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PROGRAMS THAT SUPPORT NON-PROLIFERATION AND DEFENSE CONVERSION FUNDED BY THE U.S. GOVERNMENT

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Abstract

The proliferation of nuclear, chemical, and biological weapons is a serious problem for international security. Consequently the U.S. government has established an array of programs to fund activities that will inhibit this activity. The problem of proliferation and defense conversion, in general, is quite complicated. The most immediate concern is the actual diversion of weapons materials. In the long term; however, weapons of mass destruction must be destroyed in a safe and environmentally sound manner. Ultimately the solution of the proliferation problem lies in the redirection of the intellectual skills of weapons scientists and engineers to peaceful commercial activities. At the present time the economic conditions in the New Independent States create severe pressure on people with critical weapons knowledge to sell their skills to political entities that are dangerous.

There are four programs to be discussed in this paper. The first is the "Nunn-Lugar" program which is the largest and is administered by the Department of Defense. Between FY92 and FY94 Congress authorized $1.2B for this activity which is aimed at weapons destruction, storage, and safeguards. The second is the International Science and Technology Center in Moscow and the Science Center about to open in Ukraine. These are joint efforts involving the U.S., the European Community, and Japan to fund projects to prevent proliferation and foster commercial technological activity in Russia, Georgia, and Ukraine. The New Independent States – Industrial Partnering Program is a $35M (FY94) program jointly administered by the Department of Energy and the Department of State. This program provides for direct DOE laboratory – NIS institute

joint R&D, U.S. industrial collaboration with NIS institutes through the DOE labs, and academic assistance in business education and information infra-structure. Finally, the State Department Non-Proliferation and Disarmament Fund supports training, verification, and destruction activities related to weapons of mass destruction.

Introduction

The problem of preventing the proliferation and control of nuclear, chemical and biological weapons is very complicated and therefore an array of programs that fund these activities have been established by the U.S. government. The most urgent concern is the prevention of the diversion of critical weapons materials into the wrong hands. This problem of physical security is addressed in these programs by providing for the destruction of weapons, the safeguarding of materials, and the control of the transport of materials. However, in the long run, it is not enough to physically control the distribution of weapons materials. The industrial capacity for their construction must be redirected, the intellectual capability to use those technologies must be redirected to peaceful purposes and the people with these skills must be supported during the transition. The danger lies in the political and economic instability in the Former Soviet Union (FSU), which can lead to the sale of this skills to countries that would use them to intimidate their weaker neighbor or to sponsor terrorist activities. The programs discussed below concentrate on different aspects of this complicated problem. Some of the programs support direct action in the FSU acting mainly as customers of existing technology while others foster R&D through collaborative effort and aim at defense conversion.

The Nunn-Lugar Program

The Nunn-Lugar program was originally created in 1992 and later amended in the Dept. of Defense Appropriation Act for FY93. According to the law, the Defense Dept. was authorized to provide assistance to the former Soviet Republics. The authorization included work to destroy nuclear, chemical, and other weapons of mass destruction, to transport, store, disable and safeguard weapons as part of their destruction, and to establish verifiable safeguards against proliferation. The charter was later expanded to include defense conversion and defense and military contact activities. The amount of money authorized for the program is quite large. In FY92 through 94, $1.2 B was authorized. $212M of the authorization expired.

A country must first go through a certification program in order to be eligible to receive funds. This process results in a certification by the Secretary of State that the country meets certain requirements related to nuclear and other weapons and human rights. Presently Russia, Kazakhstan, Belarus, and Ukraine are certified. Next, negotiations are conducted between the U.S. and the country and Congress is notified of the proposed obligations. The program has taken a long time to get off the ground mainly because of the negotiation phase. Some of the FSU countries were not so eager to participate. This problem seems to be resolved and obligations increased from $130M in March, 1994 to $300M in August 1994. The program is administered almost completely by the Dept. of Defense. An exception is the science centers described in a later section. Proposals are invited through Commerce Business Daily announcements and formal Requests for Proposal. Unsolicited proposals may be sent to the Defense Nuclear Agency which has the main responsibility for running the program.

There are five focus areas for the program:

1) Weapons Destruction and Dismantlement
2) Safe and Secure Transport and Storage of Nuclear Weapons and Materials
3) Non-Proliferation
4) Defense Conversion and De-Militarization
5) Defense and Military contacts

The first area involves much low technology, because construction type tools are mostly used, though some high technology emergency response capability is funded. The second area requires some technical support. This support, when R&D is needed, comes from the Dept. of Energy national labs or from the Dept. of Defense labs. The third area involves development of export controls and material control and accountability with technical support supplied as in the second area. However, the science centers are also included in this area. They are aimed at providing civilian research opportunities for FSU scientists. The fourth area is aimed at outright aid to convert industries to civilian purposes. Some of these conversion efforts involve business partnerships between U.S. companies and FSU weapons companies. The last area involves people to people contacts to create a more stable civilian controlled military in FSU states.

To sum up the situation regarding R&D opportunities in the Nunn-Lugar program, one must work through the Defense Nuclear Agency (DNA) administrative structure while establishing links to DOE or DOD laboratories that supply technical support. The

exception to this is to work through the science centers which are administered through the State Dept. Based on the projects approved so far, R&D opportunities may exist in the areas of materials detection and surveillance, emergency response methods, environmental restoration, reactor safety, storage and transport container, and communications systems for notifications between countries. However, it should be noted that the emphasis is on getting the work of weapons destruction and secure storage done with available technology if possible.

Non-Proliferation and Disarmament Fund

This is a small program currently funded at $10M per year which is administered by the State Dept. Proposals must fall into four mission areas:

1) Education and training
2) Weapons Destruction and Conversion
3) Enforcement and Interdiction
4) Verification and Safeguards

A contractor does not bid to this program, the State Dept. can give money (which is not restricted by fiscal year) to a U.S. Government agency, a foreign government or NATO. They regard themselves as customers of existing technology procuring products for non-proliferation activities. Any R&D activities would be performed by an entity such as the DOE laboratories. However, the expense of the R&D would be borne by DOE in that case with the State Dept. paying no overhead. This program has no interest in environmental issues. The program does exert some influence over the science centers although it has no direct responsibility for them.

Science Centers

The science centers such as the International Science and Technology Center (ISTC) in Moscow are operated with Nunn-Lugar money, but under the oversight of the State Dept. These are not exclusive U.S. enterprises. ISTC receives money from the U.S., Japan, and the European Community with some operational building support from Russia. The U.S. contributes $25M, Japan - $17M, the European Community - $28M, and Russia something over $1M in facilities. The purpose of the program is to address the long-term solution to the proliferation problem which is the re-employment of weapons scientists and engineers in commercially viable enterprises. The science centers exist to foster projects that will create this defense conversion, to select the best

projects and match needs and capabilities in the NIS, and to fund those chosen projects. Of special interest to ISTC are the fields of environmental protection, energy production and nuclear reactor safety although these topics by no means exclude other areas. Anything which encourages the conversion to a market based economy responsive to civil needs is acceptable. Another goal of the program is to create more contacts between scientists and engineers in the NIS and Georgia and the international scientific community.

ISTC has a Governing Board, an Executive Director, a Scientific Advisory Committee (SAC) and a Center staff. Proposals are reviewed by the SAC which makes recommendations to the Governing Board. Once a proposal is approved, an agreement between ISTC and the recipient is negotiated. ISTC funds can only be spent in the NIS and Georgia, but collaboration between a Western institute and an NIS institute is allowed. ISTC staff has no facilities for R&D work itself. Some areas excluded from consideration. Nothing that involves national security information disclosure of proprietary or business confidential information to a third party, or transfer of sensitive non-proliferation information to third parties will be considered. Proprietary and business confidential information is safeguarded.

In addition to ISTC money, money from outside sources can also be included in the project. As of August 1994, ISTC has approved proposals totaling $30M of which $18M is funded by the U.S. This money will finance 54 projects. The expectation for FY95 is that no additional money (beyond the $25M) will be available from the U.S. for ISTC use. At the present time 3,000 NIS scientists and engineers are potentially covered by approved proposals over a period of 3 years.

A second science center, the Science and Technology Center in Ukraine (STCU) will be opened in Kiev. The agreement creating STCU entered into force on July 16, 1994. The purpose of STCU is the same as the purpose of ISTC. The parties to the agreement are: the U.S. - $10M, Canada - $2M, Sweden - $1.5M, and Ukraine which will provide in-kind support including a rent free operational facility. The organization and procedure for submitting and evaluating proposals is not yet defined. This will be done at an organizational meeting of the parties at the end of August 1994. Proposals will be invited from individuals, institutions, governments, and non-profit organizations.

New Independent States-Industrial Partnering Program (NIS-IPP)

This program which is funded by money transferred from the State Dept. to the Dept. of Energy also aims at the long-term solution to the non-proliferation problem, but using a three pronged strategy. It was established under section 575 of the Foreign Operations Appropriations Bill of 1994. The program is run jointly by the State Dept. and the Dept. of Energy. The philosophy is to provide direct assistance to NIS institutes first. Second, create joint projects between U.S. industry and NIS institutes. Third, provide academic assistance to educate NIS scientists and engineers in western market economics and to establish an information infra-structure.

In the first year (FY94) $35M was provided for the entire program. A budget request for a line item in the FY96 DOE budget has been prepared at the level of $55M. The final transfer of money from State to DOE occurred late in the fiscal year and the money can be spent in FY95 and 96. There are efforts underway to reprogram DOE, DOD, and State money in FY95 to raise an additional $35M in that year. The program is coordinated by a group called the Inter-Laboratory Advisory Board (ILAB) consisting of one representative and one alternate from each of 10 DOE multi-purpose national laboratories: *Argonne National Lab., Brookhaven National Lab., Lawrence Berkeley Lab., Lawrence Livermore National Lab., Los Alamos National Lab., National Renewable Energy Lab., Idaho National Engineering Lab., Pacific Northwest Lab., Oak Ridge National Lab., Sandia National Lab.* This body reviews proposals for the direct U.S. lab - NIS institute programs, oversees the operation of the industrial phase, and participates in oversight of the academic program.

The first phase (Thrust I) of the program in FY94 provides for $20M in direct U.S. lab to NIS institute joint programs. Each laboratory received an allocation of money determined by ILAB. Each laboratory solicited proposals from its own personnel and chose the ones it would fund under its allocation. ILAB reviewed the proposals selected by the individual labs for duplication of effort, conformity with the program goals, and opportunity for collaboration. DOE and the State Dept. then reviewed an initial package of 136 proposals put forward by ILAB for appropriateness and duplication with other programs such as ISTC. This process should continue to be followed in coming years. The Thrust I proposals must meet a set of qualification criteria and a set of evaluation criteria.

Qualification	Evaluation
• No nuclear weapons design • Meets export and classification criteria • Protects intellectual property rights of all parties • Appropriate use of DOE lab capabilities • At least 50% of funds spent in NIS • Consistent with State/DOE policy guidance	• Employ weapon scientists and engineers • Potential for commercial applications • U.S. industry involvement • High inpact • High quality technology • Potential timely payoff • Mutual benefit to U.S. and NIS • Good program management

One hundred and ten of the proposals in the first package were approved. The technology areas were biotechnology, energy, environment, lasers and accelerators, manufacturing, materials, sensors and instrumentation, and waste management. The projects approved, will spend $9.5M out of $14.6M total in the NIS and employ 1,500 NIS scientists and engineers. The distribution among countries is 85% Russia, 8% Ukraine, 4% Kazakhstan, and 3% Belorus.

The second phase (Thrust II) involves cost shared industrial projects. An industry group called the U.S. Industrial Coalition (USIC) was incorporated to actually run this phase of the program. So far about 35 U.S. companies have joined USIC. In FY94, $12M was made available for Thrust II, which means that the companies will have to provide $12M in matching funds if all the money is to be used. The DOE labs also have a role in this part as described below.

USIC will operate under a memorandum of understanding with the Dept. of Energy which allows this privately incorporated body to use federal money. USIC members are expected to generate proposals which will have a high degree of economic benefit to U.S. and NIS industry as well as contributing to the anti-proliferation goal by employing NIS weapons scientists and engineers. The USIC board of directors will decide which proposals are funded with the approval of the Dept. of Energy and the State Dept.

ILAB provides an intermediary role and will review the appropriateness of the selected USIC proposals. Each USIC proposal will involve a partnership with a DOE lab. The role of the DOE lab will be to validate the technology being provided by the NIS

institute and to control the flow of federal program money going to the NIS institute. The DOE lab may also perform R&D as part of the program. In Thrust II, 50% of the *federal* money must be spent in the NIS.

As was mentioned above, the FY96 budget request is $20M higher than the FY94 appropriation. This is mainly because the Thrust II funding increases from $12M in FY94 to $30M in FY96. The Thrust I funding remains at $20M. Both the Thrust I and Thrust II programs are viewed by the national labs as an opportunity to increase their contacts with industry to augment their existing technology transfer efforts. The creators of the program and DOE view this activity as a new mission for the national labs. As the program continues, the prediction is for it to become a totally privately funded program. National lab involvement if it exists at that stage will have to be funded by industry.

The final and smallest part of the program is the academic support activity. This amounts to $3M in FY94 with $5M requested for FY95. The operations center for this activity is at the New Mexico Engineering Research Center at the University of New Mexico in Albuquerque. A number of universities are part of this effort. The goal is to provide training to weapons scientists in the NIS to enable them to deal with a free market economy and to learn to commercialize their ideas and technological skills. The second part of the task is to develop an information infrastructure between the NIS institutes and between the NIS and the U.S. This information system would service the needs of both ILAB and USIC as well as the labs and institutes conducting research.

Summary

As was seen above, four programs have been discussed, all of which address the non-proliferation problem. Two of them (Nunn-Lugar and the Non-Proliferation and Disarmament Fund) emphasize quick action to halt the spread of actual weapons and weapons materials. In this case opportunities for R&D depend on relationships with agencies that receive the funds to do the work. The second two (Science Centers and NIS-IPP) try to foster joint research and development programs that lead to commercialization and less dependence on defense funding. Here contact for research proposals must go through a science center office or through a national lab or participating company.

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