10 of the Code of Federal Regulations, Chapter II Subchapter H, Part 600 as a result of this solicitation, and funds are available. Federal funds appropriated for this solicitation are approximately $890,000 and are to be used to fund the entire two year research effort. The Catalog of Federal Domestic Assistance Number for this program is 81.078. All projects shall be cost shared by DOE and the participant. Applicants should be aware that any awardee shall be required to have a cost share of not less than 50% of the total cost of the program. *No fee or profit will be paid to the award recipients.* Under Cooperative Agreements it is anticipated there will be substantial involvement by DOE.

DOE suggests, but does not require, a multi-task single phase approach. The first task would usually consist of refractory material selection and rationale for selecting the refractory materials formulation, followed by the second task consisting of field testing of the selected refractory formulation in an state-of-the art end-user application in one or more of the targeted industries. Project duration cannot exceed 2 years. Project(s) with durations of 2 years or less are eligible. All applications with project periods of 2 years or less will be given equal consideration. The period of performance for the first budget period is anticipated to be 12 months. If at the end of the first budget period, funds are available and the participant demonstrates a continuing need for federal assistance, shows sufficient progress in the research effort, has completed the work in compliance with a mutually agreed management plan, and identifies the new work planned, DOE may award a continuation to undertake further work to complete field testing. Successful applicants will be required to submit quarterly, annual and a final report to DOE.

The objective of this solicitation is to support research, development and demonstration (field testing) of new refractories in state-of-the-art high temperature furnaces and molten material handling equipment to assist end-use industry sectors to remain competitive, and reduce energy consumption and environmental impacts. The research is to be directed toward those refractories used by the aluminum, glass, iron or steel industries. Applications shall include a demonstration (field test) in an end-use facility.

New refractory systems are needed for use in existing industrial furnaces and for applications in new industrial processes (in the iron and steel, glass and aluminum end-use areas). Basic research to develop exotic new materials is not being sought. Improved refractories resulting from compositional changes or adaptations of existing materials are being sought for high temperature applications. Refractories with improved thermal, mechanical, and chemical characteristics are needed to improve longevity, adaptability, resistance to harsh environments, and ease of application. Development may include (but are not limited to) the following:

- Refractory materials installation systems
- Refractory for molten material and/or slag containment systems
- Longer service life
- Composites, coatings
- Materials with improved expansion/ contraction characteristics
- Furnace repair refractories and glass stop materials
- Recuperator linings
- Refractories for oxy-fuel or gas reburn applications
- Stable refractories for high temperature applications

C. Application Requirements

Each Application shall contain the following information and use the following format:

1.0 EXECUTIVE SUMMARY
- 1.1 Proposed program and why it is appropriate for domestic industry and the relationship to the objectives of the solicitation
- 1.2 Organizational Plan
- 1.3 Specialized Experience
- 1.4 Total costs and non-federal cost-share commitments
- 1.5 Nonproprietary summary of proposed project including project benefits suitable for public release (maximum of two pages)

2.0 CRITICAL REVIEW OF TECHNOLOGY STATUS
- 2.1 Domestic Technology Status including Emerging Technologies
- 2.2 Worldwide Technology Status including Emerging Technologies
- 2.3 Why domestic industry is not pursing the proposed concept

3.0 PROJECT DESCRIPTION
- 3.1 Introduction including how industry has participated in the selection of the proposed R&D
- 3.2 Proposed concepts
- 3.3 Assumptions and detailed calculations of economic benefit to the overall domestic end-use industry
- 3.4 Assumptions and detailed calculations of energy savings in the overall domestic end-use industry
- 3.5 Technical feasibility and targets
- 3.6 Hurdles to be overcome by the proposed R&D
- 3.7 Environmental benefits of the proposed R&D

4.0 PROJECT PLAN
- 4.1 Project goals and scope
- 4.2 Statement of work
- 4.3 Work breakdown structure
- 4.4 Milestone plan, schedule integration
- 4.5 Technical targets, decision points and go/no-go decision criteria
- 4.6 Spending plan by task, phase and year
- 4.7 Sources of, and expectations concerning cost share and financing
- 4.8 Commercialization plan including technology transfer to industry and academia

5.0 TECHNICAL CAPABILITIES
- 5.1 Key personnel and responsibilities
- 5.2 Related experience
- 5.3 Facilities and equipment available
- 5.4 Justification for and description of needed facilities and estimated costs

6.0 PROJECT MANAGEMENT PLAN
- 6.1 Project organization and responsibilities
- 6.2 Task integration and project coordination
- 6.3 Project management structure including implementation and monitoring of R&D
- 6.4 Management philosophy
- 6.5 Reporting

D. Qualified Applicants

For profit and not for profit organizations, state and local governments, Indian tribes and institutions of higher learning. Applications may include national laboratories, but only as lower tier participants with funding for their expected costs provided through their existing arrangements with the Government.

E. Application Evaluation

a. Application Deadline

The deadline for receipt of applications is 4:00 p.m. MDT, August 17, 1995. Late applications will be handled in accordance with 10 CFR 600.13.

b. Selection of Applications

Only those applications which meet all of the requirements of this solicitation will be considered for selection. Selections will be made in accordance with the following selection criteria and programmatic considerations. All applications will be evaluated and point-scored in accordance with the following criteria. The applications should be fully responsive to each of the criteria.