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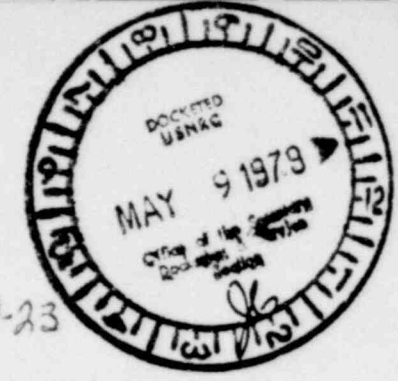

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of Amending the Commission's Regulations Pertaining to Offsite Emergency Response Plans for Nuclear Facilities	)))))	PRM No.-50-23

PETITION FOR RULEMAKING

Pursuant to 10 C.F.R. § 2.208, the Critical Mass Energy Project, the Public Interest Research Group (PIRG), the Northern California Public Interest Research Group (NorCalPIRG), the Iowa Student Public Interest Research Group (ISPIRG), the Public Interest Research Group in Michigan (PIRGIM), the Minnesota Public Interest Research Group (MPIRG), the Missouri Public Interest Research Group (MoPIRG), the North Carolina Public Interest Research Group (NCPIRG), the New Jersey Public Interest Research Group (NJPIRG), the Vermont Public Interest Research Group (VPIRG), Citizens for a Better Environment, the Environmental Coalition on Nuclear Power, Local 1010 of the United Steelworkers of America, the Mid-America Coalition for Energy Alternatives, and Citizens Energy Forum petition the Nuclear Regulatory Commission to amend its regulations on preparedness for nuclear emergencies. This petition seeks to correct the deficiencies in emergency arrangements that are supposed to protect the public from accidental releases of radioactivity from NRC-licensed facilities.

The accident at Three Mile Island Unit 2 on March 28, 1979 has demonstrated that preparedness to deal with nuclear reactor accidents is not a luxury, as the NRC has treated

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emergency planning and evacuation drills in the past. In light of the lack of effective emergency preparedness during the Three Mile Island accident and the weaknesses identified by actual incidents and government reports, the petitioners hereby renew and supplement a petition on evacuation plans submitted to the NRC by PIRG and 30 other citizen groups on August 6, 1975. The NRC denied the petition on July 7, 1977. 42 Fed. Reg. 32326 (July 14, 1977).

The amendments proposed in this petition would require all NRC reactor licensees to formulate and test emergency response plans, including means to evacuate members of the public within 50 miles of the facility. The proposed regulations would require NRC certification of the workability of licensee and governmental emergency plans as a precondition to construction or operation of a nuclear energy facility. In addition, licensees should be required to maintain adequate monitoring equipment to determine the need for emergency protective actions in the event of an accidental release of radiation; to notify a potentially affected population of what measures will be undertaken for their protection in the event of an accident; and to cover all the costs related to emergency preparedness for radiological accidents.

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I. THE PETITIONERS

The petitioners are fifteen citizen organizations active in twelve states and the District of Columbia. All are engaged in public interest activities in the areas of safe energy and nuclear health and safety.

The Critical Mass Energy Project, a branch of Public Citizen in Washington, D.C, is a public interest organization dedicated to the development of safe and efficient energy technology. It has participated in numerous NRC proceedings, including petitions on decommissioning and on responses to nuclear transportation accidents.

PIRG is a nonprofit public interest research organization in Washington, D.C. PIRG was the lead petitioner to the NRC in 1975 on evacuation plans. In addition, PIRG has participated in the GESMO proceedings and petitioned the NRC on decommissioning, population density, and Candidate Jimmy Carter's reactor safety proposals.

NorCalPIRG, ISPIRG, PIRGIM, MPIRG, MoPIRG, NCPIRG, NJPIRG, and VPIRG are nonprofit, student supported groups. They seek to further the public interest in a number of policy areas, including the environment, energy, and nuclear safety.

Citizens for a Better Environment is a Chicago-based, non-profit public interest group, which is active in utility rate cases and the transportation of radioactive materials.

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CBE has more than 3500 members. It has produced reports on nuclear evacuation plans and nuclear economics.

The Environmental Coalition on Nuclear Power is based in State College, Pennsylvania, and has approximately 10,000 members. It is a public education organization which has intervened in licensing proceedings on Pennsylvania nuclear power plants and has taken other actions in support of nuclear safety.

Local 1010 of the United Steelworkers of America represents approximately 10,000 steelworkers at the United States Steel Inland plant in East Chicago, Indiana, an area that has a concentration of operating and proposed nuclear power plants.

The Mid-America Coalition for Energy Alternatives is a non-profit citizen organization based in Kansas City, Missouri. It is an intervenor in the Wolf Creek nuclear plant licensing proceeding and has members who live within three miles of the Wolf Creek site in Burlington, Kansas.

Citizens' Energy Forum is a Northern Virginia nonprofit public resource and education organization working on the environmental, social, health, and economic implications of different energy technologies.

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II. THE PROVISIONS

The petitioners propose regulations to improve the licensee and governmental ability to cope with radiological dangers following a nuclear accident. These amendments include provision for: coordinated emergency planning for protection of the public within 50 miles of the facility; annual testing of emergency plans, including an evacuation drill of a sector out to 30 miles; annual notification of the public of specific nuclear emergency plans; offsite monitoring to enable adequate emergency decisionmaking; consideration of emergency capabilities in NRC nuclear powerplant siting and licensing decisions; and requirement that the ability to carry out emergency actions for existing reactors be demonstrated within six months, or less if the NRC so determines in the interest of public health.

1. Coordinated Offsite Emergency Response Plan

All 10 C.F.R. Part 50 licensees and license applicants shall develop, in coordination with state and local authorities and the NRC, a detailed plan of offsite responses to a nuclear accident. The plan shall include provisions for evacuating the public in times of radiological emergencies and to take other protective action measures to protect the public within 50 miles of the licensed facility. The planned offsite protective actions, including evacuation, shall explicitly take account of the anticipated range of actual or

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imminent radiation releases and durational, weather, seasonal, and traffic conditions. Public expenses in formulating the emergency response plan shall be reimbursed by the licensee or license applicant.

2. Tests of the Plan

Before licensing a nuclear power plant, both at the construction and operating stages, a test of the emergency response plan shall be conducted in cooperation with federal, state and local authorities. In addition to testing communications, health protection, treatment of injuries, and radiation monitoring, the test shall include an evacuation drill in which a representative sector of angular width 7°, containing a diverse and significant population, is evacuated to a distance of at least 30 miles. For operating plants, such tests shall be conducted at least once a year, commencing upon the adoption of this regulation. All costs of conducting both offsite and onsite tests shall be borne by the licensee or license applicant.

3. Offsite Radiological Monitoring

The operator of a nuclear power plant shall maintain a system of offsite radiation detectors to determine the radiation exposure of the public from plant emissions. The system shall be designed, taking account of population distributions and seasonal weather conditions, so that cumulative

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doses to the public from accidental releases can be established with an error of less than 30% for the most exposed section of the public within 10 miles of the plant and less than 50% for those within 50 miles of the plant. The operator shall assume the costs for this monitoring system and shall operate it, unless it chooses to delegate operation to a suitably accurate governmental monitoring system.

4. Public Notice and Hearings

Each 10 C.F.R. Part 50 licensee shall distribute to every residence, business, school and other institution within 50 miles of the facility (with sufficient copies for each person or household unit) information on the physical character and development of a large radioactive release, the health dangers of radiation exposure, and an outline of the emergency response plans which will be put into effect in different hazardous conditions. The public notice shall contain detailed information on how people can best protect their health, how they can receive bulletins during a radiological emergency, and what steps and routes they should take if an evacuation is ordered.

This notice shall be distributed before the grant of a construction permit or operating license, and thereafter annually in the case of an operating reactor. Prior to distribution of each notice specified above, there shall be public hearings, held in the vicinity of the facility, on

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the emergency response plan. In addition to the distributed information, the licensee shall make available to any member of the public all documents concerning the emergency response plan.

5. Consideration of Emergency Protection in Licensing and Siting

Determination that there will be effective emergency protection of the public in the event of large radiation releases shall be a prerequisite to NRC approval of a proposed nuclear reactor site. A finding of effective protection of the public within 50 miles of the proposed site shall take into account population density (resident, occupational, and transient), transportation patterns and areas of congestion, the effectiveness of the emergency plan demonstrated by the test, the vulnerability to long-term radioactive ingestion through food and water, and other relevant factors.

No construction permit shall be issued until the coordinated offsite emergency response plan has been formulated, tested, and demonstrated to be effective. No construction permit or operating license shall be issued in a state in which the state's radiological emergency response capability has not been certified effective by the NRC, based on lines of authority and communication, the availability of trained personnel and equipment, and detailed plans for appropriate contingencies, and also based on verification of effectiveness by tests and drills.

6. Emergency Response Plans for Existing Reactors and Interim NRC Safety Action

Operators of existing plants shall immediately undertake planning for offsite emergency action to protect the public, in cooperation with appropriate government officials. The plan shall be formulated and tested (including an evacuation drill) within six months of the promulgation of this regulation.

The NRC will immediately undertake an analysis of the operating nuclear reactors to determine which present the greatest risk to the public from accidental release of radioactivity. To determine the order of priority for interim safety actions, this analysis shall include the safety record of the plant (including the frequency of violations of NRC regulations, radiation exposure of workers, releases of radiation to the environment, the NRC's perception of the technical proficiency of the licensee's staff, and any design, construction, operational or generic deficiencies known to the NRC), adequacy of existing emergency plans, population density and other factors affecting the feasibility of evacuation, and the existence and capability of state and local radiological emergency plans and personnel. Having determined the plants in need of highest priority attention, the NRC will take prompt action to increase the safety of the plants and improve the efficacy of the emergency plans. In addition to assisting the licensee in making these

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improvements, the NRC will consider interim steps to protect the public, including prompt testing of existing emergency plans and derating or closing down the plant until improvements are made.

III. BASIS OF THE PETITION

The Three Mile Island accident has shown that evacuation capability is not icing on the cake, but an essential safeguard of public health and safety in the aftermath of a nuclear accident. The discussions of the NRC Commissioners and staff on March 30, 1979 concerning evacuation of the area around Three Mile Island reveals a lack of knowledge about the feasibility of evacuation, as Pennsylvania officials sought to devise evacuation plans with little help or coordination from the NRC. Harold Collins, the NRC's director of state emergency preparedness, told the Commissioners that the four county area around Three Mile Island could be evacuated within one hour. NRC Executive Director Lee V. Gossick suggested that Harrisburg could be evacuated within 2 hours. Both estimates were rejected by Pennsylvania officials. At one juncture, NRC Chairman Joseph Hendrie told the state to be prepared to withdraw people 20 to 25 miles from the reactor. Mr. Thomas Gerusky, the State's chief radiation health specialist, has said that Pennsylvania did not have that capability.

The NRC denied the 1975 PIRG petition provision advocating evacuation drills based on probability estimates of

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reactor accident risk of WASH-1400, the Reactor Safety Study. (Ironically, the low injury predictions were based on WASH-1400's assumption of evacuation of about half of the population in the affected area up to 25 miles downwind within one hour of an evacuation order. Thus, using WASH-1400 to deny a test of its assumption of successful evacuation was somewhat circular.) The NRC has repudiated the WASH-1400 probability estimates. In its January 18, 1979 statement on WASH-1400, the NRC directed the agency's staff to review decisions and statements based on WASH-1400 and "to take steps to assure that any such use in the past will be corrected as appropriate." This directive requires reconsideration of the PIRG evacuation petition as supplemented in the present petition. The need to assure the effectiveness of offsite protective actions is all the more urgent in light of the Three Mile Island accident.

A task force of the NRC and Environmental Protection Agency (EPA) on radiological emergency response plans for nuclear power plants issued its report in December 1978. (NRC/EPA Report, NUREG-0396.) The NRC/EPA Report recommends emergency planning for direct exposure to the radiation plume out to 10 miles and for exposure by food ingestion out to 50 miles. However, reference to EPA protective action guides (PAG's) for accidental exposure of the public and the exposure graphs in the NRC/EPA Report lend support to the larger planning area for direct exposure and evacuation proposed by the petitioners.

In September, 1975 EPA issued the Manual of Protective

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Action Guides and Protective Actions for Nuclear Incidents. The PAG for airborne radiation exposure of the public is 1-5 Rems whole body and 5-25 Rems to the thyroid. Figures I-11 and I-13 of the NRC/EPA Report give the probability of whole body and thyroid doses assuming a core melt accident has occurred, as a function of distance from the plant. (These dose probability figures are taken from WASH-1400.) Given a core melt accident, there is a 10% chance of exceeding the PAG range for whole body exposure between 40-50 miles and of exceeding the thyroid range between 28 and over 100 miles from the accident. Figure I-16 of the NRC presents the calculation of an MIT nuclear engineering professor, D.C. Aldrich, for a core "melt-through" and "atmospheric" release accident. This calculation shows the probability of exceeding the PAG's 100 miles away from an accident of that kind to be between 15% and 70%. Thus, the petitioners conclude that there is a substantial chance of mandatory protective action under EPA's guidelines after a severe nuclear power plant accident at and beyond the 50 miles proposed for emergency planning in this petition.

Two days after the Three Mile Island accident, the General Accounting Office released a timely report, "Areas Around Nuclear Facilities Should Be Better Prepared for Radiological Emergencies," EMD-78-110 (March 30, 1979). The GAO made several recommendations to the NRC which support the rules proposed in this petition. The GAO recommended that

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the NRC:

> allow nuclear powerplants to begin operation only where State and local emergency-response plans meet all of NRC's essential planning elements. In addition, NRC should require license applicants to make agreements with State and local agencies assuring their full participation in annual emergency drills over the life of the facility. (Pp. 35-36).

After citing several deficiencies found in sporadic testing of nuclear powerplant emergency procedures, the GAO commented:

> We believe it is better to identify problems in an emergency drill rather than wait until the actual event occurs. (P. 26).

The petitioners agree. In 1977, utilities in eight states scheduled tests of their emergency plans. These tests, largely preannounced, essentially consisted of verifying the operation of the network to communicate with radiological emergency officials. None involved evacuation of members of the public. The NRC observed six of the ten tests which were conducted. The NRC found significant failures in all tests. It is on this basis that the petitioners urge a requirement of annual emergency drills, involving state and local officials as well as the reactor operator, and involving some public evacuation.

The GAO recommended increase of the planning zone size to ten miles, based on the NRC/EPA Report, but noted that WASH-1400 "described a nuclear accident with serious consequences

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ranging up to 50 miles from the powerplant." (P. 21.) The petitioners also find support in the GAO recommendation that the NRC:

> require that the people living near nuclear facilities be provided with information about the potential hazard, the emergency actions planned, and what to do in the event of an accidental radiological release. (P. 35.)

The NRC's current regulatory position on the marginal importance of emergency plans is well captured by the December 18, 1978 comments of Lee Gossick, NRC Executive Director for Operations, to the GAO draft.

> State and local emergency plans provide an added margin of protection for the public in the vicinity of a nuclear facility in which we believe that an adequate measure of safety already exists. . . . State and local plans, while related to the facilities undergoing the licensing process, and to applicant's emergency plans, are not essential in determining whether the plant can be operated without undue risk to public health and safety. (Pp. 67-68, emphasis in original.)

In May, 1978, the petitioner Citizens for a Better Environment issued a report, "Nuclear Power Plant Evacuation Plans." The CBE report cites numerous deficiencies in the emergency preparedness of the state of Illinois, which has the largest number of operating reactors of any state, and failures in implementing emergency plans in New Jersey and Colorado. In an August 16, 1978 memorandum of explanation accompanying the CBE report to the NRC Commissioners, Robert

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Ryan, the director of the NRC Office of State Programs complained that:

> In the past, the emergency preparedness program involving State and local governments has been a backwater at the Commission. NRC expenditures for this program in FY 1978 will total $250,000. This represents .15% (.0015) of the total NRC FY 1978 budget. The SP radiological preparedness staff consists of three full time professionals and one clerical person; this represents .15% (.0015) of the total NRC FY 1978 complement of 2,662 employees.

At present, the NRC has approved the emergency response plans of only twelve states, not including Illinois.

On August 16, 1978, the NRC proposed an amendment to 10 C.F.R. Part 50 Appendix E to permit, but not require, NRC consideration of emergency planning outside the low population zone (which extends no more than several miles from the plant). 43 Fed. Reg. 37473 (Aug. 23, 1978). This is a very small step in the direction of providing for effective offsite public protective action. It does not meet the needs served by the amendments proposed by the petitioners. The NRC notice accompanying the Appendix E proposed amendment explicitly states that extended emergency response capability is not to be a factor in determining site suitability. Secondly, the amendment only permits consideration of extended evacuation; it does not require such consideration, nor does it require an effective state and local governmental emergency ability. Finally, there is no hint of a reasonable distance away from

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the facility to plan for action to protect the public after a nuclear accident.

Among the many lessons of Three Mile Island is that the NRC must give priority attention to the development of a workable offsite emergency response plan in connection with any plant the NRC allows to operate. For some plants, there may be sufficient assurances of safe plant operation to allow the licensee a full half year to formulate and test emergency actions and for the state the plant is in to meet NRC standards for emergency preparedness. On the other hand, there are certainly some nuclear power plants, such as Indian Point 2, whose safety record and location require an assured evacuation capability as a minimum safeguard of public health and safety if the plant is in operation.

In August 1977, the NRC staff prepared a report entitled "A Statistical Evaluation of the Nuclear Safety-Related Performance of NRC Operating Reactor Licensees During 1976." This report rated the safety of nuclear power plants based on their record of violations of NRC regulations and of the occurrence of reportable safety events. As pointed out in the report of Public Citizen's Health Research Group, "Atomic Worker's Guide to the Most Unsafe Atomic Power Plants in 1977," safety ratings of atomic plants should include large worker exposure and radiation emissions, even if the individual occurrences are within NRC-allowed standards. Above average cumulative worker exposures and releases of radiation are

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signs of a troubled plant which is not working as planned. Combining this augmented safety rating with factors affecting emergency preparedness and feasibility of evacuation will provide tne NRC with a priority list among operating plants. Until emergency and evacuation plans are proven effective, the NRC must impose additional safety precautions, including the possibility of operation at lower power levels or suspension of operation entirely, on the reactors posing the greatest danger to the public.

Decisions in the aftermath of a large accidental radiation release are dependent on monitoring the radiation rates and cumulative doses away from the source. The sporadic monitoring in the three days after the Three Mile Island accident show that reliance on utilities' present systems of routine offsite environmental monitoring will not do in an emergency. Monitoring to provide adequate information for emergency decisionmaking must be either in place at all times a plant is operating or ready for immediate deployment in the event of an accident. If the latter method is adopted, such deployment must be tested as part of the plant's emergency response plan.

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IV. CONCLUSION

This petition seeks again to draw attention to a vital area of protecting the public from radiological dangers which has been long neglected by the NRC. NRC licensees are not required to have evacuation plans for the public endangered by reactor operations. The few sketchy plans there are have not been tested and those that have undergone drills and exercises have largely failed. The emergency capabilities of most states with operating reactors have not been certified by the NRC. In this light, most existing reactors are operating without a lifeboat for the public in the event of an accident.

The petitioners urge prompt action on this petition. The public will not countenance the usual NRC delays of a year or more. Prior to initiation of the rulemaking the petitioners proposed, the NRC should take administrative action under existing emergency planning requirements to strengthen licensee and state emergency preparedness, to require testing of existing plans, and to take safety precautions where emergency offsite capability is weak.

On June 12, 1978, Public Citizen submitted comments to the NRC on its proposed amendments to its regulations on petitions for rulemaking. In those comments, Public Citizen recommended that the NRC should decide on a course of action on petitions within 30 days of receipt. The NRC has not

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acted on this suggestion. The petitioners request a decision from the Commission within thirty days to accept or reject the petition or to refer it to the NRC staff with a specific task and deadline to report and to seek public comment.

Respectfully submitted,

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