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**PROGRESS REPORT
UPDATE**

WORKING GROUP 7.1 ON ENVIRONMENTAL TRANSPORT

**US-USSR JOINT COORDINATING COMMITTEE ON
CIVILIAN NUCLEAR REACTOR SAFETY**

September 7, 1991

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PROGRESS REPORT UPDATE

**Lynn R. Anspaugh
Environmental Sciences Division
Lawrence Livermore National Laboratory**

September 7, 1991

Since our Progress Report in February 1991, those projects that had been making good progress have continued fairly well, and those projects that have not achieved good contact with Soviet counterparts are still not progressing as well as hoped. This is mainly due to political problems, in my view, and the recent developments in the USSR may allow us to develop more positive and local ties to the proper scientists.

For Project 7.0 on Management and Administration, we have not had sufficient support to cover the actual manpower expended. The future success of these activities will require more active (and paid) participation. Thus, a major increase in budget for this activity is proposed for FY 1992.

Project 7.1.A on Atmospheric Transport is successfully working with the Soviets to develop a model that can use and respond to recorded radiological data and modify its predictions accordingly. Drs. Pitovranov, Klepikova and Petrov visited LLNL during November 1990 and February 1991, respectively. The Soviet and American capabilities and data resources appear to complement each other very nicely, and work is progressing on developing a regression scheme to employ data in real time to correct predicted patterns. Work is also progressing on examination of data available for and of techniques of model validation. A visit by four or more LLNL scientists was planned for September and has been postponed until October.

Project 7.1.B on Resuspension, encountered one of the more severe problems with the inability of the Soviet host institution to provide the usual "host country pays" support. This is true even though other projects under the same Committee on Hydrometeorology are continuing to provide host country support. Dr. Garger, the USSR leader for resuspension, is also asking us to provide the dollar support for him to purchase a ticket to come here on Aeroflot. However, Project 7.1.B is the most advanced project in the sense that there is now a major experiment in the USSR that is lasting about six weeks. Unfortunately, the coup fell right in the middle of the experiment, but most of the planned work will still be accomplished. There has been a major increase in expenses due to the fact that the Soviets were not able to honor "host country pays," and the US agreed to this concept as an exception to the normal policy. Sometime late in CY 1991, Dr. Garger and one or more of his

colleagues will travel to the US to analyze the data from the experiment and to prepare a paper for publication.

Project 7.1.C on External Dose is not active at this time. We hope that we can resolve some USSR leadership issues on this subject and to resume work with the appropriate people early in FY 1992. The first agenda item is a small workshop to be held in New York City.

Project 7.1.D on Terrestrial Food Chains is not having success in receiving promised data from the Soviet side. However, Dr. Owen Hoffman is participating in important international activities on model validation that will be very important to the overall success of this project, and we are strongly encouraging USSR scientists to participate, as well. During FY 1992, we hope to continue with better success by finding new and more responsive colleagues in Kiev, Chernobyl, and Gomel with whom to work.

Project 7.1.E on Aquatic Food Chains has been underfunded, but much of the dose-calculation model of the Chernobyl aquatic pathways has been developed by PNL. The project has been very successful in achieving a major and continuing exchange with Soviet scientists. A delegation of Soviet scientists did visit Savannah River Ecological Laboratory (SREL), ORNL, and PNL in March 1991. A return visit to the USSR was planned for September 1991, but has been postponed by the aftermath of the attempted coup. A priority for FY 1992 will be the planning and conducting of aquatic experiments in the Chernobyl ecosystem.

Project 7.1.F on Hydrological Transport has generally been very successful. Four Soviet scientists visited PNL, ORNL, and Army Corps of Engineering Waterways Experiment Station (WES) during March 1991. Agreements were reached on the production of Soviet data and its transmission to Dr. Onishi. However, the agreed upon data have not been sent due to what is believed to be bureaucratic problems within the USSR. The data have been promised to be handed over to Dr. Onishi, if he goes to the USSR to personally receive it. During FY 1992, priority will continue to be given to Landsat Data Analysis and The Pripyat River/Dnieper River Reservoir System Modeling. The latter task is the one for which the data discussed above are needed.

Project 7.1.G on Intercalibration has been inactive pending the outcome of the International Atomic Energy Agency (IAEA) study. We also failed in getting the support of the relevant DOE office for the cross calibration of airborne measurement systems. This Project will be replanned now that the IAEA studies have been finished (we hope to see the final report this month), and we will decide early in FY 1992 whether useful additional work needs to be done.

Atmospheric Dispersion Modeling

Paul H. Gudiksen
Atmospheric and Geophysical Sciences Division
Lawrence Livermore National Laboratory

Drs. Pitovranov, Klepikova and Petrov visited LLNL during November 1990 and February 1991, respectively, to discuss:

- Continental scale atmospheric dispersion model development and evaluation.
- Local/mesoscale atmospheric dispersion model development and evaluation.
- Methodology for combining radioactivity measurements with model prediction for source-term estimation.

The USSR and US capabilities and data resources appear to complement each other very nicely, and work is progressing on developing a regression scheme to employ data in real time to correct predicted patterns. Work is also progressing on examination of data available for and of techniques of model validation.

A visit to Moscow and Obninsk by four US scientists took place in October 1991. One paper is now ready for submission to a journal on the regression scheme to be used to modify model predictions. Other papers concerning the research are being written. The next visit of USSR scientists will occur during the first half of CY 1992.

Wind-Driven Resuspension of Toxic Aerosols

Joseph H. Shinn and Lynn R. Anspaugh
Environmental Sciences Division
Lawrence Livermore National Laboratory

Three USSR scientists visited LLNL during March 1991. The major activity of this visit was to plan for an experiment to be done in the USSR. A visit was also made to the Nevada Test Site to examine the sites of major resuspension experiments within the US.

The major six-week experiment took place within the Chernobyl 10-km zone at two sites during August and September 1991. The primary purpose was to investigate the secondary radioactive contamination; specifically to conduct a joint experiment to estimate the values of the resuspension rate and resuspension factor in the zone near Chernobyl and to develop an improved model of resuspension. The experiment was conducted successfully.

During the first quarter of FY 1992, much work will be done to analyze the results of the experiment and to plan publications. Sometime early in CY 1992, Dr. Garger and one or more of his colleagues will travel to the US to complete analysis of the data from the experiment and to prepare publications.

Future work on developing a validated model will be planned at that time.

External Exposure and Dose from Deposited Radionuclides

Harold L. Beck
Environmental Measurements Laboratory

From July 1990 through May 1991, Drs. Anspaugh and Bouville were the co-leaders with Dr. Bennett of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) of the International Chernobyl Project's Task C on Dose. As this activity was partly redundant of the activity planned for the US-USSR collaboration, Project 7.1.C was set aside to await the results of the international activity.

We do know that the necessary measurements are being made by the USSR scientists, so that we will be able to accomplish the key goals of this project.

We anticipate that the next major step will be for the US to host in New York City a small workshop on this subject with USSR scientists.

Transfer of Radionuclides through Terrestrial Food Chains
and the Resulting Dose to Man

F. Owen Hoffman
Oak Ridge National Laboratory

Following the 1990 meeting at Zelëny Mys, Ukraine, USSR, Dr. Hoffman gathered the data promised by the US side and sent it to Academician Aleksakhin. However, the USSR side has not yet responded with the requested data.

As agreed, Dr. Hoffman is continuing to participate in other international activities to validate models of this type. During October, Dr. Hoffman spent two weeks in Vienna, Austria, pursuing these activities. We were very encouraged to discover that several USSR scientists also attended these meetings and are participating in the international activities of model development and validation.

During FY 1992, we will reestablish our contacts with Academician Aleksakhin and others and continue our studies in an international sense, rather than only in a bilateral sense.

Long-Term Dose from the Contamination of Aquatic Food Chains

William L. Templeton
Battelle Pacific Northwest Laboratories

A delegation of Soviet scientists visited SREL, ORNL, and PNL on March 1991.

A return visit to the USSR took place during October 1991. During this visit, results of ongoing experiments and calculations were discussed and progress reports are being prepared.

We expect that papers will be published in FY 1992, and that further work on the development and validation of models will proceed.

Modeling the Behavior of Radionuclides in a Soil-Aquatic System Including Rivers and Reservoirs

Yasuo Onishi
Battelle Pacific Northwest Laboratories

Four Soviet scientists visited PNL, ORNL, and the Army Corps of Engineers Waterways Experiment Station (WES) during March 1991. Agreements were reached on the production of Soviet data and its transmission to Dr. Onishi, the US Leader.

However, the agreed upon data have not been sent due to what is believed to be bureaucratic problems within the USSR. The data have been promised to be handed over to Dr. Onishi, if he goes to the USSR to personally receive it. He plans to make this visit in December of 1991.

During FY 1992, priority will continue to be given to Landsat Data Analysis and the Pripyat River/Dnieper River Reservoir System Modeling. The latter project is the one for which the data discussed above are needed.

Intercalibration of Methods for Measuring Radioactive Contaminants in the Environment

**Harold L. Beck
Environmental Measurements Laboratory**

This project has been inactive pending the outcome of the International Chernobyl Project study, which included a major study of calibration methods within the USSR and with the rest of the world. A team from the DOE's Environmental Measurements Laboratory played a major role in that study during the Summer of 1990.

This project will be replanned now that the International Chernobyl Project has been finished and the final report has been published. We will decide early in FY 1992 whether useful additional work needs to be done.

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