



State of California

GOVERNOR'S OFFICE
SACRAMENTO 95814

EDMUND G. BROWN JR.
GOVERNOR

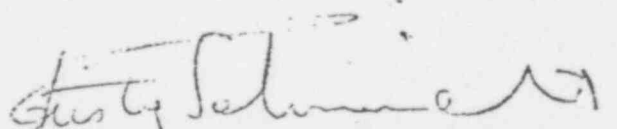
May 25, 1979

(916) 322-7691

Dear Dr. Hendrie:

Enclosed is a copy of the report of the Nuclear Power Plant Emergency Response Panel established by Governor Brown after the Three Mile Island incident. I thought you would find it of interest.

Sincerely,


Russell L. Schweickart
Assistant to the Governor
for Science and Technology

Enclosure

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Memorandum

To : Edmund G. Brown Jr.
Governor

Date : May 18, 1979

Subject: Recommendations of
the Nuclear Power Plant
Emergency Review Panel

From : Russell L. Schweickart
Assistant for Science
and Technology



In response to your request, I am transmitting to you the recommendations of the Nuclear Power Plant Emergency Review Panel. These recommendations are designed to improve our emergency response capabilities to provide greater protection to the public in the event of a nuclear power plant accident here in California.

In arriving at these findings, representatives of the panel met with federal, state and local officials, consulted with utility representatives, and held public hearings in Los Angeles and Sacramento. Additionally, panel members reviewed many reports, studies, transcripts and other documents in their deliberations. I am confident, therefore, that we have learned from the Three Mile Island experience and that the actions which we propose will significantly improve our ability to deal with nuclear power plant accidents here in California.

Upon your concurrence and favorable action by the Legislature, adoption of the Panel's recommendations would have the following major results:

1. The area around California's nuclear power plants for which evacuation should be planned will be expanded to account for "Class 9" accidents (core meltdown and breach of containment). Thus a larger number of citizens, who live in the vicinity of nuclear power plants, will be covered by emergency plans and protective measures.
2. Timely notification of public authorities in the event of incidents with possible public health consequences would become certain and mandatory under state law. Additionally, critical occurrences at the plants, such as activation of emergency core cooling systems and high radiation levels would automatically send alarms to local and state emergency control centers.

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3. Under those conditions at a nuclear power plant which may require emergency actions by state and/or local authorities to protect the public health and safety, a certified state official will be dispatched to the power plant to serve as the state liaison officer and on-site representative. This will assure credible communications between the plant and emergency response authorities.
4. The Department of Health Services will procure and deploy potassium iodide tablets to local emergency response agencies. These tablets, which protect the thyroid from radioactive iodine, will be distributed to the public endangered by an actual or imminent release of these materials in the event of a nuclear power plant accident.
5. Educational materials on radiation, its potential effects, and the kinds of events which can occur at nuclear plants will be distributed to the public within the emergency planning zone around nuclear power plants. Also included will be instructions on protective measures and emergency plans including evacuation information.

While it will require additional resources to improve our readiness to deal with possible nuclear power plant accidents, the panel has concluded that these efforts should be funded by the utilities operating nuclear power plants. The cost of emergency preparedness is an additional expense associated with this power source, hence, it is appropriate that those expenses be offset by the power companies and not the taxpayers in general.

It is my feeling that with implementation of these recommendations our ability to protect the public from the consequences of a serious nuclear power plant accident here in California will be considerably improved. It is essential that all of us recognize that no matter how diligent the nuclear regulatory authorities and the power plant operators are in assuring safety in the operation of these facilities, there will be serious nuclear accidents. We must, therefore, be prepared to act decisively in these circumstances to minimize the consequences to the California citizens whom we serve.

NUCLEAR POWER PLANT EMERGENCY REVIEW PANEL RECOMMENDATIONS

A. PLANNING AND EMERGENCY RESPONSE

Issue: Present planning for nuclear power plant incidents is based on the likelihood of a so-called "design basis" accident which might affect those living in the low population zone, 3-6 miles from the plant. The experience at Three Mile Island indicates that the magnitude of nuclear power plant accidents could be greater than previously believed and that the effects of such accidents could extend beyond the scope of existing emergency plans.

Recommendation A-1.

The California Energy Commission should determine the probable consequences of a release of radioactive material from nuclear power plant accidents involving core melting and breach-of-containment (class 9 accidents). As part of this study, the Energy Commission should prepare, within six months, site specific maps for each of California's commercial nuclear power plants showing the areas likely to be affected by such a release. These areas shall be designated as Emergency Planning Zones, where evacuation or other protective actions would be required and where the food chain would be affected. This analysis would consider the size and type of reactor, local topography, weather conditions and other relevant factors.

Implementation: Governor's Directive

Recommendation A-2.

The State Office of Emergency Services (OES) should revise its Nuclear Power Plant Emergency Response Plan to reflect the information provided by the Energy Commission; a similar upgrading of other state agencies' plans and procedures should be ordered.

Implementation: Governor's Directive

Issue: Local authorities have the primary responsibility for preparing emergency response plans for nuclear power plant accidents. Like the state plan, however, local plans are based on the present planning criteria. Furthermore, many counties outside the existing low population zones have no plans, but are likely to be within the enlarged planning areas delineated by the California Energy Commission.

Recommendation A-3.

Local planning for nuclear power plant accidents should be mandated by state law for any jurisdiction where protective action might be required. County plans should be based on guidance developed by the State Office of Emergency Services, consistent with information provided by the Energy Commission. OES should continue to be responsible for coordination and approval of these plans.

In developing its approval criteria, OES should give special attention to problems of large-scale evacuations, appropriate in-place protective actions, as well as special protection for the handicapped and those in hospitals, convalescent homes, correctional facilities, etc. In addition, OES should ensure that adequate communication links and equipment are available at the local level.

Implementation: Legislation requiring state-mandated local program.

Issue: Current Nuclear Regulatory Commission (NRC) regulations do not adequately recognize the need for off-site emergency planning for nuclear power plant accidents. NRC does concur in state plans, but this process is not mandatory for licensing or operation of a nuclear facility.

Recommendation A-4.

The State should urge passage of new federal legislation which would prohibit the granting of a commercial nuclear power plant operating license until local emergency response plans are approved by state authorities and state plans have received concurrence from the NRC. The Energy Commission should examine its authority to impose this requirement on any future nuclear plants in California.

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Implementation: Governor's request to the California Congressional Delegation and the NRC.

B. NOTIFICATION AND ASSESSMENT OF EMERGENCY CONDITIONS

Issue: Adequate emergency response to nuclear power plant accidents depends on timely and accurate notification of local and state authorities by the plant operator. Emergency notification procedures should be initiated before an accident has reached serious proportion, so that state and local officials can take preliminary steps to respond. At present there are no uniform criteria for notification and local authorities complain of uncertainty as to when and under what circumstances they will be alerted.

Recommendation B-1.

The State Office of Emergency Services with the Energy Commission, local authorities, and plant operators, should develop within 90 days a detailed, objective set of notification procedures. These should guarantee that plant operators provide timely notification to off-site authorities in the event of a nuclear power plant incident which threatens to have consequences beyond the plant boundaries. These criteria would require notification in events such as the activation of emergency systems within the plant, evacuation of plant personnel from certain areas, as well as incidents not directly related to the operation of the reactor, e.g., fires, sabotage, etc.

These procedures should recognize the need for the earliest practical notification of local and state authorities of situations which are potentially serious. Uniform application of these procedures should be mandatory under state law.

Implementation: Governor's Directive
Legislation

Recommendation B-2.

The State should require the installation of automated systems in each commercial nuclear power plant. These systems would trigger alarms in the CES State Warning

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Center and at designated local agencies. The alarms would be activated by any of the following: initiation of emergency core cooling systems, indications of high radiation in the containment building and indications of excessive radiation levels present in the release of stack gases.

Threshold levels for these devices should be established by the ARB, the Energy Commission, and the Department of Health Services, Radiologic Health Section.

Implementation: Legislation

Issue: During a nuclear power reactor emergency, communications between the plant and off-site authorities are of critical importance. Decisions to evacuate or take other protective steps must be based on an accurate and timely flow of information. At present, state and local officials must rely on periodic reporting of critical events by the utility operator as the basis of emergency actions. At Three Mile Island, this dependency resulted in confusion, misinformation, and a lack of credibility which is unacceptable in arriving at sound decisions.

Recommendation B-3.

The State Office of Emergency Services should train and certify individuals who would be dispatched to a nuclear power plant site upon confirmation of any emergency having potential off-site consequences (e.g. activation of at least two of the warning alarms specified in Recommendation B-2). This official's sole responsibility would be to maintain liaison with state and local emergency officials, apprising them of developments at the plant and recommending appropriate response actions.

Since this proposal may involve areas of federal jurisdiction, the Governor should request that the Nuclear Regulatory Commission, as part of its accident response plans, approve the placement of such state officials at the plants during an emergency and ensure that appropriate communications capabilities are in place.

Implementation: Governor's Directive to OES

C. TRAINING AND PRACTICE EXERCISES

Issue: At present there are few training programs which can prepare state and local officials to fully carry out their responsibilities in the event of an accident. Counties not previously involved in nuclear emergency planning are particularly in need of adequate training programs, especially in radiological monitoring and assessment of health effects.

Recommendation C-1.

The California Specialized Training Institute (CSTI) should incorporate nuclear emergency response into its emergency planning courses for local and state officials. Further, CSTI and the Office of Emergency Services should develop a program of simulation exercises to present realistic crisis management problems to decision makers responsible for handling nuclear power plant accidents. These exercises should be conducted at least annually, on location where possible.

Implementation: Governor's Directive

Recommendation C-2.

The State Office of Emergency Services along with the Department of Health Services and health physicists employed by the utilities, should develop radiological protection training for local and state health officials. Certification of local officials by the Department of Health Services should be required as part of the approval process of local emergency plans.

Implementation: Governor's Directive
Legislation mandating local programs

D. MONITORING OF RADIOACTIVE RELEASES

Issue: Monitoring equipment adequate to measure total radiation dosage or dose rate may not exist at all necessary locations.

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Recomendation D-1.

The Department of Health Services in conjunction with local officials should review the radiological monitoring requirements for the areas surrounding each nuclear power plant. Where necessary, low level radiation monitoring devices should be provided. The Department of Health Services Radiologic Health Section should develop a system for the rapid analysis of release products and total dose exposure. The Department of Health Services should make arrangements for the use of the computerized analysis capabilities (ARAC) at the Lawrence Livermore Laboratories for predicting the geographical distribution of radioactive materials released from a nuclear power plant. It should also arrange with university and private laboratories for analysis of the large number of samples which would be collected during an emergency.

Implementation: Governor's Directive

Recommendation D-2.

The Air Resources Board should set air quality standards for airborne radiological contaminants and establish source monitors within the boundaries of nuclear power plants to enforce these standards. These monitors would provide a continuous data readout and be connected to the existing ARB air quality monitoring system.

Implementation: ARB Order

E. PROTECTION OF PUBLIC HEALTH

Issue: Ingestion or inhalation of radioactive iodine, a potential release product from nuclear reactors, can result in an accumulation of these substances in human thyroid glands and cause serious damage. A thyroid blocking agent, potassium iodide, has been approved for distribution to the public; however, no stocks of this substance exist at present. Hence, the protection afforded by this drug is not available.

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Recommendation E-1.

The Department of Health Services in conjunction with the Federal Food and Drug Administration should, within the next 6 months, develop a program for the procurement and distribution of potassium iodide tablets to emergency response agencies. This distribution should be accompanied by cautionary advice on the use of the substance and its proper storage. The method of ultimate distribution of these products to the public in an emergency should be specified in local emergency response plans.

Implementation: Governor's Directive

Recommendation E-2.

The Department of Health Services and the Office of Emergency Services should develop a plan for predistribution of potassium iodide to those persons for whom it is determined that evacuation could not be carried out prior to their exposure.

Implementation: Governor's Directive

Issue: Present emergency plans do not adequately address the problem of radiological contamination of the food chain (the "ingestion pathway"). New federal guidance calls for ingestion pathway monitoring up to 50 miles from a nuclear power plant. Other studies have suggested much larger areas might be affected. In any case local capabilities to monitor food chain contamination would be taxed.

Recommendation E-3.

The Department of Health Services should assume responsibility for ingestion pathway monitoring following a nuclear power plant accident. Health Services should procure in situ sampling and analysis equipment and plan to monitor up to 200 miles from a power plant site. Training and information on sampling and contamination control should go to state and local officials who would assist the Department in this task.

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Note: The Health and Safety Code gives the Department of Health Services authority to impound any crop or food product which, in its judgment, is affected with harmful levels of contamination. The Department and appropriate federal authorities should jointly establish threshold levels which would initiate this action.

Implementation: Governor's Directive

Issue: Under existing criteria, only minimal involvement of medical facilities is anticipated, but, in the event of a large power plant accident, emergency medical facilities could be overwhelmed.

Recommendation E-4.

The Department of Health Services and the State Office of Emergency Services should assist local jurisdictions in identifying those hospitals and other care facilities within a 50-mile radius of each nuclear power plant capable of handling radiological and trauma injuries. They should also identify provisions for large scale decontamination, handling of exposure cases and long-term monitoring of health effects on those exposed to radiation.

Implementation: Governor's Directive

F. PUBLIC EDUCATION

Issue: The experience at Three Mile Island clearly points out the need to provide better information to the public before and during a crisis at a nuclear power plant. At present the general public has little understanding of the nature of nuclear accidents, the hazards of radiation or possible protective measures they might take.

Recommendation F-1.

Information concerning accidental releases from nuclear power plants should be distributed to the public in the vicinity of nuclear sites. The State Office of

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Emergency Services, assisted by the Department of Health Services and the Energy Commission, should prepare the following information for distribution to the public:

- a. A brief description of radiation terms and dose comparisons including a description of relative health hazards resulting from various types of exposure.
- b. A brief explanation of the kinds of events that can occur as a result of a serious reactor accident.
- c. Information about countermeasures and protective actions which can be taken by the public.

This information should be distributed twice annually via utility bill inserts or a similar mechanism. Additionally, information on nuclear power plant accidents should be made a part of the "Survival Guide" which now appears in telephone directories in many areas of California.

Along with the general information described above, additional materials should be made available to those living in closest proximity to the plants (i.e., the Emergency Planning Zone as defined by the Energy Commission in Recommendation A-1). This would include information on the availability of potassium iodide as a thyroid blocking agent and special instructions concerning possible evacuation in the event of a reactor accident.

Implementation: Governor's Directive
PUC Order to private utilities
Legislation covering municipal utilities

G. LAND USE PLANNING

Issue: Current low density areas proximate to nuclear power plants face the prospect of significant population growth over time as the demands for housing increase. These demographic changes may erode the ability of local government to plan for the effective evacuation of at-risk populations in the event of an accident.

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Recommendation G-1.

The Office of Planning and Research should amend the state guidelines for preparation and approval of Environmental Impact Reports under the California Environmental Quality Act. These guidelines should define within the class of "Mandatory Significant Effects" any proposed development or general plan change whose implementation may inhibit the execution of local emergency response planning for nuclear power plant accidents.

Environmental Impact Reports including such analysis should be reviewed for accuracy and adequacy by local and state offices of emergency services as well as the Energy Commission.

Implementation: OPR and Resources Agency

H. FINANCING FOR IMPROVED EMERGENCY PLANNING

Issue: Expanded emergency planning efforts to adequately prepare for nuclear power plant accidents will require increases in funding and staffing at the state and local level, beyond amounts currently budgeted.

Recommendation H-1.

The additional costs associated with improved emergency planning for nuclear power plant accidents should be borne by the utility operators themselves, since these expenses are part of the true costs of nuclear electric power generation in California. Therefore, the Office of Emergency Services, Department of Health Services, and the California Energy Commission should determine costs associated with development of emergency plans, training of personnel, procuring of equipment, and establishment of a public education program to meet the above outlined recommendations. The Public Utilities Commission and the Department of Finance should then establish an assessment structure whereby utility companies would reimburse state and local agencies for these expenses. The utilities should pay only those costs which can be assigned to nuclear preparedness, per se, as opposed to emergency planning in general.

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Note: The costs of actually executing nuclear power plant response plans and the cleanup expenses following an accident may be substantial. Consideration of how these costs will be met was beyond the scope of this panel since that involves questions of liability insurance and the Federal Price-Anderson Act.

Implementation: Legislation

I. SUPPLEMENTAL RECOMMENDATIONS

Issue: While the federal government, through the Department of Energy and the Nuclear Regulatory Commission have responsibility for the handling of radioactive wastes, there are no current plans for the disposal of waste materials resulting from a nuclear power plant accident.

Recommendation I-1.

The State should insist that the Department of Energy and the NRC develop a plan for the handling and timely removal from the State of radioactive materials, including possibly portions of the plant itself, following a nuclear power plant accident.

Implementation: Governor's request to the NRC and Department of Energy

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