

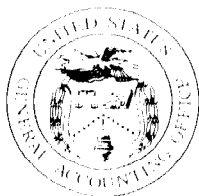
GAO

Report to the Chairmen, House and
Senate Committees on Armed Services

July 1991

DEFENSE RESEARCH

Funding of the U.S./ U.S.S.R. Joint Seismic Program



RELEASED

RESTRICTED—Not to be released outside the
General Accounting Office unless specifically
approved by the Office of Congressional
Relations.



**National Security and
International Affairs Division**

B-244615

July 5, 1991

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

In fiscal years 1988 through 1990, the Congress provided funds to the Defense Advanced Research Projects Agency (DARPA), in part to support the U.S./U.S.S.R. Joint Seismic Program¹ administered by the Incorporated Research Institutions for Seismology (IRIS). In 1990, questions surfaced about whether the level of funds being provided by DARPA for this program met the level intended by the Congress. As a result, the conference report on the defense authorization act for fiscal year 1991, House Report Number 101-923, directed us to determine whether funding for the Joint Seismic Program for fiscal years 1988 through 1990 was consistent with congressional intent.

Beginning with fiscal year 1991, the Congress appropriated funds for the Joint Seismic Program through the Air Force, rather than through DARPA. Therefore, we also briefly examined the fiscal year 1991 program's funding.

Background

IRIS is a nonprofit consortium of 72 universities and research laboratories that collects and analyzes seismological data to aid in the study of earth sciences such as research on earthquakes and volcanoes. The Joint Seismic Program is part of IRIS' Global Seismological Network. This network will eventually include 128 seismic data collection stations around the world. The Joint Seismic Program was started in 1988 and currently consists of six collection stations operating in the Soviet Union. IRIS has plans for installing up to 25 stations in the U.S.S.R.

Since its inception in 1984, IRIS has received funding from the National Science Foundation. In 1988, Congress began providing additional funding to IRIS through DARPA's Nuclear Monitoring Program. DARPA uses data collected by IRIS to monitor and verify adherence to nuclear test ban treaties.

¹This program was previously called the Eurasian Seismic Studies Program.

The U.S. Geological Survey (USGS) also participates in the Joint Seismic Program by testing and installing seismic equipment. USGS's participation in the Joint Seismic Program activities was also funded by DARPA.

Results in Brief

Although Department of Defense (DOD) officials were aware that some of the funds appropriated for DARPA's Nuclear Monitoring Program in fiscal years 1988-90 were to be used to support the Joint Seismic Program, the applicable authorization and appropriation acts did not earmark or specify how much money DARPA should provide. Eight months into fiscal year 1990, however, the fiscal year 1990 supplemental appropriations act specified that at least \$6.5 million was to be made available during that fiscal year for the Joint Seismic Program.

In the absence of specific funding levels in the applicable acts, DARPA determined the extent of funding to be provided to the Joint Seismic Program. For fiscal years 1988 and 1989, and initially in fiscal year 1990, DARPA officials told us they relied on the legislative history behind the DOD authorization and appropriation acts and congressional correspondence to determine legislative intent. For each of the 3 fiscal years, we found no basis in the statutes or the legislative history to conclude that DARPA had provided an inappropriate level of funds for the Joint Seismic Program.

During fiscal year 1990, IRIS raised concerns over the reduced level of funding and the acquisition of seismic equipment by DARPA. Nevertheless, the fiscal year 1990 funding actually exceeded by \$1 million the \$6.5 million minimum funding level specified in the supplemental appropriations act.

For fiscal year 1991, neither the defense authorization act nor the appropriation act mentioned the Joint Seismic Program. However, the authorization conference committee report specified \$7 million was to be provided for the Joint Seismic Program, while the appropriation conference committee report specified \$10.3 million. Ultimately, the Joint Seismic Program was funded at \$7 million.

Legislation Did Not Specify Funding Levels

The defense authorization and appropriation acts for fiscal years 1988 through 1990 increased the DOD budget for the Nuclear Monitoring Program. However, the Congress did not direct that these funds be applied to any specific seismic program, such as the Joint Seismic Program, or to any specific research organization, such as IRIS. The legislative history of

these acts, however, indicates that these additional funds were intended to (1) augment DARPA's seismic verification research efforts, including support for university seismological research, and to (2) expand existing seismological studies and data exchange with the Soviet Union.

It was not until the fiscal year 1990 supplemental appropriations act² was enacted that the Congress specified a funding level for the Joint Seismic Program. Section 215 of that act provided that of the fiscal year 1990 funds appropriated for DARPA's Nuclear Monitoring Program, at least \$6.5 million was to be made available for the Joint Seismic Program. This legislation, however, was not enacted until May 25, 1990, 8 months into fiscal year 1990.

Except for the fiscal year 1990 Senate authorization committee report, which recommended \$6.5 million for the Joint Seismic Program, the DOD authorization, appropriation, and conference reports for fiscal years 1988-90 did not specifically mention the Joint Seismic Program.³

DARPA Provided Funds It Considered Appropriate for the Joint Seismic Program in Fiscal Years 1988-90

Because the applicable authorization and appropriation acts were not specific about funding the Joint Seismic Program, DARPA officials told us they determined the amounts of funds to be provided in fiscal years 1988, 1989, and initially in fiscal year 1990. In doing so, DARPA officials told us that they referred to the legislative history supporting the DOD authorization and appropriation acts and other congressional correspondence. On the basis of the actions taken by DARPA, we have no reason to question its interpretation of congressional intent.

Table 1 summarizes the Joint Seismic Program's funding history for fiscal years 1988-90.

²The Dire Emergency Supplemental Appropriation for Disaster Assistance, Food Stamps, Unemployment Compensation Administration, and Other Urgent Needs, and Transfers, and Reducing Funds Budgeted for Military Spending Act of 1990 (P.L. 101-302), enacted May 25, 1990.

³Although the Joint Seismic Program was not specifically mentioned, the fiscal year 1990 House DOD authorization report recommended that not less than \$8 million be authorized for several purposes, including the continuation and expansion of the existing seismological studies and data exchange program with the Soviets.

Table 1: DARPA Funds Requested and Received by IRIS and the USGS for the Joint Seismic Program

Dollars in millions			
Funding requested	Fiscal year		
	1988	1989	1990
IRIS	\$1.04	\$4.23	\$9.64 ^a
USGS	0	0.77 ^b	0.77
Total	\$1.04	\$5.00	\$10.41
Funding received			
IRIS	\$1.04	\$4.15	\$3.84
USGS	0	0.54	0.77
Other	0	0	2.89 ^c
Total	\$1.04	\$4.69	\$7.50

^aLater revised to \$5.5 million.

^bLater revised to \$0.54 million.

^cThe value of government-furnished equipment.

Fiscal Year 1988

In fiscal year 1988, the only indication of congressional intent was a floor amendment to the defense authorization bill. Senator Jeff Bingaman proposed a \$4.6 million increase over the defense budget for DARPA's Nuclear Monitoring Program. This increase was intended to reinvigorate seismic verification research and to follow up on progress being made by DARPA and university researchers. In cosponsoring the amendment, Senator Edward Kennedy commented that at least half of the increase in DARPA's Nuclear Monitoring Program funds should be spent on seismological research performed by individual universities and by IRIS-supported organizations. Senator Kennedy did not specify what percentage of these funds should go to each of the two research groups. Although the Congress provided DARPA's Nuclear Monitoring Program a \$4.6 million increase, legislation and committee reports did not specify to whom DARPA was to provide the additional funds or at what level.

Without a specific funding level for the Joint Seismic Program in the defense authorization and appropriation acts, DARPA officials decided that about half of the increase in DARPA's Nuclear Monitoring Program funds would be divided almost evenly between IRIS and other university seismic research.

Because of a subsequent congressional funding reduction, DARPA ultimately received an increase of about \$4 million instead of the proposed \$4.6 million. DARPA determined that about \$2 million of this amount

would be split between the Joint Seismic Program and other university seismic research.

DARPA believed that the \$1.04 million provided to the Joint Seismic Program was consistent with the only indication of congressional intent available—the comment Senator Kennedy made on the Senate floor.

Fiscal Year 1989

In fiscal year 1989, the Congress increased DARPA's Nuclear Monitoring Program funding by \$15 million over DOD's request. But, as in fiscal year 1988, the authorization or appropriation acts did not specify any single program or organization that was to receive the additional funds. The House Armed Services Committee's authorization report stated that the increase was to support university seismological research and advanced high-performance seismic station development and to expand the DARPA-funded international seismic research program. Likewise, the Senate Armed Services Committee's authorization report merely mentioned seismic research programs. However, neither report nor other applicable committee reports cited the Joint Seismic Program or how much funding it should receive.

To determine fiscal year 1989 funding for the Joint Seismic Program, DARPA referred to a July 25, 1988, letter from eight senators to the Chairman of the Defense Subcommittee of the Senate Appropriations Committee. The letter listed the activities to be supported by the \$15 million increase and advocated \$7 million for university seismic research. Because DARPA officials considered the Joint Seismic Program a university research effort, they determined that the program would receive \$4 million for fiscal year 1989. This decision was similar to DARPA's decision in fiscal year 1988 to divide research funds about evenly between the Joint Seismic Program and other university seismic research.

In funding the Joint Seismic Program for fiscal year 1989, DARPA provided about \$4.2 million to IRIS and \$542,000 to the USGS. Thus, the fiscal year 1989 funding totaled about \$4.7 million. DARPA believed this funding not only fulfilled the intent of Congress but exceeded it.

Fiscal Year 1990

In fiscal year 1990, the Congress increased DARPA's Nuclear Monitoring Program funding by \$11.5 million over DOD's request. However, as in the 2 previous years, the authorization and appropriation acts did not specify a particular program or organization to be funded by the

increase. While the authorization report of the Senate Armed Services Committee recommended \$6.5 million for the Joint Seismic Program, the House Armed Services Committee's authorization report recommended that not less than \$8 million be used to continue and expand the existing seismological studies and data exchange program with the U.S.S.R. and university research on the detection and discrimination of low-yield nuclear explosions. Although the authorization conference committee report supported the Senate Committee's increased level of funding for DARPA's Nuclear Monitoring Program, the report did not specifically address the Joint Seismic Program funding issue. Similarly, the pertinent committee reports on defense appropriations did not mention the specific activities or programs that were to be funded.

As in the 2 previous fiscal years, without a specific statutory funding level, DARPA officials told us they used legislative history as a guide in determining funding for the Joint Seismic Program. DARPA based its determination of congressional intent on the Senate Armed Services Committee's report, which was later reinforced when the May 1990 supplemental appropriations act provided that at least \$6.5 million be made available for the Joint Seismic Program. This was the first time an authorization or appropriation act specified a funding level for the Joint Seismic Program.

IRIS requested \$9.6 million from DARPA for the fiscal year 1990 Joint Seismic Program. IRIS intended to use about half of this money to purchase and install equipment at six new seismic stations in the Soviet Union and at six new stations in the United States.⁴

In early March 1990, DARPA offered to fund the Joint Seismic Program at \$3.8 million, along with an additional amount of government-furnished equipment it had decided to purchase for the program. Later in March 1990, IRIS excluded the cost of equipment from its proposal and revised its request to \$5.5 million. The parties eventually agreed to a funding level of \$3.8 million, with DARPA providing the equipment.

DARPA initially provided about \$2.1 million to IRIS to support the fiscal year 1990 Joint Seismic Program. Later in the fiscal year, DARPA provided an additional \$1.7 million for the program.

⁴IRIS' request included costs for its own stations as well as those of USGS. IRIS and USGS were to decide how to divide the IRIS funds after DARPA approved the request. USGS also submitted a separate request for its own seismic program activities in fiscal year 1990.

Although IRIS officials stated they were not pleased with the type of equipment DARPA proposed to provide, this equipment was capable of providing the same seismic data as the IRIS- proposed equipment. The equipment DARPA proposed to provide was valued at \$2.9 million. This total included

- \$2 million for equipment and installation costs at six U.S.S.R. seismic stations;
- \$600,000 for equipment and installation costs at IRIS' three new U.S. seismic stations; and
- \$300,000 for computer equipment at IRIS' seismic data center at the University of California, San Diego.

In accordance with the conference report on the 1990 supplemental appropriations act, DARPA included the value of this equipment as part of the funds it provided to the Joint Seismic Program. In total, then, the government provided about \$7.5 million to support the seismic program during fiscal year 1990: DARPA provided \$6.7 million to IRIS, including equipment valued at \$2.9 million, and about \$800,000 to the USGS. DARPA officials contended that this amount exceeded the minimum \$6.5 million funding level specified in the supplemental appropriations act.

Air Force Given Responsibility for Funding the Joint Seismic Program in Fiscal Year 1991

Because of IRIS' concern over the reduced level of funding for the program during fiscal year 1990, the Congress recommended that responsibility for funding the program be transferred from DARPA to the Air Force's Office of Scientific Research beginning in fiscal year 1991.

The fiscal year 1991 defense authorization and appropriation acts did not specifically state the level of funding that the Joint Seismic Program should receive. However, the legislative history shows that some funds were specifically directed to support the IRIS Joint Seismic Program. Specifically, the authorization conference report, in assuming that funding responsibility would remain with DARPA, recommended that DARPA make available \$7 million to support IRIS' Joint Seismic Program. Similarly, the appropriation conference report recommended that \$10.3 million of the funds appropriated for the Air Force's Defense Research Sciences be used for the Joint Seismic Program. Ultimately, the Air Force was designated as the fiscal year 1991 funding agency for the Joint Seismic Program and funded \$7 million for this effort.

The Air Force is now working with appropriate congressional staffs to develop a plan for funding the Joint Seismic Program for fiscal year 1992 and beyond.

Scope and Methodology

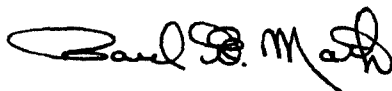
In assessing whether the level of funding provided to the Joint Seismic Program was consistent with congressional intent, we

- interviewed officials from IRIS, DARPA, USGS, the National Science Foundation, the Air Force Science and Technology Group at Air Force Headquarters, and the Air Force Geophysics Laboratory;
- met with congressional staff members from both Houses of Congress;
- visited seismologists at the University of Colorado and the University of California, San Diego;
- reviewed congressional committee reports and related statutes; and
- analyzed financial and managerial documents and correspondence relating to the Joint Seismic Program.

We made our review between March and May 1991 in accordance with generally accepted government auditing standards. As requested, we did not obtain agency comments. However, we sought the views of agency officials during our work and have incorporated them where appropriate.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the report date. At that time, we will send copies to the Secretary of Defense and other appropriate congressional committees. We will also make copies available to others upon request.

I can be reached at (202) 275-4587 if you or your staff have any questions concerning this report. The major contributors to this report are listed in appendix I.



Paul F. Math
Director, Research, Development,
Acquisition, and Procurement Issues

Major Contributors to This Report

**National Security and
International Affairs
Division, Washington,
D.C.**

Michael E. Motley, Associate Director
Lester C. Farrington, Assistant Director
William M. McPhail, Evaluator-in-Charge
Robert Clark, Senior Evaluator

Ordering Information

The first five copies of each GAO report are free. Additional copies are \$2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

**U.S. General Accounting Office
P. O. Box 6015
Gaithersburg, MD 20877**

Orders may also be placed by calling (202) 275-6241.

**United States
General Accounting Office
Washington, D.C. 20548**

**Official Business
Penalty for Private Use \$300**

**First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100**
