

NUCLEAR INFORMATION AND RESOURCE SERVICE

1424 16th Street NW Suite 404

Washington, DC 20036

Tel. 202 328 0002 <http://www.nirs.org>

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Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

By Email: LRGEIS@nrc.gov

Comments of Nuclear Information and Resource Service on the Notice of Intent to Prepare an Environmental Impact Statement for the License Renewal of Nuclear Power Plants and To Conduct Scoping Process

On behalf of Nuclear Information and Resource Service (NIRS), I am providing comments to the Notice of Intent to Prepare an Environmental Impact Statement for the License Renewal of Nuclear Power Plants and To Conduct Scoping Process as it appeared in the Federal Register, June 3, 2003 (Volume 68, Number 106).

The Generic Environmental Impact Statement (GEIS) analyzes the significance of the environmental impacts of continued operation of nearly 100 issues for the 20-year license extension of nuclear power stations. NRC categorized each of the issues and concluded that of the 92 issue analyzed by NRC staff, 69 issues can be dismissed as generic from site-specific proceedings potentially involving public interventions, 21 issues require further site-specific assessment analysis that applicants are required to review and address, and 2 issues require a site-specific review by NRC.

NIRS continues to take issue with the determination by NRC that an environmental issue is "resolved" or absolved of redress in simply by listing it as a generic consideration. The mere listing does not necessarily translate into actual resolution and the meaningful mitigation of environmental issues at site specific reactors. NIRS takes note that in fact such treatment currently removes it from challenge by contentions in a public intervention process. Through such means, NRC and the nuclear industry currently enjoy the advantage to indefinitely table resolution at increasing risk to public safety and environmental health and avoid addressing such issues during the licensing proceeding.

For example, generic resolution of the high-level radioactive waste issue through the reliance on the Waste Confidence Decision does not necessarily lead to the timely removal and successful isolation of high-level radioactive waste accumulating on sites located on the shores of the Great Lakes. Confidence can be shaken by reality.

NIRS offers the following concerns and requested scoping actions that regard other examples of false confidence and inadequate analysis incorporated into the Generic Environmental Impact Statement for License Extension.

(1) Lack of Analysis for Increased Public Health Risk Associated with Additional Radiation Exposures to Routine Operational Releases as a Result from 20-year License Extension

The Environmental Impact Statement (EIS) fails to properly consider the potential impact on human health from radioactive releases during normal plant operation.

On one hand, Section 4.1.2 of the Supplemental Environmental Impact Statement (SEIS) for Calvert Cliffs discusses the impacts of routine plant operating on fish and shellfish, reporting that "...approximately 1,600,000 finfish and blue crabs would be collected on the traveling screens, 260,000 would die...".

On the other, Section 4.3 of the SEIS for Calvert Cliffs discusses the potential impact on human health from radioactive material released during normal plant operation. On page 4-16, the EIS states, "No significant new information has been identified by the staff in the review process and in the staff's independent review."

Why are the environmental impacts on fish and shellfish discussed in detail while radiation impacts on human health are not detailed?

The NRC typically replies that an evaluation for radiation impacts on humans is outside the scope of the environmental reviews. Within the scope of license extension, this type of response is increasing inappropriate. Nuclear power station operations routinely discharge radioactive gas, particulate and effluent. Annual radioactive release filings by licensees to the NRC document the ongoing discharge of persistent radioactive toxins (measured in half-lives) that are bio-concentrating and bio-accumulative. For example, licensee annual radioactive release reports identify that a typical nuclear power station will routinely discharge short-lived noble gases that decay into long-lived radioactive particulate. The fallout of radioactive particulate then bio-magnifies in downwind environments of operating nuclear power stations.

For example, typical routine discharges contain the following gas-to-particulate isotopes:

*krypton-89 (3.2 minute half-life) decays into strontium-89 (52 day half-life)

*xenon-137(3.9 minute half-life decays into cesium-137 (30 year half-life)

*xenon-135 (9.17 hour half-life) decays into cesium-135 (3 million year half-life)

There remains no known or established safe threshold level for human exposure to radiation. Each additional exposure raises, not lowers, the risk of deleterious health and genetic consequences. The current EIS for license extension fails to seriously address this matter. It is unreasonable for the EIS to go into considerable detail when evaluating the impact of station operation on fish and shellfish populations and, at best, only

superficially evaluate potential radiological impacts of station operation on human populations downwind, downstream, in close proximity and long duration of residency.

During the initial licensing of nuclear power stations, the NRC assumed that the various regulations governing routine releases of radioactive materials provided adequate protection of public health. The NRC has failed to ensure that its original assumption is valid. An environmental impact statement with considerably less attention paid to potential human health consequences from routine radiation releases than from impingement of fish and shellfish is totally inconsistent with the NRC's federal mandate to protect public health and safety.

The final report must include a detailed assessment of potential health consequences from routine and bio-magnifying radiation releases. This assessment should be made by a station-specific evaluation involving independent and peer review. The evaluation can not be the simply repackaging of past generic studies.

If detailed assessments of potential health consequences from cumulative and routine radiation releases from nuclear power stations seeking license renewal contradict NRC's previous assumption, then it becomes necessary to conduct this assessment effort for all subsequent license renewal applications. Otherwise, it is imprudent for the NRC to continue to grant 20-year extensions without such public health assessments.

(2) Increased Security Risks Associated with 20-year License Extensions

The Commission must reconsider its unfair and unfounded treatment of security issues and contentions in context of the 20-year license extension process.

The Commission currently disallows license renewal contentions based on security issues and the associated increase in risk to public health, safety and the environment on the basis that terrorism is "too speculative" to be raised under National Environmental Protection Act. The Commission's dismissal is unfounded by fact that President George Bush disclosed in a State of the Union speech that a credible threat to U.S. nuclear power stations exists from the al Qaeda network.

The threat to nuclear power stations from high-jacked, stolen, or rented cargo planes from general aviation fields is not currently evaluated for the risk posed to public health, safety and environment by security gaps or nonexistent security. The Federal Aviation Administration is nowhere near assessing the threat posed by acts of terrorism directed from general aviation fields against critical infrastructure, namely nearby nuclear power stations.

The Commission must therefore provide for a concerned and affected public to assess, address and contend under the National Environmental Protection Act the associated risks from terrorism to a site-specific licensing proceeding as Category 2 items.

(3) Age-related Degradation Surprises Are More Likely With 20-Year License Extension at the Same Time the Agency Has Demonstrated To Shirk Its Regulatory Duty

The agency wrongly assumes that the license extension process and the associated environmental impact statements can adequately manage into the license extension period. In fact, events contradict such agency and industry assertions. The Davis-Besse operating license is explicitly conditional on the NRC's having found that the facility will operate in conformity with the Commission's regulations. There is ample evidence to the contrary. The Davis-Besse reactor was shut down from June 1985 through December 1986 undergoing extensive repairs to return the facility to conformance with the Commission's regulations. The Davis-Besse reactor has been shut down since February 2002 undergoing extensive repairs to return the facility to the Commission's regulations. NIRS contends that the agency and the example licensee have miserably failed in the present to adequately manage age-related degradation of safety-related systems, structures and components. NIRS, therefore, cites the failure of the NRC to hold the operators of the Davis-Besse nuclear power station to its licensing agreements with regard to boric acid corrosion control and the subsequent unanticipated near failure of the primary pressure boundary at the its reactor vessel pressure vessel head. The NRC has reneged on its fiduciary responsibility to protect the public from a nuclear reactor operating outside of federal safety regulations.

Furthermore, an Office of the Inspector General report released in December 2002 concludes that the agency allowed Davis-Besse operators to place the company's production agenda ahead of maintain reactor safety margins.

Aging nuclear power stations failure rates should therefore be anticipated to follow a Bathtub Curve where component failure rates are likely to unpredictably increase as reactors age and enter into the Break-down phase.

Critical age-related degradation mechanisms are not adequately understood to make the claim that the agency can adequately manage degradation to the exclusion of contentions in a site specific license extension proceeding. The predictability of crack initiation and crack growth rates in safety related components is presently unreliable. There has been an increase in unanticipated failure events that have significantly undermined critical industry and agency-held assumptions regarding degradation mechanisms.

The public has therefore lost confidence in the NRC's willingness to regulate and enforce licensing commitments and corrective action programs.

Therefore, age-related degradation issues must be reconsidered as Category 2 items where contentions are admissible under NEPA in site-specific license extension proceedings.

(4) Lack of Analysis for Nuclear Waste Proliferation and Unfair Treatment of Alternatives and 20-year Extensions

The issues of nuclear waste proliferation are widely recognized as worthy of regulatory attention and public due process within the context of the license extension proceeding. In one of the more obvious examples for such a need, the International Joint Commission called for site specific proceedings for reactors on the Great Lakes.

“All environmental requirements for nuclear reactor facilities call for sufficient on-site storage for high-level wastes, primarily fuel rods. At virtually all nuclear power plants, spent fuel rods continue to accumulate in storage facilities originally intended to be only temporary. The on-going actions by the U.S. government to develop storage facilities in Nevada may mitigate this situation. Under the license renewal guidelines, the on-site storage problem is exempted from consideration in license applications. However, the possibility of radioactive waste discharges to the Great Lakes from breaching of the sites must be considered in the application for license renewal and extension. The issue of security at nuclear power plants has also been raised.”¹

The supplement environmental impact statements (SEIS) appear unfairly biased. For example, page 6-4 of the SEIS for Calvert Cliffs nuclear power station states, "...in accordance with Commission's Waste Confidence Decision, 10 CFR 51.23, a repository can and likely will be developed at some site..."

In section 8.2.4.7, the SEIS states, "None of these technologies [biomass-derived fuels] have progressed to the point of being competitive on a large scale or of being reliable enough to replace a base load plant such as CCNPP." Other renewable energy technologies are comparably dismissed in Section 8.2.4 of the draft SEIS.

On one hand, the SEIS gives full credit to one uncertain, unproven and unlicensed technology (i.e., disposal of high-level nuclear waste). Nuclear utilities have filed suit against the Department of Energy for breach of contract related to overdue acceptance of high level nuclear waste. That lawsuit clearly suggests some doubt regarding the reliability and availability of a repository.

On the other hand, the SEIS tosses aside renewable technologies claiming that their development has not progressed enough to be reliable at this time, even though the SEIS is typically submitted more than a decade in advance of the expiration of the applicant's operating license. The draft SEIS apparently presumes that the repository will someday become available but that renewable technologies will not. Thus, the draft SEIS appears to apply separate standards to favor nuclear power and penalize alternatives. Inequitable treatment must be removed from the final report.

(5) Less Than Thorough Analysis for Climate Change and the 20-year Extension of Nuclear Power Operations

The collective activity of the human race is in the process of altering the climate of the Earth. The nuclear industry does not dispute this fact and even goes so far as to make the

¹ 11th Biennial Report, Great Lakes Water Quality, "The Challenge to Restore and Protect the Largest Body of Fresh Water in the World", Section 12 Nuclear Issues, International Joint Commission, September 2002

claim that nuclear power can contribute to efforts to avert global warming. It is widely understood that mitigation can only change processes in the future, beyond the coming decade or two and perhaps longer. The effects of past human activity including air emissions will govern the changes in weather patterns now being documented and those for the license extension periods. The global outlook is increasing severity in weather patterns, particularly storms both in number and severity, increased temperatures, receiving water levels, precipitation and other variables. An article that appeared in the Washington Post linked higher temperatures from global warming to the melting of most of the Arctic's summer icecap by the end of the century. The three year international study indicated that ice around the North Pole shrunk by 7.4% in the past 25 years with a record small summer coverage in September 2002.²

Global warming was recently documented to have significantly changed government operations related to nuclear waste management in Russia. The Atomic Energy Ministry had approved the construction of a US\$70 million nuclear waste storage facility on Novaya Zemlya in June 2002. Climate change was cited as "instrumental in Russia's decision not to construct a nuclear waste storage facility on the island of Novaya Zemlya in the Arctic Ocean. The decision puts an end to plans Russia has been formulating for more than a decade."³

Despite ongoing warnings, the nuclear industry and the Nuclear Regulatory Commission have failed to thoroughly analyze the multiple environmental impacts these accelerating climate changes will have on reactor operations, as well as the ways that it will change the type and magnitude of impact that the reactors have on their external surroundings.

Analysis of climate change must also include an analysis of the increased potential of Station Blackout by virtue of projected increased numbers of hurricanes, tornadoes, drought induced ground and forest fires, and other severe weather impacts.

Another area of concern is the once-through cooling system for nuclear power stations. Once-through cooling is widely used throughout the U.S. nuclear industry; 48 units rely exclusively on once-through cooling systems. Eleven units utilize a combination of once-through with cooling tower assistance. A typical once-through cooling system takes in on the order of 1 billion gallons of water per day per reactor unit. The water temperature must meet criteria to adequately service the condenser for the steam line in order to efficiently cool the reactor. Obviously, warm water is less efficient as a cooling agent. As the lake or river temperature goes up, the ability to cool the steam exiting the turbine goes down. The condenser becomes less and less able to convert the steam back into water. The pressure inside the condenser rises (it is at a vacuum to the atmosphere to help it pull the steam out of the turbine). If the condenser pressure rises too far, the steam "loiters" in the turbine longer than it should. This can damage the turbine. So, the turbine automatically trips on high condenser pressure. As such, service water temperatures warmer than specified can lead to unsafe operational conditions within the reactor.

² "Global Warming May Melt Arctic Icecaps," Washington Post, August 14, 2003, p. A4

³ "Warming Climate Ruins Plans for Russian Arctic Nuclear Dump," MOSCOW, Russia, August 8, 2003 (ENS)

For example, as a result of the summer of 2003 heat wave, the French and other European nuclear power stations were adversely impacted by a severe heat wave which has increased river water temperatures by 9° F (5° C).⁴ The crisis over nuclear safety at French reactors as rising atmospheric and water temperatures soared demonstrates the concern for prolonged climate change impacts that can defeat efforts to adequately cool the nuclear power stations. Moreover, nuclear power station operators are seeking relaxations to thermal pollution permits in order to discharge warmer coolant water that in fact will have an adverse effect on aquatic and marine habitat and wildlife.

Because of the climatic impact on a variety of service and receiving water conditions (salt versus fresh, depth, available volumes, etc.) NIRS is opposed to categorization of the environmental impact as a Category 1 item. As each site can be uniquely impacted by climatic change thus NIRS contends that climatic changes need to be addressed as a Category 2 items.

(6) Increased Damage to Marine and Aquatic Environments as the Result of Once-Through Cooling System Damage and 20-year license extension.

Appendix B to Subpart A “The Environmental Effect of Renewing the Operating License of a Nuclear Power Plant” for Aquatic Ecology states that cold shock, thermal plume and scouring be treated as Category 1 items with small impact. Recent studies conducted at the state level surpass NRC’s earlier conclusions.

On July 11, 2003 the State of New York publicly released a study including an assessment of the Indian Point once-through cooling system environmental impact on fish eggs, larvae, small fish and aquatic vegetation in the Hudson River that directly contradicts earlier NRC findings regarding Thermal Plume Barriers To Migrating Fish--Category 1--SMALL. Thermal plumes have not been found to be a problem at operating nuclear power plants and are not expected to be a problem during the license renewal term.”

On July 11, 2003 the California Water Quality Control Board-Central Coastal Region abandoned a proposed settlement with Pacific Gas and Electric on once-through cooling system for Diablo Canyon nuclear power station’s severe thermal pollution of Diablo Cove and destruction of marine habitat. The findings of the California Water Quality Control Board assessment of the thermal discharge from Diablo Canyon are in direct contradiction to NRC finding “Scouring caused by discharged cooling water--Category 1--SMALL. Scouring has not been found to be a problem at most operating nuclear power plants and has caused only localized effects at a few plants. It is not expected

⁴ “France Frets Over Nuke Plants and Heatwave Toll”, Reuters, Monday, August 11, 2003 08:44 AM ET

to be a problem during the license renewal term.” In fact, CWQCB concluded that Diablo Canyon’s thermal discharged had scoured significant portions of Diablo Cove to “essentially bare rock.”⁵

Similarly, the State of Vermont has additionally requested that a study of Vermont Yankee nuclear power station’s to assess the proposed 20 % power uprate and thermal plume impact on fish populations in the Connecticut River.

Therefore, NIRS contends that the environmental impact on aquatic ecology assessment and treatment as a Category 1 item has been surpassed by more recent studies released by the State of New York and the State of California. These items should therefore be re-evaluated as Category 2 items for NEPA contentions admissible in site specific proceedings for license extension.

Sincerely,

Paul Gunter, Director
Reactor Watchdog Project
NIRS

⁵ Michael Thomas, Project Manager, Central Coastal Region California Water Quality Control Board, Rebuttal Testimony in Support of Cease and Desist Order No.00-032, May 05, 2000, p.6.