safety. In addition, each grant to an educational institution should contain elements which will potentially benefit the graduate research program of the institution, e.g., graduate student training.

The NRC encourages educational institutions to submit research grant proposals in the following areas:

1. Experiments and predictive modeling for thermal stratification, thermal striping and flow-induced vibration in plant fluid systems.

2. Evaluation, modeling, and experiments on phenomena associated with the cooling of molten debris in a reactor vessel lower head and associated lower head failure analyses during a severe accident.

3. Modeling and experimentation on two-phase flow, interfacial relations, and heat transfer in reactor coolant systems. Experiments in modeling of passive heat transfer in natural circulation systems.

4. Development of condensation models for systems codes such as RELAP5/MOD3 or TRAC—PFI/MOD2 for two cases: with and without condensible gases.

5. Conduct experimentation and model development of the boron in reactor coolant systems under natural circulation conditions.

6. Development and validation of a standard model of human performance in (a) nuclear power plant operations and maintenance, (b) medical uses of by-product materials, and (c) industrial uses of by-product materials.

7. Effect of digital I&C technology on operator performance, including vigilance, response rate, response accuracy, and completeness.

8. Develop and codify pragmatic, statistically valid methods for updating severe accident frequency and consequence analysis to reflect results of new operational, experimental and calculation data.

9. Develop methods and comparison of probabilistic risk assessment (PRA) results with operational data and experience.

10. Evaluation and modelling of microstructural and chemistry changes in grain boundaries of irradiated austenitic materials.

11. Development of nondestructive testing methods for in-situ evaluation of reactor vessel material properties and property degradation due to aging, such as fracture toughness, fatigue, residual life, and radiation effects.

12. Determine data requirements to assess system reliability performance to a prescribed goal at a predetermined assurance level. 13. Development of innovative methods for accurate imaging of flaws in thin wall, small diameter tubes.

14. Development of non-intrusive, insitu condition monitoring and diagnostic methods for detecting and evaluating degradation of electrical insulation materials.

15. Development of methods for predicting and measuring electrochemistry and chemistry in crevices and cracks.

16. Development of and/or validation of models to predict the propagation of seismic ground motion in Central and Eastern United States including the effects of ground motions on the response of NPPs and their site characteristics, taking into consideration uncertainties inherent in such estimates.

17. Development and/or validation of models to explain the quaternary tectonics and seismicity of the Central and Eastern United States (East of 105 degrees W).

18. Development of techniques and QA and QC procedures necessary for rapid bioassay analysis in the event of accidental internal exposure.

19. Studies of volcanism or other disruptive processes or events in the Basin and Range.

20. Development of improved instrumentation or techniques for measuring activity, radiation dose, and dose rates, especially from small radioactive particles, and materials in the environment in concentrations approaching background.

21. Research on the metabolism of radionuclides and their compounds relative to the calculation of internal dose.

22. Validation of approaches to quantitatively assess human health effects of radiation, including new approaches to analyses of human epidemiological studies and experimental animal studies, and investigation of radiation induced effects at the cellular/molecular levels and repairs thereof.

23. Development of, or analysis of the effectiveness of decontamination technologies for land, structures, recycled materials and equipment and estimation of individual comparative costs.

24. Investigations, including natural analogue studies for long-term analyses, of coupling between hydrologic, thermal, chemical, and/or mechanical processes as they affect the simulation of high-level waste repository performance.

25. Development of methods needed for realization of risk-based regulation.

Eligible Applicants

Educational institutions, nonprofit entities, State and Local governments, and professional societies are eligible to apply for a grant under this announcement.

Factors Generally Indicating Support Through Grants

The NRC's benefit from the results of grants should be no greater than for other interested parties, i.e., the public must be the primary beneficiary of the work performed. Surveys, studies, or research which provide specific information or data necessary for the NRC to exercise its regulatory or research mission responsibilities will not be funded by a grant. Applicants requesting support for work which has a direct regulatory application should submit their requests as an unsolicited proposal for consideration as a contract rather than a grant.

1. The primary purpose of NRC grants is to support the development of knowledge or understanding of the subject or phenomena under study.

2. The exact course of the work and its outcome are usually not defined precisely, and specific points in time for achievement of significant results need not be specified.

3. The NRC desires that the nature of the proposed investigation be such that the recipient will bear prime responsibility for the conduct of the research and exercise judgment and original thought toward attaining the scientific goals within broad parameters of the proposed research areas and the resources provided.

4. Meaningful technical reports (as distinguished from Semi-Annual Status Reports) can be prepared only as new findings are made, rather than on a predetermined time schedule.

5. Simplicity and economy in execution and administration are mutually desirable.

Proposal Format

Proposals should be concise and provide a thorough understanding of the proposed project. Neither unduly elaborate applications nor voluminous supporting documentation is desired.

State and local governments shall submit proposals utilizing the standard forms specified in Office of Management and Budget (OMB) Circular A–102 (Revised), Paragraph 6.c). Nonprofit organizations, universities, and professional societies shall submit proposals utilizing the standard forms stipulated in OMB Circular A–110, (Attachment M).

The format used for project proposals should give a clear presentation of the