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Docket Number 50-346

License Number NPF-3

Serial Number 1883

December 17, 1990

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555

Subject: License Amendment Request to Extend the Operating License (OL) Term  
to 40 Years from the Date of OL Issuance (TAC Number M75849)

Gentlemen:

By letter dated May 31, 1990 (Serial Number 1753), Toledo Edison submitted the subject license amendment request for Nuclear Regulatory Commission (NRC) approval. The requested license amendment would extend the term of the Davis-Besse Nuclear Power Station (DBNPS) Operating License to April 22, 2017, 40 years from the date of issuance. The current expiration date of March 24, 2011 is based on a 40 year term commencing on the date of issuance of the construction permit (March 24, 1971). Toledo Edison has requested NRC approval of this amendment request by December 31, 1990.

Attachment 2 of the subject license amendment request (letter Serial Number 1753) provided supplemental information pertaining to environmental considerations relative to the proposed extension of the Operating License. Recently, Toledo Edison has had several telephone discussions with the NRC Staff which have clarified and expanded this supplemental information. The purpose of this letter is to document the information provided in these telephone discussions. Principal areas of discussion related to population projections, the effect of additional carbon-14 released during the extension period, occupational exposure, and the environmental impacts associated with transportation and the uranium fuel cycle.

Attachment 2 of letter Serial 1753 updated the population projections presented in the Final Environmental Statement (FES) related to the operation of DBNPS Unit 1 (NUREG-75/097), dated October 1975. The principal source of the updated population projections was the "The Ohio County Profile - 1988" published by the Ohio Data Users Center. The Ohio County Profile - 1988 used 1980 national census data as its basis adjusted to reflect more recent information from other sources such as annual Department of Labor statistics.

Operating Companies:  
Cleveland Electric Illuminating  
Toledo Edison

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The population projections presented in the Ohio County Profile - 1988 reflect adjustments made in the 1986 time frame. Although a national census was conducted in 1990, published results of county level population projections based on the 1990 census are not expected to be available before mid-1991.

Attachment 2 to letter Serial 1753 also noted that population changes within the 10 mile radius emergency planning zone (EPZ) are periodically evaluated to update evacuation time estimates for the DBNPS Emergency Plan. The last evaluation, completed in December 1989, projects a slight decrease in the permanent population within the EPZ during the period from 1980 to 1991. These periodic evaluations which are conducted in conjunction with local and state authorities assure that the effectiveness of the emergency plan is not reduced by population changes in the EPZ.

Table 5.2 of the FES, "Annual Integrated Dose to the U.S. Population," identified carbon-14 (C-14) released from the DBNPS as a contributor to integrated population dose. The C-14 dose contribution presented in the FES was based on 30 years of operation. Since C-14 has a half life of 5730 years, the concentration of C-14 in the environment would not reach equilibrium during a 30 year period. An increase in a operating life would result in corresponding increases in environmental C-14 concentration and attributable population dose. Attachment 2 to letter Serial Number 1753 indicated that the increase in total annual dose (whole body and thyroid) would increase less than 10% considering the additional C-14 released for a forty year lifetime. For C-14, the dose presented in FES Table 5.2 is directly proportional to the amount of C-14 released during 30 years of plant operation. 40 years of assumed operation would multiply the Table 5.2 C-14 dose by a factor of four-thirds. Dose contributions of the other radionuclide groups listed in FES Table 5.2 are unaffected by the increased operating lifetime since they have relatively short half-lives and reach an equilibrium concentration which is unaffected by the length of operation assumed beyond 30 years. Multiplying the C-14 dose presented in FES Table 5.2 by a factor of four-thirds results in an increase of the total annual dose (thyroid and total body) from 136 to 147 man-rem, an increase of less than 10%.

The FES estimated that the annual occupational exposure associated with the operation of the DBNPS would be 450 man-rem. Attachment 2 of letter Serial Number 1753 referenced NUREG-0713, Volume 8, "Occupational Exposures at Commercial Nuclear Power Reactors and Other Facilities - 1986 - Nineteenth Annual Report," to illustrate that actual DBNPS occupational exposures are significantly less than that assumed in the FES. However, only data for the period 1982 through 1986 was identified and no discussion of internal contamination monitoring was included. During the period of operation from 1977 through 1989, results of internal radioactivity monitoring indicate that fewer than 10% of individuals have had positive results and that the maximum dose received by any individual from internal radioactivity is less than 6.3% of the Regulatory Limit. Table 1 lists occupational exposure at the DBNPS through 1989. The average annual occupational exposure over this period is 97.9 man-rem. 1990 occupational exposure is estimated at 100 man-rem. This larger than normal exposure is due primarily to the 10-year inservice inspections conducted during the sixth refueling outage.

Two more major ten-year interval inservice inspection outages would be expected during the current license term in the years 2000 and 2010. The proposed extension of the Operating License term from March 24, 2011 to April 22, 2017 will not add an additional major 10-year interval inservice inspection since the 10-year period extends beyond the proposed OL expiration date.

Attachment 2 of letter Serial Number 1753 provided a discussion of the effects of the proposed license extension on the FES assessment of environmental impacts transportation of radioactive material and the uranium fuel cycle. The FES assumed annual refuelings and that spent fuel would be shipped offsite for reprocessing or to a final spent fuel repository. Since the FES was written, reprocessing of spent fuel was abandoned, and the final spent fuel repository is not likely to be available until after the year 2010, resulting in spent fuel being stored at reactor sites for periods longer than assumed in the FES. Additionally, plants including the DBNPS now plan longer intervals between refueling than the annual refueling intervals assumed in the FES. As discussed below the impacts of these changes to the uranium fuel cycle have been generically assessed and determined to not involve significant environmental impacts.

The DBNPS completed its sixth refueling in 1990. Based on an annual cycle as assumed in the FES, 26 annual refuelings would be required for operation through the proposed extension, a total of 32 refuelings over the license term. This would represent approximately a 10% increase for the model light water reactor (LWR) assumed in the FES. DBNPS now plans 18 month refueling intervals. Based on an eighteen month refueling interval, 17 refueling outages would be required for operation through the proposed extension, for a total of 23 over the license term. This significantly reduces the environmental impact of transportation and final disposal of spent fuel as compared with the 29 refuelings assumed in the FES. While 18 month refueling intervals have the effect of reducing the total number of fuel assemblies used as compared with annual refuelings, higher fuel enrichment and extended fuel burnup are required. The environmental impacts of the uranium fuel cycle associated with higher enrichments and extended fuel burnups have been generically assessed by the NRC in 53 FR 6040, dated February 29, 1988, "Extended Burnup Fuel Use in Commercial LWRs; Environmental Assessment and Finding of No Significant Impact," and 53 FR 30355 dated August 11, 1988, "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation." In summary, the NRC staff generically concluded that there are no significant adverse radiological or non-radiological impacts associated with use of higher enrichment and extended burnup fuel in LWRs and that the transportation impacts of extended irradiation and increased fuel enrichment are bounded by the impacts reported in Table S-4 of 10CFR51.

The FES did not anticipate onsite storage of spent fuel. However, the environmental impacts of onsite storage have been generically assessed as part of the five year update of the Waste Confidence Rulemaking (55FR38472) dated September 8, 1990, "Consideration of the Environmental Impacts of Temporary

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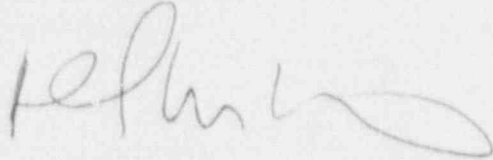
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Storage of Spent Fuel After Cessation of Reactor Operation," and 55FR38474 dated September 18, 1990, "Waste Confidence Review." As stated in the revised 10CFR51.28, the Commission has determined that spent fuel generated in any reactor facility can be stored safely and without significant environmental impacts in reactor storage pools or independent spent fuel storage installations for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license).

If you have any questions regarding this information, please contact Mr. R. W. Schrauder, Manager - Nuclear Licensing at (419) 249-2366.

Very truly yours,



cc: P. M. Byron, DB-1 NRC Resident Inspector  
A. E. Davis, Regional Administrator, NRC Region III  
M. D. Lynch, DB-1 NRC Senior Project Manager  
Utility Radiological Safety Board

Table 1

Annual DBNPS Occupational Exposure  
(1977 - 1989)

Year	Dose (Man-Rem)
1977	1.15
1978	49.6
1979	24.6
1980	132.0
1981	58.5
1982	164.2
1983	80.1
1984	176.8
1985	70.5
1986	124.0
1987	47.3
1988	307.7
1989	36.6