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INTERNATIONAL SCIENCE AND TECHNOLOGY CENTER
ЦЕНТР

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TRANSMISSION FORM
FOR ANNUAL REPORTS OF ISTC PROJECTS

064

Title of the Project:

Design of a Nuclear Reactor Core Melt Catcher on the Basis of Zirconia Concrete

Executive Director Statement:

Enclosed is a copy of Annual Report of Project # 064, including Summary Report and main text of Annual Report presented by project participants and Evaluation of Annual Project Report prepared by ISTC Secretariat.

Confidential information:

1. Budget items of Annual Project Report.
2. Technical information included in the main text of Annual Project Report..

Other comments:

Oles Lomacky
Executive Director

EVALUATION FORM FOR ANNUAL REPORTS OF ISTC PROJECTS

Project Attributes	
Project Number	# 064 - 94
Project Title	Design of a Nuclear Reactor Core Melt Catcher on the Basis of Zirconia Concrete
Leading Institute	HERDRC SA "IVTAN"
Project Manager	Prof. Ev.Pakhomov
O.C.D.	01.06.1994
Duration	36 months
Total Budget	US $ 528,400.
Funding Parties	EU,Japan, USA
ISTC Project Manager	L.Tocheny
ISTC Deputy Executive Director	A.Gerard

Major Technical Progress

I. The technical progress has no delay from the schedule in the Work Plan

Two subtasks of the Work plan have been completed, 13 remaining ones will be prolonged for the next period.

A reliable technique was proposed and tested to measure the change of mixed cement volume during hardening. The new experimental data reflecting the strong impact of mixing water amount on the parameters of developed concrete (Fig.1 -3) were obtained.

A set of experimental studies of high-temperature characteristics of concretes was developed. The most important ones are the rate of Zr-concrete interaction with model of corium in the air (Fig.8).

Computer models for melt-concrete interactions, for thermal and spreading processes have been developed. The importance of the problem of reducing the uncertainties of some features data (viscosity e.g.) was noted for the next stage.

Analyses of the catcher schemes, regimes, conceptual design (Fig.9) as well as the the catcher model tests (Fig.4,6,7) and test approaches were developed. It was decided to carry out the tests of thermal shock resistance of the catcher with HF-heating of the metal pool, which is reasonable for the specific purpose of the project and easier and cheaper than to develop a new method of chemical heating.

Other items of the Work plan are processing succesfully.

II. Published Papers, Presentations, Trips (Conferences, Meetings).

Project Manager Prof. E.Pakhomov visited Institute fur Neutron Physik und Reactor Technik of the Center of Nuclear Research (Forschungszentrum, Karlsruhe), project collaborator, Germany (Sept. 1994). He took part in the seminar.

An article presenting the results of the investigations of molten metal interaction with zirconia concrete was accepted by the magazine "Refractories", Russia.

A contributed paper has been submitted to the international conference "Thermophysics-95", Obninsk, Russia (Nov., 1995).

III. Collaboration between CIS Institutes.

Institute of Nuclear Safety RAS (IBRAE, Moscow),
Special Design Bureau "Gidropress" (Podolsk, Moscow region),
Scientific Research Institute forTechnology (Sosnovy Bor, Leningrad region),
Firm "Ogbet Ltd". (Moscow).

IV. Partnership with Foreign Institutes.

The partnership has been so far limited in exchange of technical information and data with Forschungszentrum, Karlsruhe (Germany).
IVTAN expressed some disapointment about this situation.
There are trends to improve the collaboration, and the possibility of holding a meeting in Moscow is envisaged during the second year.

Financial Information.

The actual expenditure for the first year was $ 140,567. - that is slightly less than estimated amount - $ 156,900.

Equipment and Materials.

The total amount used for equipment and materials ($ 38,500) was less than scheduled in the Work Plan ($ 45,600).

Results of On-site Project Monitoring.

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No specific problems to be mentioned from on-site monitoring. All participants and institutions have been working with good cooperation on this project in parallel with implementation of other activities.

Comments.

The three projects # 64, 65, 66 are underway in parallel with good coordination and emulation.
Project seminars are usually held weekly in accordance with a schedule.

Deputy Executive Director

Senior Project Manager