attempted to make an efficient use of the Commission's resources by combining presentations with the Tennessee Valley Authority and Baltimore Gas & Electric, et al., at appropriate times. We would work with them, as well as others, at an appropriate time to allocate time and resources for any oral responses on technical and/or legal policy issues.

statement on any basis other than the rule.^{4/}

Further, this rulemaking does not address the whole Table S-3 but is intended only "to supplement the existing record [on reprocessing and waste management] and to determine whether or not the rule [in those respects] should be amended"^{5/}.

In line with this concept it is important to remember that the United States Court of Appeals^{6/}, in its

^{4/} By action dated April 11, 1978, the Commission issued a clarifying amendment to Table S-3 removing releases of radon-222 and clarifying that Table S-3 does not include health effects from effluents contained therein. 43 Fed. Reg. 15,613 (1978). With regard to radon, the Commission declared, "[t]his issue may henceforth be litigated in individual licensing proceedings since it is not now covered by the rule." *Id.* at 15,615. On May 30, 1978, the Appeal Board denied the Staff's motion to consolidate consideration of radon-222 for all proceedings in which the issue was pending. ALAB-480, 7 NRC 796 (1978). Since that time radon-222 has been considered on an individual basis in nuclear power plant licensings. In its August 30, 1978 advance notice of intent to update WASH-1248, the Commission reiterated its April decision that "pending possible generic rulemaking on the radon issue alone at a later date, the estimates of radon releases could henceforth be considered in individual reactor licensing proceedings." 43 Fed. Reg. 39,801 (1978). Also "dose commitments" or "health effects" need not be included in this rule since they are considered in individual proceedings.

^{5/} 42 Fed. Reg. 26,988 (1977).

^{6/} We are somewhat mystified by the Hearing Board's occasional references in its Conclusions and Recommendations to the Court of Appeals opinion as requiring certain approaches, since that decision was reversed and remanded by the Supreme Court. Vermont Yankee, *supra* page 3. For example, the Supreme Court, for a number of reasons, left open the question of whether the rule was adequately supported in the record. Compare Conclusions and Recommendations at 3, with Vermont Yankee, *supra* page 3, at 539-40.

examination of the original rule, found that the discussion of the so-called "front-end" activities (mining, milling, conversion, enrichment and fuel fabrication) was not just an "adequate [but an] admirable job". NRDC v. NRC, supra page 5, at 647. Thus, it is fair to conclude that insofar as the Staff in its zeal has introduced, and the Board has allowed, discussion of additional aspects of the reprocessing and waste management fuel cycle activities (which aspects were not included in the original rule with respect to the front-end activities), such discussion, while perhaps interesting, is legally unnecessary to the purpose of Table S-3.

This analysis leads us to suggest that the Commission need not provide an "explanatory narrative"^{7/}, nor does it need to discuss "socioeconomics"^{8/}.

Finally, we regret that the Board has strayed beyond the task assigned by the Commission in this rule-making, to advise the Commission with respect to further actions that might be taken by the Commission in updating the rule^{9/} but that are not necessary, and in some cases

^{7/} Board Conclusions and Recommendations at 61, and 63-64.

^{8/} Id. at 64 and 70.

^{9/} Id. 60-61, and 65-70.

not relevant (for example, the remarks on AFR construction) to the purpose of this rulemaking. Due to these excursions by the Board, it may be advisable for the Commission to identify them as unnecessary and/or irrelevant to the rule in its Statement of Consideration for the guidance of the public and, in the event of a petition for review, for the guidance of the court.

Particular Comments

With these principles in mind, we make the following comments on the Board's Conclusions and Recommendations:

Need for a Narrative. Aside from the fact that a "brief explanatory narrative" is not legally necessary to Table S-3^{10/}, we suggest that it is inappropriate for the Commission to attempt an explanatory narrative of the entire Table S-3 rule in the context of a proceeding on only two of the activities covered by that rule^{11/}. In

^{10/} Neither the Court of Appeals nor the Supreme Court has suggested that Table S-3 is inadequate due to the absence of a narrative.

^{11/} If the Commission were to attempt to provide an explanatory narrative as part of the rule (especially one covering the entire fuel cycle, as opposed to the limited subject of this rulemaking), an argument might be made that Section 553 of the Administrative Procedure Act requires such a narrative to be subject to notice and comment. In any event, evidence might dictate that such a narrative be subject to notice and comment to avoid criticism on the basis of adjectives or adverbs chosen to describe the particular impacts.

any event, it is not necessary for the Commission to legislate the particulars of such a narrative in the form of a rule in order to allow the Staff to include such a narrative in environmental impact statements. Finally, it occurs to us that this suggestion of a brief explanatory narrative by the Board may arise from a confusion between the Administrative Procedure Act's requirement of a statement of consideration to accompany the publication of such a rule, and the National Environmental Policy Act requirement of a clear statement which latter requirement is already satisfied by the table itself.

Realism vs. Conservatism. While we agree with the Board that the analysis should be consistent and realistic (i.e., smaller than the impacts currently stated in the rule), we cannot fault the Commission if it takes the approach of a conservative statement where even the conservative (i.e., overstated) statement of impacts is so small, especially when such conservatism diminishes the opportunity for intervenors to tempt the courts to intrude into the Commission's realm of technical judgment. Vermont Yankee, supra page 3; Kleppe v. Sierra Club, 427 U.S. 390, 412 (1976).

Technetium. With respect to the issue of whether and how technetium release and its impact should be considered, our position is that the conservative assumption

of the release of all iodine-129 more than compensates for the omission of technetium from the Table^{12/}. If the Commission also agrees, it should explain the technical basis for this judgment in the Statement of Consideration to support the adequacy of this approach. We have set forth a brief analysis of the technical basis in the Appendix to these comments.

On the other hand, if the Commission decides that technetium release needs to be separately stated in the Table, as well as in the rulemaking record, then we suggest that there is more than ample material in the record to allow a determination of the technetium impact for that Table and would recommend that the Commission publish for notice and comment only the particular factor to be included. If the Commission were to take the explicit statement approach with respect to technetium, we believe that timely publication of such notice, with an allowance of thirty (30) days for written comment, would permit the inclusion of a factor for technetium on a reference reactor year basis in the final rule to be published on or before March 14, 1979.

Curies vs. Health Effects. The Board states a preference for the statement of radiological impacts in terms of man-rem and health effects rather than curies.

^{12/} Board's Conclusions and Recommendations at 67.

First, we suggest that the approach of stating impacts in terms of curies was not criticized by the Court of Appeals previously and, therefore, may be presumed to be legally adequate. In addition, we (a) point out that since radiological impact is currently determined in individual reactor licensing proceedings in terms of health effects, such a statement need not be made by rule, and (b) recognize that the Commission is considering a statement of health effects in Table S-3 pursuant to another rulemaking as the more efficient approach^{13/}.

Socioeconomics. The Board has recommended the inclusion of the socioeconomic impacts of the construction and operation of fuel cycle facilities^{14/}. The Court of Appeals did not find fault with the absence of such impacts with respect to the front-end activities and, therefore, the omission of such impacts should not be a defect at this time. This approach is supported by reason if one distinguishes the character of the impacts measured by Table S-3 from those which are omitted: Table S-3 states the impacts of the fuel cycle which are truly generic in nature (i.e., those arising from the state of current technology) and, therefore, are unavoidable for the

^{13/} 43 Fed. Reg. at 15,615.

^{14/} Board's Conclusions and Recommendations at 70.

nation regardless of the geographic location and other conditions of a particular fuel cycle activity. On the other hand, the so-called "socioeconomic impacts" are highly dependent on the proposed location of a particular activity and are subject to control in individual licensing proceedings for such activities^{15/}. In any event, the record in this proceeding, as well as the environmental impact statements on fuel cycle facilities supports the conclusion that the socioeconomic impacts are beneficial on balance.

Cumulative Impact. We also disagree with the Board's comment on the treatment of cumulative impacts. The citation furnished by the Board in its Conclusions and Recommendations^{16/} does not require, or even indicate, that the rule should state cumulative, as opposed to annual, impacts. Rather, that footnote in the Court's opinion and the accompanying text indicate only that fuel cycle impacts need to be addressed in the environmental impact statement because such impacts, cumulatively, are not small. Further, this comment confuses the function of an environmental

^{15/} Any attempt to meaningfully calculate socioeconomic impacts in such amorphous circumstances would clearly lack the "factual predicate" for production of an assessment "of the type envisioned by NEPA." Kleppe v. Sierra Club, 427 U.S. at 402.

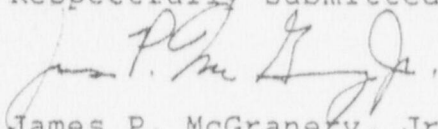
^{16/} Board's Conclusions and Recommendations at 70 n.46.

impact statement to include, among other things, a statement of cumulative impact with the function of this rule which is merely to determine some environmental impacts on an annual basis so that the cumulative impact may be assessed in individual environmental impact statements. Finally, it would be impractical for the rule (or any narrative) to address cumulative impact in particular fashion, since the cumulative impact (either for one power plant or in a national sense) can only be determined at the time of the licensing of a particular reactor when that plant's expected life is known and the number of then existing reactors can be known. In short, the reference reactor year approach provides the soundest basis for an assessment of cumulative impact in the environmental impact statement for each reactor licensing proceeding as it occurs.

Conclusion

Commonwealth Edison, et al., urge adoption of the Interim Rule as modified.

Respectfully submitted,


James P. McGranery, Jr.

LeBOEUF, LAMB, LEIBY & MacRAE

Attorneys for Commonwealth
Edison, et al.

APPENDIX TO
WRITTEN COMMENTS OF COMMONWEALTH EDISON, et al.
ON
TECHNETIUM

With respect to the issue of Technetium-99 (Tc) release and its impact, we believe that the conservative assumption of the release of all iodine-129 compensates for the omission of Tc from the Final Table. A brief examination of record confirms that this compensation is more than a tendency. It is a certainty.

For purposes of examining the extent to which the overestimate of iodine-129 release compensates for any potential release of Tc, an "impact equivalency" figure of 2.4 ci/RRY of Tc is used.^{1/} If one examines the credible releases that may be calculated for Tc based on the processes and models assumed by the Staff, it is clear

^{1/} This figure is obtained by calculating the man-remS resulting from an approximate overestimate of iodine-129 release in curies, and back-calculating from that man-rem figure to the corresponding number of curies of Tc required to produce the same man-rem value. An iodine-129 release value of 1.3 ci/RRY was obtained from Table 2.10 of NUREG-0216. This release equals approximately 0.6 man-remS, as demonstrated in the Addendum to Table 2.10 in NUREG-0216. Assumptions for performing the back calculation to obtain an equivalent release value for Tc of 2.4 ci/RRY are contained in Appendix C to NUREG-0216.

Note that the assumption of 1.3 ci/RRY for iodine-129 releases is a function of the "no reprocessing" case, in which case no Tc would be released. NUREG-0216, Table 2.10. If the reprocessing case is used the iodine-129 release would not exceed 0.03 ci/RRY, thus indicating the compensation for the Tc release in that reprocessing case. Id.

that no more than 2.4 ci/RRY, and indeed probably much less than 2.4 ci/RRY (namely 0.4 ci/RRY or less), can be attributed to Tc.

In reaching this estimate, the relevant stages of the fuel cycle are reprocessing, HLW solidification, and enrichment. There appears to be general agreement with regard to the total ci/RRY attributable to Tc derived from spent fuel that enters these waste management stages. That figure is approximately 500 ci/RRY.^{2/}

The uranium purification and conversion phase is estimated by Exxon Nuclear to include approximately 8% of the total Tc, or approximately 40 ci/RRY. This Tc can be effectively retained ($DF 10^2$) on magnesium flouride traps,^{3/} and hence 0.4 ci/RRY may be estimated to enter the enrichment process. Assuming, conservatively,^{4/} that 100% of the Tc that enters the enrichment process is released to the environment as Sierra Club has asserted, the enrichment portion would result in a total release of

2/ See, e.g., "Sierra Club Response to Question 7 Commonwealth Edison, et al., and Amendment to Direct Testimony", February 20, 1978 at 1 ("Sierra Club Response to Question 7").

3/ Tr. 298-99, and 898-900. As the Hearing Board has concluded, "the magnesium flouride, loaded with technetium, will be packaged and stored on site until it can be delivered to a Federal repository." Board's Report at 59, citing NFRRC PSAR, pp. 7.5-30 through 7.5-32.

4/ See pp. 5-6 infra.

0.4 ci/RRY of Tc.^{5/} Thus approximately 39.6 ci/RRY would be held in the traps for waste disposal.

The remainder of the Tc, somewhat less than 92%, or 460 ci/RRY, would report to HLW solidification.^{6/} The record supports the conclusion that volatilization of Tc during solidification will be no higher than, and probably lower than, volatilization of Ru since behavior of Tc is similar to Ru.^{7/} Since there is adequate empirical evidence to support the 10^8 DF used by the Staff for Ru during solidification,^{8/} a total DF of 10^8 during

5/ Comm. Ed., et al. FRA to Sierra Club FRQ No. 11 at 101. Of course, if one adopts the Staff's lower bound estimate of 4%, only 20 ci/RRY accompany the uranium stream and thus only 0.2 ci/RRY would enter the enrichment process. Tr. 298-99.

6/ This assumes Pu is treated as a waste.

7/ See Comm. Ed., et al. FRA to Sierra Club FRQ No. 13 at 107.

8/ See Board's Report at 58, citing BNWL-1667, Waste Solidification Program Summary Report, Vol. 11. As the Board noted, the WSEP tests indicated volatilization under "conditions similar to those of the model facility" of less than 2%. Id. The Board continued, "after the vapors from the solidification process have passed through the acid recovery, off-gas scrubbing, and final filtration equipment, the overall decontamination factor was greater than the 10^8 used by the Staff." Id. Exxon Nuclear has calculated a higher DF for Ru than that used by the Staff, producing an overall DF of 2×10^{10} . See Comm. Ed., et al. FRA to Sierra Club FRQ No. 13 at 107. Of this amount, Exxon Nuclear calculated that removal through the solidification process would account for a Ru DF of approximately 10^3 , or better. Tr. 900. This leaves a DF of 2×10^7 attributable to removal by off-gas

solidification may be assumed for Tc, and a correspondingly negligible fraction of Tc (i.e., 4.6 E-7 ci/RRY) will be released through the off-gas system of the HLW solidification facility. This analysis indicates that virtually all of the Tc is contained at the reprocessing and waste solidification stages on filters, scrubbing equipment, etc., or in the solidified waste form.

The issue then is what portion of the Tc so contained is eventually released to the environment. Although the record has raised a question regarding the potential migration of Tc with ground water in LLW waste land burial, it appears that doubts as to the adequacy of treatment as LLW would be resolved by treatment as HLW, i.e., repository burial. The Staff has stated, "[w]hile clearly hazardous concentrations of radionuclides will require long term isolation, it is not clear from the information presented whether Tc contaminated enrichment plant components will require this. If further information

Footnote continued from previous page

treatment. If one examines instead the Staff's more conservative assumption of a total DF of 10^8 , and then removes credit for a DF of 10^3 attributable to solidification, one would still achieve a total DF of 10^5 for Ru (and attain at least a comparable DF for Tc) using the Staff's estimates. Thus even on a conservative basis, taking no credit for removal during solidification (i.e., assuming all Tc is volatilized) the amount of Tc that should be assumed to be released as gaseous effluent from the HLW solidification facility is minute.

indicates the necessity of disposing of such components in the federal repository, the trade-off balance of the environmental impacts between shallow land burial and long-term disposal are assumed to be small."^{9/} Presumably similar principles would apply to any contaminated equipment from HLW solidification.

It may further be assumed that containment in the geologic repository will be effective.^{10/} Thus total release of 0.4 ci/RRY for Tc, largely attributable to an assumption of a total release of the Tc reporting to the enrichment facility, can be obtained. This is clearly more than compensated for by the overestimate of release of iodine-129, the impact equivalency of which is 2.4 ci/RRY of Tc. The level of this overcompensation is even greater when one considers that filtering, scrubbing, or other

^{9/} Staff FRA to Sierra Club FRQ No. 1 at 5-2.

^{10/} Board's Conclusions and Recommendations at 40. Sierra Club has maintained that 100% of the Tc reporting to the HLW stream would be released to the environment, either as gaseous effluent, in LLW burial, or in a Federal repository. This assumption, however, is based on several unfounded assumptions, including that up to 75% of the Tc will be released as gaseous effluent, and that little or no Tc separated from HLW will be sent to the repository. As noted above, the record clearly supports a very significant DF for gaseous effluent Tc. It also has been shown that the magnesium fluoride traps containing 7.92% of the Tc will be sent to a repository, and any other Tc of significance would also be sent to geologic disposal. No showing of any significant release therefrom is shown, and the Board has found otherwise. Id.

decontamination methods may be used in the enrichment facility effluent streams, creating a DF for Tc at the enrichment facility well above the figure of 1 assumed for conservatism in this Appendix.

To be even more conservative, one could perform the above analysis assuming a higher input of Tc into the enrichment facility up to the maximum level designated in the specification for an enrichment facility provided by the Department of Energy. That level is 4 ppm^{11/} of Tc in uranium, or $7E-8$ ci/gU. This figure would equal approximately 2.4 ci/RRY. Assuming a total release of input of Tc from the enrichment facility, and assuming that the other factors hold true with regard to uranium purification and conversion and HLW solidification, a total release on the order of 2.4 ci/RRY would occur. This also would be compensated for by the overestimate of the "impact equivalency" of 2.4 ci/RRY of Tc related to the assumption by the Staff of a total release of iodine-129, even if 100% release of Tc from the enrichment facility is assumed.

On the basis of the above material, it is abundantly clear that an assumption of total release of iodine-129 more than adequately compensates, rather than merely tending to compensate, for releases of Tc in the Table S-3.

^{11/} See 11/17/77 letter from R. W. McCauley to M. Resnikoff, and 9/6/77 letter from R. J. Hart to M. Resnikoff, in attachments to Sierra Club Response to Question No. 7.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Commission

In the Matter of)	
)	
URANIUM FUEL CYCLE IMPACTS)	Docket No. RM 50-3
FROM SPENT FUEL REPROCESS-)	
SING AND RADIOACTIVE WASTE)	

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of written comments pursuant to the Commission's Order of October 19, 1978, in this proceeding on behalf of Commonwealth Edison Company, Detroit Edison Company, Exxon Nuclear Company, Niagara Mohawk Power Corporation, Omaha Public Power District, Power Authority of the State of New York, Public Service Company of Indiana, Inc., and Rochester Gas and Electric Corporation was served this twenty-first day of November, 1978 by hand delivery or first class mail, postage prepaid, on the following persons:

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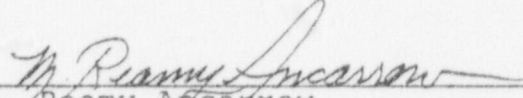
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Critical Files

November 6, 1978

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