

**Nuclear Regulatory Commission**

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from the reactor, with respect to normal conditions of transport and possible accidents in transport, are as set forth in Summary Table S-4 in paragraph (c) of this section; and the values in the table represent the contribution of the transportation to the environmental costs of licensing the reactor.

(b) For reactors not meeting the conditions of paragraph (a) of this section, the statement shall contain a full description and detailed analysis of the

environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport. The statement shall indicate that the values determined by the analysis represent the contribution of such effects to the environmental costs of licensing the reactor.

(c)

**SUMMARY TABLE S-4—ENVIRONMENTAL IMPACT OF TRANSPORTATION OF FUEL AND WASTE TO AND FROM ONE LIGHT-WATER-COOLED NUCLEAR POWER REACTOR <sup>1</sup>**

Normal Conditions of Transport

	Environmental impact
Heat (per irradiated fuel cask in transit) .....	250,000 Btu/hr.
Weight (governed by Federal or State restrictions) .....	73,000 lbs. per truck; 100 tons per cask per rail car.
Traffic density:	
Truck .....	Less than 1 per day.
Rail .....	Less than 3 per month

Exposed population	Estimated number of persons exposed	Range of doses to exposed individuals <sup>2</sup> (per reactor year)	Cumulative dose to exposed population (per reactor year) <sup>3</sup>
Transportation workers .....	200	0.01 to 300 millirem .....	4 man-rem.
General public:			
Onlookers .....	1,100	0.003 to 1.3 millirem .....	3 man-rem.
Along Route .....	600,000	0.0001 to 0.06 millirem .....	

Accidents in Transport

	Environmental risk
Radiological effects .....	Small <sup>4</sup>
Common (nonradiological) causes .....	1 fatal injury in 100 reactor years; 1 nonfatal injury in 10 reactor years; \$475 property damage per reactor year.

<sup>1</sup> Data supporting this table are given in the Commission's "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants," WASH-1238, December 1972, and Supp. 1 NUREG-75/038 April 1975. Both documents are available for inspection and copying at the Commission's Public Document Room, 2120 L Street NW., Washington, DC and may be obtained from National Technical Information Service, Springfield, VA 22161. WASH-1238 is available from NTIS at a cost of \$5.45 (microfiche, \$2.25) and NUREG-75/038 is available at a cost of \$3.25 (microfiche, \$2.25).

<sup>2</sup> The Federal Radiation Council has recommended that the radiation doses from all sources of radiation other than natural background and medical exposures should be limited to 5,000 millirem per year for individuals as a result of occupational exposure and should be limited to 500 millirem per year for individuals in the general population. The dose to individuals due to average natural background radiation is about 130 millirem per year.

<sup>3</sup> Man-rem is an expression for the summation of whole body doses to individuals in a group. Thus, if each member of a population group of 1,000 people were to receive a dose of 0.001 rem (1 millirem), or if 2 people were to receive a dose of 0.5 rem (500 millirem) each, the total man-rem dose in each case would be 1 man-rem.

<sup>4</sup> Although the environmental risk of radiological effects stemming from transportation accidents is currently incapable of being numerically quantified, the risk remains small regardless of whether it is being applied to a single reactor or a multireactor site.

[49 FR 9381, Mar. 12, 1984; 49 FR 10922, Mar. 23, 1984, as amended at 53 FR 43420, Oct. 27, 1988; 72 FR 49512, Aug. 28, 2007]

**§51.53 Postconstruction environmental reports.**

(a) *General.* Any environmental report prepared under the provisions of this section may incorporate by reference any information contained in a prior environmental report or supplement thereto that relates to the pro-

duction or utilization facility or site, or any information contained in a final environmental document previously prepared by the NRC staff that relates to the production or utilization facility or site. Documents that may be referenced include, but are not limited to,

the final environmental impact statement; supplements to the final environmental impact statement, including supplements prepared at the license renewal stage; NRC staff-prepared final generic environmental impact statements; and environmental assessments and records of decisions prepared in connection with the construction permit, operating license, early site permit, combined license and any license amendment for that facility.

(b) *Operating license stage.* Each applicant for a license to operate a production or utilization facility covered by §51.20 shall submit with its application a separate document entitled “Supplement to Applicant’s Environmental Report—Operating License Stage,” which will update “Applicant’s Environmental Report—Construction Permit Stage.” Unless otherwise required by the Commission, the applicant for an operating license for a nuclear power reactor shall submit this report only in connection with the first licensing action authorizing full-power operation. In this report, the applicant shall discuss the same matters described in §§51.45, 51.51, and 51.52, but only to the extent that they differ from those discussed or reflect new information in addition to that discussed in the final environmental impact statement prepared by the Commission in connection with the construction permit. No discussion of need for power, or of alternative energy sources, or of alternative sites for the facility, or of any aspect of the storage of spent fuel for the facility within the scope of the generic determination in §51.23(a) and in accordance with §51.23(b) is required in this report.

(c) *Operating license renewal stage.* (1) Each applicant for renewal of a license to operate a nuclear power plant under part 54 of this chapter shall submit with its application a separate document entitled “Applicant’s Environmental Report—Operating License Renewal Stage.”

(2) The report must contain a description of the proposed action, including the applicant’s plans to modify the facility or its administrative control procedures as described in accordance with §54.21 of this chapter. This report must describe in detail the

modifications directly affecting the environment or affecting plant effluents that affect the environment. In addition, the applicant shall discuss in this report the environmental impacts of alternatives and any other matters described in §51.45. The report is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such costs and benefits are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. The environmental report need not discuss other issues not related to the environmental effects of the proposed action and the alternatives. In addition, the environmental report need not discuss any aspect of the storage of spent fuel for the facility within the scope of the generic determination in §51.23(a) and in accordance with §51.23(b).

(3) For those applicants seeking an initial renewed license and holding an operating license, construction permit, or combined license as of June 30, 1995, the environmental report shall include the information required in paragraph (c)(2) of this section subject to the following conditions and considerations:

(i) The environmental report for the operating license renewal stage is not required to contain analyses of the environmental impacts of the license renewal issues identified as Category 1 issues in appendix B to subpart A of this part.

(ii) The environmental report must contain analyses of the environmental impacts of the proposed action, including the impacts of refurbishment activities, if any, associated with license renewal and the impacts of operation during the renewal term, for those issues identified as Category 2 issues in appendix B to subpart A of this part. The required analyses are as follows:

(A) If the applicant’s plant utilizes cooling towers or cooling ponds and withdraws make-up water from a river whose annual flow rate is less than  $3.15 \times 10^{12}$  ft<sup>3</sup>/year ( $9 \times 10^{10}$  m<sup>3</sup>/year), an assessment of the impact of the proposed action on the flow of the river and related impacts on instream and riparian

ecological communities must be provided. The applicant shall also provide an assessment of the impacts of the withdrawal of water from the river on alluvial aquifers during low flow.

(B) If the applicant's plant utilizes once-through cooling or cooling pond heat dissipation systems, the applicant shall provide a copy of current Clean Water Act 316(b) determinations and, if necessary, a 316(a) variance in accordance with 40 CFR part 125, or equivalent State permits and supporting documentation. If the applicant can not provide these documents, it shall assess the impact of the proposed action on fish and shellfish resources resulting from heat shock and impingement and entrainment.

(C) If the applicant's plant uses Ranney wells or pumps more than 100 gallons (total onsite) of ground water per minute, an assessment of the impact of the proposed action on ground-water use must be provided.

(D) If the applicant's plant is located at an inland site and utilizes cooling ponds, an assessment of the impact of the proposed action on groundwater quality must be provided.

(E) All license renewal applicants shall assess the impact of refurbishment and other license-renewal-related construction activities on important plant and animal habitats. Additionally, the applicant shall assess the impact of the proposed action on threatened or endangered species in accordance with the Endangered Species Act.

(F) If the applicant's plant is located in or near a nonattainment or maintenance area, an assessment of vehicle exhaust emissions anticipated at the time of peak refurbishment workforce must be provided in accordance with the Clean Air Act as amended.

(G) If the applicant's plant uses a cooling pond, lake, or canal or discharges into a river having an annual average flow rate of less than  $3.15 \times 10^{12}$  ft<sup>3</sup>/year ( $9 \times 10^{10}$  m<sup>3</sup>/year), an assessment of the impact of the proposed action on public health from thermophilic organisms in the affected water must be provided.

(H) If the applicant's transmission lines that were constructed for the specific purpose of connecting the plant to the transmission system do not meet

the recommendations of the National Electric Safety Code for preventing electric shock from induced currents, an assessment of the impact of the proposed action on the potential shock hazard from the transmission lines must be provided.

(I) An assessment of the impact of the proposed action on housing availability, land-use, and public schools (impacts from refurbishment activities only) within the vicinity of the plant must be provided. Additionally, the applicant shall provide an assessment of the impact of population increases attributable to the proposed project on the public water supply.

(J) All applicants shall assess the impact of highway traffic generated by the proposed project on the level of service of local highways during periods of license renewal refurbishment activities and during the term of the renewed license.

(K) All applicants shall assess whether any historic or archaeological properties will be affected by the proposed project.

(L) If the staff has not previously considered severe accident mitigation alternatives for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment, a consideration of alternatives to mitigate severe accidents must be provided.

(M) [Reserved]

(iii) The report must contain a consideration of alternatives for reducing adverse impacts, as required by §51.45(c), for all Category 2 license renewal issues in appendix B to subpart A of this part. No such consideration is required for Category 1 issues in appendix B to subpart A of this part.

(iv) The environmental report must contain any new and significant information regarding the environmental impacts of license renewal of which the applicant is aware.

(d) *Postoperating license stage.* Each applicant for a license amendment authorizing decommissioning activities for a production or utilization facility either for unrestricted use or based on continuing use restrictions applicable to the site; and each applicant for a license amendment approving a license termination plan or decommissioning

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plan under § 50.82 of this chapter either for unrestricted use or based on continuing use restrictions applicable to the site; and each applicant for a license or license amendment to store spent fuel at a nuclear power reactor after expiration of the operating license for the nuclear power reactor shall submit with its application a separate document, entitled “Supplement to Applicant’s Environmental Report—Post Operating License Stage,” which will update “Applicant’s Environmental Report—Operating License Stage,” as appropriate, to reflect any new information or significant environmental change associated with the applicant’s proposed decommissioning activities or with the applicant’s proposed activities with respect to the planned storage of spent fuel. Unless otherwise required by the Commission, in accordance with the generic determination in § 51.23(a) and the provisions in § 51.23(b), the applicant shall only address the environmental impact of spent fuel storage for the term of the license applied for. The “Supplement to Applicant’s Environmental Report—Post Operating License Stage” may incorporate by reference any information contained in “Applicants Environmental Report—Construction Permit Stage.

[61 FR 66543, Dec. 18, 1996, as amended at 64 FR 48506, Sept. 3, 1999; 68 FR 58810, Oct. 10, 2003; 72 FR 49513, Aug. 28, 2007]

### **§ 51.54 Environmental report—manufacturing license.**

(a) Each applicant for a manufacturing license under subpart F of part 52 of this chapter shall submit with its application a separate document entitled, “Applicant’s Environmental Report—Manufacturing License.” The environmental report must address the costs and benefits of severe accident mitigation design alternatives, and the bases for not incorporating severe accident mitigation design alternatives into the design of the reactor to be manufactured. The environmental report need not address the environmental impacts associated with manufacturing the reactor under the manufacturing license, the benefits and impacts of utilizing the reactor in a nuclear

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power plant, or an evaluation of alternative energy sources.

(b) Each applicant for an amendment to a manufacturing license shall submit with its application a separate document entitled, “Applicant’s Supplemental Environmental Report—Amendment to Manufacturing License.” The environmental report must address whether the design change which is the subject of the proposed amendment either renders a severe accident mitigation design alternative previously rejected in an environmental assessment to become cost beneficial, or results in the identification of new severe accident mitigation design alternatives that may be reasonably incorporated into the design of the manufactured reactor. The environmental report need not address the environmental impacts associated with manufacturing the reactor under the manufacturing license.

[72 FR 49513, Aug. 28, 2007]

### **§ 51.55 Environmental report—standard design certification.**

(a) Each applicant for a standard design certification under subpart B of part 52 of this chapter shall submit with its application a separate document entitled, “Applicant’s Environmental Report—Standard Design Certification.” The environmental report must address the costs and benefits of severe accident mitigation design alternatives, and the bases for not incorporating severe accident mitigation design alternatives in the design to be certified.

(b) Each applicant for an amendment to a design certification shall submit with its application a separate document entitled, “Applicant’s Supplemental Environmental Report—Amendment to Standard Design Certification.” The environmental report must address whether the design change which is the subject of the proposed amendment either renders a severe accident mitigation design alternative previously rejected in an environmental assessment to become cost beneficial, or results in the identification of new severe accident mitigation