



MID-TERM RECIPIENT AUDIT REPORT

SCIENCE AND TECHNOLOGY CENTRE IN UKRAINE (STCU)

NOVEMBER 2009

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Foreign Affairs and International Trade Canada
Office of the Inspector General

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EXECUTIVE SUMMARY

As part of the departmental review of Grants and Contributions, Foreign Affairs and International Trade Canada (DFAIT) through the Office of the Inspector General Recipient Audit Division audited the amounts claimed by the Science and Technology Centre (STCU) in the Ukraine as part of a mid-term review of the STCU for the DFAIT Global Partnership Program (GPP). The purpose of the mid-term review was to provide assurance to senior management of GPP that the management control framework in place at the STCU was sufficient and operating effectively.

The team from the Office of the Inspector General (OIG) visited the STCU Headquarters in Kyiv and audited seven different Canadian funded projects in the Ukraine and in Georgia from September 7-18, 2009.

The OIG conducted its audit in accordance with Canadian Generally Accepted Auditing Standards (GAAS). Those standards require that it plan and perform an audit to obtain reasonable assurance that the management control framework and amounts claimed were free of material misstatement and complied with the financial terms and conditions established by the Memorandum of Understanding (MOU) signed between DFAIT and the STCU on September 5, 2008 (see Annex A).

One of the major observations raised in our report is the funding issue of the STCU beyond 2012 which impacts the “modus operandi” of the STCU over the long term. During discussions with senior officers of the STCU it became apparent to the auditors that funding to the STCU beyond the 2012, particularly minimum funding required in maintaining effective operations, has yet to be fully addressed by the Governing Parties. This point was raised by senior officials of the STCU in a report tabled by the Executive Director to the Governing Board in a May 2009 report entitled STCU after 2010: Transition to the Future. This report appears to change the focus somewhat of the STCU to creating cooperative partnerships in science and technology to solve real-world challenges to global security and stable prosperity. This new focus or objective is somewhat different from the original mandate of the STCU which is to give weapons scientists and engineers, particularly those who possess knowledge and skills related to weapons of mass destruction or missile delivery systems, in Ukraine and, if interested, in other states of the former Soviet Union, opportunities to redirect their talents to peaceful activities. Therefore, the Office of the Inspector General notes that the Governing Board Members will likely have to address both the current funding issue of the STCU and the new proposed direction the Secretariat would like to go in. As one can see the two issues raised above are not necessarily mutually exclusive but are dependent on each other in determining the future direction of the STCU.

Senior management in the Secretariat would like to implement a more holistic approach to STCU programs; organize targeted training programs; develop focused collaborative

research and seek new opportunities to bring recipient scientists to the attention of other Science & Technology cooperative activities, such as bilateral/multilateral scientific governmental or private foundation programs. This would certainly be a new revitalized direction for the STCU and one which should be discussed among Governing Board nations at a future Board meeting.

The other key observation which will have a direct impact on the discussions noted above is for Governing Board Members to decide whether to continue the current direction that a minimum of 30% of a project team to be comprised of Former Weapon Scientists (FWS) in order for a Full Form Proposals to be funded. According to STCU project submission guidelines, the minimum FWS participation for STCU projects is stated as at least 30-50% FWS. The STCU normally forwards project proposals for Party review with higher percentages of FWS, but has forwarded some proposals that have had as little as 30% FWS on a project. However, the policy is for each Funding Party to determine for their selves what percentage of FWS on a project is adequate for project approval and funding. This position was confirmed during the September 22, 2004 Advisory Committee meeting in Ottawa, Canada. At this meeting, the decision as to what should be considered "substantial" number of FWS would be left up to each individual Funding Party.

Regardless of the actual percentage of FWS, the auditors noted that one would have to agree that there will not be many FWS (WWII or Cold War scientists) around beyond the next decade. Yet, it can also be argued by some that younger scientists in countries of the former Soviet Union could pose a greater proliferation risk than the current FWS. Nevertheless, one can see that given the dwindling pool of FWS, this issue is likely to have a material impact on operational planning at the STCU in the future and should receive further consideration by the STCU senior management and the Funding Parties. No matter the outcome of such discussions, this issue, along with the funding issue are the key issues which will impact the long-term viability of the STCU.

It should be noted that DFAIT does not directly monitor the activities or results of the work of scientists participating in Canadian funded science centre projects. It does, however, review and approve the work-plans for each Canadian funded project and uses Canadian collaborators in maintaining a "hands-on" approach to Canadian funded projects. For the most part, DFAIT relies upon the oversight provided by Senior Specialists and Project Accountants at the STCU who routinely conduct financial and technical reviews. The Centre also uses its network of Regional officers to help oversee the activities of the Institutes within their territory. These reports are all readily available on the STCU web site for all Governing Parties to review.

Based on our review of six projects at seven different institutes in the Ukraine and in Georgia, we found that the management control framework set up by the STCU is

working well in the area of financial oversight by Project Accountants but there is room for improvement in the area of technical reviews performed by Senior Specialists. In particular, the OIG found there was a need for more clarity in the annotation of log book entries by scientists for the project(s) they are working on. Some were quite well done while others were very “skimpy” in providing details of the work performed on a daily or weekly basis. As noted in a previous General Accounting Report (GAO) – GAO-01-582, the GAO noted that it was very difficult for the auditors to track what the scientists were doing from the log book entries. For the purposes of our review the OIG utilized the services of a senior scientific advisor from DFAIT who accompanied us to each Institute and the advisor’s overall impression was that the research performed appeared to be in accordance with the project agreements signed with the STCU but you couldn’t necessarily tell this from some of the log book entries of scientists. As noted by the STCU, technical monitoring by Senior Specialists ensures that the work is being conducted as per the work plan. The log books are primarily in place to ensure that the scientists worked on the project. The STCU states that the log books cannot be a comprehensive report of the project activities. The OIG disagrees in that it is the log book which actually annotates the work being performed by each individual scientist, whereas, the work-plan in most instances is prepared by the Team Leader or Project Manager.

Finally, the Office of the Inspector General notes that a formal evaluation of the STCU and its effectiveness should be undertaken by the Governing Parties of the STCU to aid in their discussions on the future direction of the STCU. This evaluation could be co-funded by the Governing Parties.

David Haire, CMA
Office of the Inspector General
Recipient Audit Manager, DFAIT

1.0 BACKGROUND

The Science and Technology Center in Ukraine (STCU) is an intergovernmental organization dedicated to non-proliferation of technologies and expertise related to weapons of mass destruction, including nuclear, biological and chemical weapons, and their delivery systems. The United States, Canada, Sweden and Ukraine signed an agreement establishing the STCU in Ukraine on October 25, 1993. The European Union acceded to the STCU agreement on November 26, 1998, and in so doing, replaced Sweden as a party to the STCU agreement. The STCU helps develop, finance and monitor science and technology projects that engage the former Soviet weapons community in Ukraine, Azerbaijan, Uzbekistan, Georgia, and Moldova in peaceful civilian activities. The funding parties of STCU projects include: the signatories to the STCU agreement, Japan as a sponsor of the STCU agreement and Partners (government and non-government) approved by the Board of Governors. The STCU is a legal entity and has been registered by the Ministry of Foreign Affairs of Ukraine as an intergovernmental organization with its headquarters in Kyiv, Ukraine. The STCU also has seven regional offices in the Ukraine, Georgia, Azerbaijan, Moldova and Uzbekistan. The Secretariat staff of the STCU includes approximately 55 administrative, scientific, and financial personnel who oversee all aspects of the STCU operations and communication with member countries.

As noted in the STCU Annual Report for 2008, “the STCU went through a year of uncertainty in 2008, marked by turmoil surrounding the STCU headquarter office premises in Kyiv. STCU also experienced another decline in overall business activity, with the number and funding of amounts of new projects falling for a second straight year. There was also a significant reduction in financing from governmental agencies working through the STCU Partners Program, which caused the overall Partner funding to fall approximately 26% from the previous year. While new project funding in 2008 was lower, STCU saw a steady amount of current project activity engaging over 4860 scientists in collaborative research projects that totaled over \$18 million (USD equivalent) in project expenditures.”

It was against this backdrop that the DFAIT Recipient Audit Division carried out its mid-term review of the STCU. The objectives and scope of the audit are shown below.

2.0 OBJECTIVES

The overall objective of the Office of the Inspector General (OIG) mid-term review was to ensure that the Management Control Framework at the STCU was sufficient and operating as intended. In particular the OIG looked at whether the STCU is well

managed; designed in accordance with Governing Board criteria and that STCU legislation and policy documents were complied with. For the Canadian funded projects selected for audit, the OIG looked at whether the projects were properly managed and that performance was measured at the conclusion of each project.

The following sub-objectives were also part of our mid-term review:

1. The STCU maintained adequate accounting and supporting documentation for project expenditures.
2. At least 50% of the scientists working on Canadian funded projects were Former Weapon Scientists. This was verified through monitoring visits by STCU finance staff.
3. All weapon scientists and support staff working on the Canadian funded project were identified in the project proposal and final project agreement signed between the Institute and the STCU.
4. Scientists' time records were accurate and reliable and maintained in accordance with STCU operating procedures. Variances over 220 days were identified and approved by Senior Specialists and noted by the CFO.
5. All grant payments received by scientists working on Canadian funded projects agreed with the Grant letters on file and were recorded accurately in the STCU financial system.
6. All assets purchased for projects with Canadian funds were in accordance with the project agreements; identified in project documentation held by the STCU; and verified through monitoring visits by STCU finance and administrative staff.
7. All projects funded by Canada were reviewed by Senior Specialists at the STCU on a regular basis.

3.0 APPROACH AND SCOPE

The approach included a planning phase, an on-site or field work phase and a report writing phase. During the planning stage the auditors assembled relevant documentation, communicated with Redirection of Former Weapon Scientist (RFWS) portfolio officers in the Global Partnership Program and with senior staff members at the STCU. Preliminary documentation received from Canadian Deputy Executive Director and the Chief Financial Officer of the STCU was reviewed and a sample

selection of Canadian funded projects was selected. A recipient audit program was established for both a review of the management control framework at the STCU and for substantive testing of Canadian funded projects at the Institute level.

DFAIT on-site procedures at STCU Headquarters consisted of:

- interviews with the Canadian Deputy Executive Director, the Chief Financial Officer (CFO), the Chief Administrative Officer (CAO), Senior Specialists and various staff members of the finance and administration departments;
- reviewing financial and project documentation for each Canadian funded project under review including initial project proposals, project agreements, grant letters and asset listings. In particular, the DFAIT team reviewed the credentials of the former weapon scientists assigned to each Canadian funded project and verified the purchase of each asset for each Canadian funded project reviewed during this audit;
- Interviews with the project manager and each former weapon scientist to review their credentials;
- asset verification;
- a review of log books for each scientist for one quarter of the project;
- a technical review of each Canadian funded project was performed by the Canadian scientific advisor from the Global Partnership Program of DFAIT (RFWS portfolio);
- an exit debriefing with the Executive Director of the STCU along with the Canadian and EU Deputy Executive Directors, the CFO and the CAO.

The scope of the audit included the verification of the internal controls over the:

- Accounting system for the recording of grant payments and asset purchases;
- Timekeeping system for recording the scientist's time on each project;
- Purchasing of assets and control of those assets including inventory or stock taking on an annual basis;
- Log book entry procedures for former weapon scientists;
- Forward planning including mechanisms in place at the STCU for the dissemination of accurate information to both the Advisory Committee and the Governing Board of the STCU.

4.0 GOVERNANCE AND STCU FUNDING

In accordance with the STCU Agreement agreed to by Canada, Sweden, Ukraine and the USA on October 5, 1993, Article I and II states:

Article 1

The Science and Technology Centre in Ukraine (STCU) is hereby established as an intergovernmental organization. Each Party shall facilitate, in its territory, the activities of the Centre. In order to achieve its objectives, the Centre shall have, in accordance with the laws and regulations of the Parties, the legal capacity to contract, to acquire and dispose of immovable property, and to institute and respond to legal proceedings.

Article II

The Centre shall develop, approve, finance, and monitor science and technology projects for peaceful purposes, which are to be carried out primarily at institutions and facilities in Ukraine and, if interested, in other states of the former Soviet Union.

The specific objectives of the STCU as outlined in Article II are:

- To give weapons scientists and engineers, particularly those who possess knowledge and skills related to weapons of mass destruction or missile delivery systems, in Ukraine and, if interested, in other states of the former Soviet Union, opportunities to redirect their talents to peaceful activities; and*
- To contribute thereby through its projects and activities: to the solution of national or international technical problems; and to the wider goals of reinforcing the transition to market based economies responsive to civil needs, of supporting basic and applied research and technology development, inter alia, in the fields of environmental protection, energy production, and nuclear safety, and the remediation of the consequences of nuclear-power reactor accidents, and of promoting the further integration of scientists of the Ukraine and the former Soviet Union into the international scientific community.*

The STCU has a Governing Board made up of voting representatives from Canada, the EU, Ukraine and the USA. Under the Board is the STCU Secretariat which is made up of the Executive Director, Deputy Executive Directors, Chief Financial Officer, Chief Administrative Officer and other staff members.

The Governing Board is responsible for:

- Determining the STCU's policy and its own rules of procedure;
- Providing overall guidance and direction to the Secretariat;
- Approving the STCU's operating budget;
- Governing the financial and other affairs of the Centre;
- Formulating general criteria and priorities for the approval of projects;
- Approving projects in accordance with Article VI of the Agreement which says that each project submitted for approval to the Governing Board shall be accompanied by the written concurrence of the state(s) and that the approval of projects shall require the consensus of Parties on the Governing Board;
- Adopting the STCU Statute and other implementing arrangements if

- necessary; and
- Performing other functions assigned to it by the Agreement.

The Statute of the STCU in Ukraine was approved by the Governing Board at its first meeting on December 5-6, 1995. It was agreed to by the original members of the STCU (Canada, Sweden, Ukraine and the USA). The contents of the Statute established;

- The location of the Headquarters of the STCU to be in Kyiv, the powers of the STCU and the parties to the STCU;
- The responsibilities of the Governing Board;
- The responsibilities of the Secretariat;
- How proposals are to be submitted to the STCU;
- The provision of scientific and professional advice for the STCU to carry out its duties;
- The project approval process;
- What must be contained in a Project Agreement;
- How contributions are to be made by funding parties to the STCU and that the Government of the Ukraine will provide at its own expense a facility suitable for use by the STCU, along with maintenance, utilities and security for the STCU;
- How outside financing of projects through the STCU are to be handled;
- Intellectual Property Rights and exemptions to Intellectual Property Rights;
- Financing of Administrative Operating Costs of the STCU by the funding parties;
- Monitoring and auditing of projects and the administrative costs of the Centre; and
- How the STCU is to be dissolved by the funding parties when the Centre is no longer needed.

The criteria that Office of the Inspector General used in its review were taken from the Management Accounting Guidelines of the Certified Management Accountants of Canada.

The governance controls instituted through the signed Agreement and the STCU Statute should operate to ensure that:

- (a) Decisions made by the Governing Board of the STCU are in fact implemented by the Secretariat to achieve the intended purposes;
- (b) Decisions made by the Governing Board and instituted by the Secretariat conform to the STCU Statute and internal STCU policies and are taken by those authorized to make them.
- (c) The Governing Board receives relevant and timely information on STCU performance measured against stated objectives of the STCU.

In particular, the OIG noted the following specific strategic objectives set by the Governing Board which defined the direction of the STCU over the next five to seven years:

- Create and implement new programs and activities to more effectively assist former weapons scientists and institutes in developing their skills and capabilities to support themselves without direct STCU assistance.
- Increase the amount of private sector funding and improve the cooperation depth of private sector projects to encourage long-term partnerships and sustainability for former weapon scientists and institutes.
- Increase the level of active participation and funding from recipient governments for science and technology projects and initiatives through the STCU and become equal partners with the donor Parties in the STCU.

The goal is for STCU grant recipients to become self-supporting and to make high-value contributions to domestic and global science and technology issues (both commercial and non-commercial). They must be weaned from dependency on the donor Parties' STCU project funding and be given the skills, experience, and reputation to complete and contribute on their own in the international science, academic, and commercial worlds.

Observation

The Office of the Inspector General of DFAIT found that the governance structure in place at the STCU was operating efficiently and effectively.

However, the Office of the Inspector General noted that one of the major concerns facing the STCU at this juncture is the long-term sustainability or viability of the STCU beyond 2012. The Parties of the Governing Board have for the most part committed their governments to the on-going funding of the STCU until 2012. In particular, Canada's funding has been approved by the Government of Canada by way of a Treasury Board Submission which received approval by Treasury Board Ministers in July 2008 to fund the STCU and its commensurate Canadian project activity until March 31, 2013. The total amount allocated by the Canadian Government for the five years to the Redirection of Former Weapons Scientists portfolio for both the ISTC and STCU is \$42.5 million in total, starting in fiscal year 2008/2009 and ending in fiscal year 2012/2013.

During discussions with the Executive Director and the Canadian Deputy Executive Director of the STCU it became apparent to the auditors that funding to the STCU beyond 2012, in particular the minimum funding required to continue effective operations, has not been adequately addressed by the Governing Board. This has placed the STCU in a difficult position in that many projects sent to the Centre for

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approval can take up to two years from project initiation to final approval by the Governing Board.

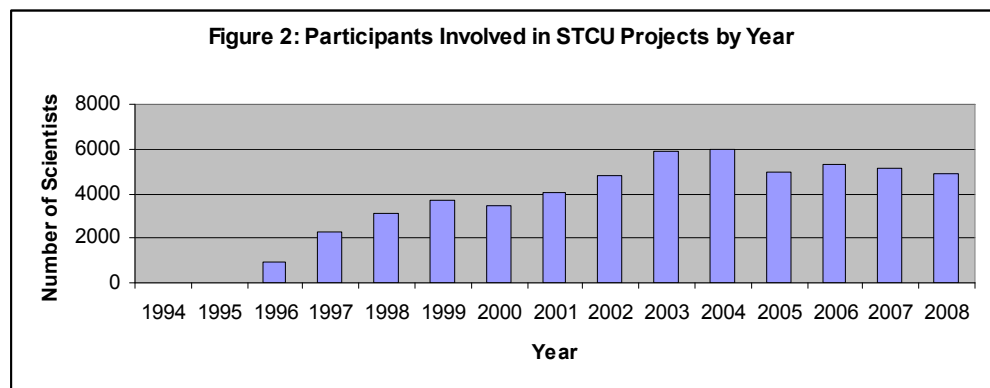
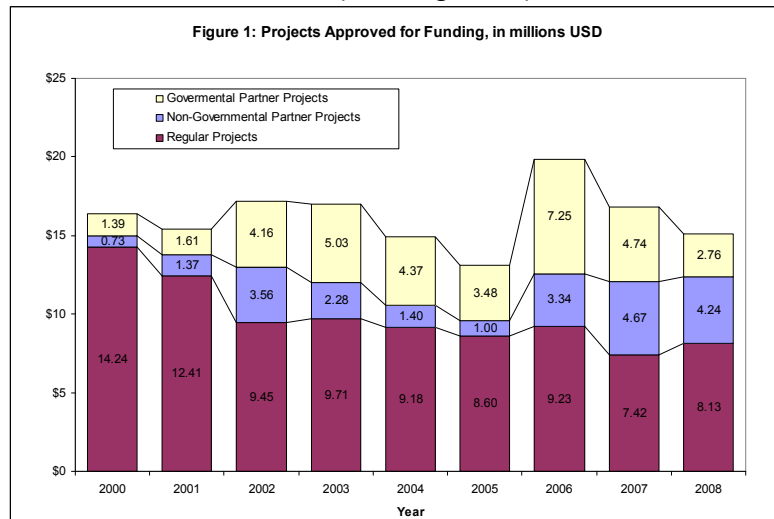
Hence, many of the current projects winding their way through the STCU approval process will require a decision shortly from the Advisory Committee as to: which projects should be submitted to the Funding Parties for consideration; whether their duration should be reduced; or whether they should be put in abeyance until the long-term funding of the Centre beyond 2012 is addressed.

The auditors also noted that one of the impacts of the reduction in funding to the STCU is the impact this is having on the Administrative Operating Budget (AOB) level. As reported in the STCU Annual Report for 2008, the Centre has experienced a 26% reduction in funding from Partners from 2007 to 2008 (see Figure 1). Also, the STCU

has decreased its staff complement from 65 to approximately 55 staff members in 2008 and it also experienced a high turnover in staff due to myriad of factors, one of which is the perceived long-term sustainability of the STCU. As a result, the Executive Director of the STCU has taken steps to reduce operating expenses commensurate with reduced funding from Governing

Board members. In 2009, the AOB was increased by 4.86% from \$1,788,844 to \$1,875,809 which is in the opposite direction from the project funding given to projects by Funding Parties for 2009. Serious consideration should be taken into account to reduce the AOB budget to fall in line with the reductions in overall project funding. The AOB for 2010 should either be capped or reduced from 2009 funding levels to fall in line with overall funding by Governing Parties.

The long-term ramifications of reduced funding should be looked at carefully in terms of the STCU AOB.



Careful consideration should be taken not to reduce the AOB with the same percentage cut across program areas and that the Executive committee of the STCU should explore scaling back or reducing altogether those program areas that can be reduced without impacting the operational capability of the Centre.

As noted in Figure 2 shown above, the numbers of funded STCU projects which then translate into the number of FWS who are funded have also steadily declined from 2004 to 2008.

Recommendations

- (1) The Executive Director and the STCU Deputy Directors should continue monitoring funding trends and advise the Governing Board if effective operations are expected to become at risk or if any policy or operational adjustments are required.**

- (2) The Executive Director and his management staff should continue to take a critical look at all operations under the Administrative Operating Budget and suggest possible program area cuts in certain administrative areas to the Governing Board.**

STCU Responses:

The STCU agrees with Recommendation #1.

The STCU agrees with Recommendation #2.

5.0 MANAGEMENT CONTROL FRAMEWORK

The Management Control Framework for Canadian funding to the STCU is covered by the Memorandum of Understanding (MOU) signed by DFAIT and the Executive Director of the STCU. The MOU outlines the manner, means and conditions of DFAIT's contribution to:

- DFAIT's share of the STCU Administrative Operating Budget;
- STCU supplemental programs of interest to DFAIT;
- Research projects selected by DFAIT;
- A share of the costs of research projects initiated by Canadian industry and other STCU Partners;
- The salaries and benefits for DFAIT sponsored positions at the STCU such as the Deputy Executive Director position for Canada; and

- Any other activity agreed to by DFAIT.

Observations

The management control framework over the monitoring of Canadian funded projects is excellent. The Office of the Inspector General noted only minor observations in a few internal control areas and made recommendations which should improve the framework over the coming years. Our overall conclusion, based on interviews with STCU staff and a review of policies and other documentation at the both the STCU in Kyiv and at the various Institutes visited in the Ukraine and Georgia, is that all DFAIT contributions to the STCU are well managed. Much of the credit goes to the senior management of the STCU who have put in place a control framework that has evolved over time and is now quite effective. The auditors also noted that senior managers at the STCU have put in considerable effort into ensuring the STCU runs effectively through the automation of work processes and through the continuous monitoring of projects at the Institute level.

Based on our mid-term review of Canada's funding to the STCU, the auditors did not find any breaches to the MOU signed between the two parties.

The auditors did note that there is always room for improvement and has identified a few areas in which enhancements to the control framework which can be made by the STCU. These are in the areas of program design; budgeting; controlling and monitoring of costs; and on-site monitoring of Canadian funded projects by STCU staff.

Program Design

The STCU program design from the acceptance of the project proposal to project approval is excellent in that the STCU acts as a catalyst in bringing together collaborative parties (institutes, project managers, outside partners, government officials) in identifying projects for funding for Former Weapons Scientists.

However, the auditors did note one major deficiency in the overall program and that is the current direction, which was approved by Funding Parties at an Advisory Committee meeting is that a project team must be comprised of between 30%-50% FWS before it can receive funding. The STCU does not screen out proposals per se but it will not forward a regular project proposal for Funding Party consideration if that proposal has less than 30% FWS on the project team or the combined FWS work-hours are less than 30% of the total project work hours. For Partner funded projects the percentage of FWS can be as low as 35%. For Targeted Initiative Projects whereby the host government funds up to 50% of the project, the percentage of FWS on these projects

must be at least 50%. Targeted Initiative projects that do not have 50% FWS are deemed non-compliant and are not sent to Governing Board members for review. This is done as the “Call for Proposals” clearly specifies this requirement. It actually states that in accordance with STCU policy, no less than 50% project participants should be FWS. It is noteworthy that the National Academy of Sciences of Ukraine has been trying to get STCU to reduce this number from 50% to 30% at several Governing Board meetings and the request was always denied by the Parties. As noted in our report, this request by the NASU is not surprising as there are less and less FWS around to fulfil the 50% requirement. Serious consideration should be given by the Governing Board to reduce this requirement for Targeted Initiative projects since 50% of these projects are in fact being financed by the Host Government.

The auditors note that the term Former Weapon Scientist is not defined in the STCU Statute or in any other STCU policy documents. Instead, FWS are required to self-identify within the project proposal and their identity as such is confirmed through the Host Government Concurrence required and obtained for each proposal prior to submission to the STCU for funding consideration or flagged to Funding Parties as falling short of this requirement. The auditors realize that the vast majority of FWS will no longer be in the workforce beyond the next decade and that younger scientists may or may not pose a greater proliferation risk. Given the dwindling pool of FWS and the existing 30% to 50% directives for FWS project participants, this issue is likely to have a material impact on operational planning at the STCU in the future and should receive further consideration by STCU senior management and the Funding Parties. No matter the outcome of such discussions, this issue, along with the funding issue are the most important issues which will impact the long-term viability of the STCU.

Recommendation

- (3) The whole policy area whereby a specific percentage of FWS must comprise a project team under a regular project or a targeted initiative project should be given serious consideration by the STCU management team and also discussed with the Funding Parties at an upcoming Governing Council meeting.**

STCU Response

“The acceptable percentage of former weapon scientists (FWS) on any STCU project is dictated solely by the STCU Governing Parties; the STCU management has no authority to determine this on its own. The FWS percentage is an outcome of the Governing Parties’ policies on what makes an STCU project

appropriate to the STCU WMD non-proliferation mission. Thus, there is flexibility inherent in the FWS percentage policy, even under the current policy. In fact, over the years the Governing Parties (specifically Funding Parties) have supported a variety of FWS percentages as acceptable. The most recent review of this subject occurred at the 22 September 2004 Advisory Committee meeting, where the Committee consensus was that the definition of what is a “substantial” [i.e., acceptable] amount of FWS on a project should be kept flexible, and that the decision as to what should be considered “substantial” would be left up to each individual Funding Party (however, no STCU project should have zero FWS involvement).

To better control the volume of project proposals being sent to the Funding Parties for review, the Advisory Committee gave informal guidance to STCU should advise the proposing scientists to have 30-50% FWS involvement on their projects, and that STCU should refrain from disseminating to the Funding Parties project proposals that have less than 30% FWS involvement. In the end, however, what is an acceptable FWS percentage on projects is a policy decision of the Parties – in theory, a Funding Party could ask today that STCU disseminate for Party review a specific project proposal (and decide to finance it) with much less than 30% minimum, if that Party so chooses and can justify to the Governing Board why the project, as a whole, is in the WMD non-proliferation interests of the STCU and its members.”

ZID Response:

The recipient auditors agree with STCU management that the ultimate decision as to the percentage of FWS on a project rests with the Governing Parties. However, to alleviate any confusion as to what was promulgated by the Advisory Committee back on September 22, 2004 (five years ago) and to what the current Advisory Committee guidance consists of, the auditors believe that now is an appropriate time for the STCU management to prepare a policy document for Governing Council approval. This observation and recommendation was also supported by the Government Accounting Office (GAO) in the United States as a result of the DFAIT Liaison Meeting held in Washington on December 15, 2009.

Financial Controls: Approving/Controlling/Monitoring and Reporting of Costs

Financial controls are ultimately achieved through the stewardship objectives that are enabled through internal controls. Control activities should be established throughout the organization, at all levels and in all functions, and prescribes how activities should be performed and prohibit inappropriate action. Controls include a range of activities as diverse as policies and procedures (discussed in Governance section), financial, cost

and transaction management practices and controls, physical and information security practices, as well as a host of activities designed to effectively manage third parties. We have divided this section into three sub sections relating to budgeting, initiating, controlling and monitoring costs, reporting and asset management.

Budgeting

The Office of the Inspector General enquired to establish whether the activities, schedules and resources needed to achieve objectives have been integrated into the budget and whether there is a formal process in place to challenge the assumptions and related resource allocations within the budget. In addition, the timeliness and follow up (monitoring) aspects were discussed with staff members of the STCU.

The STCU starts the budgeting process six months before the start of the New Year. This typically happens in June. In August, Finance provides draft budgets to the funding parties and then the Advisory Committee (AC) of the Board meets to discuss the budget in the mid September to early October timeframe. The AC addresses any issues and then meets again just prior to the Governing Board meeting in November each year. Once the budget is approved by the Governing Board, the STCU reviews its financial status on a monthly basis. Quarterly financial reports are prepared by the Chief Financial Officer and sent to the Governing Parties regarding the Annual Operating Budget (AOB) and the Supplemental Budget (SB). Any changes to either budget which is greater than 10% must be approved by the Governing Board. For changes to individual project agreements, a "Redirection letter" or an amendment is needed when there is a major change to the project work-plan schedule (e.g. a project extension) or budgeted amounts.

Project budgets form an integral part of the Project Agreement signed between the Institute and the STCU. Actual expenditures against budget line items are compared by the project accountants at the STCU and each invoice for payment is approved by the project manager, the CAO, and in some cases the Chief Financial Officer (CFO).

Project information is available daily as the STCU posts all new transactions through a batching process overnight so the Project Managers (PMs), STCU staff members and Governing Board members can access up to date program and financial information via the STCU web site. STCU Project Accountants review financial statement activity for each project on a monthly basis.

The auditors found that the STCU budget process was found to be adequate.

Purchasing and Inventory Control

Purchases are initiated by STCU personnel with responsibility over specific budget lines. The STCU has a database of vendors and price comparisons are required for purchases over \$2,500. Purchases over \$25,000 require at least three quotes from different vendors. Purchases between \$25,000 and \$75,000 are put out under restricted tenders and all purchases over \$75,000 require an open tender such as the selection of the STCU external auditor, whereby, the open tender was advertised in the Economist magazine for the financial statement audit in 2009.

The STCU has four procurement officers and it is their duty under the supervision of the Chief Administrative Officer (CAO) to procure goods and services on behalf of the STCU. Due to the nature of a few scientific projects funded by Governing Parties, sole sourcing is required for a specific piece of equipment. From a review of procurement files, the auditors noted that these cases are justified at the project management level and approved at the Executive Director.

All purchases for projects are handled centrally at the STCU in Kyiv. The only exception is that each project manager is allowed to maintain a petty cash balance of \$300.00 USD for sundry purchases. Petty cash reimbursements are audited by the project accountants at the STCU on a quarterly basis and all source documents are sent to the accountants for verification purposes before the petty cash accounts are replenished.

As noted above, sole source purchases are not the norm at the STCU. The auditors tested one purchase that was sole source and found that there was appropriate justification on file for this purchase. The auditors also noted that all sole source purchases have to be approved by the Executive Director before the procurement process can begin.

The auditors found that there was adequate segregation of duties in that the procurement function (CAO office) is separate from the payment function at the STCU (CFO office)

The auditors found that the procurement process at the STCU was operating effectively.

Project Monitoring

The largest area of financial risk relates to the expenditures at the Recipient Institute level over grant payments to scientists. Therefore as part of the mid-term audit, the

Office of the Inspector General analyzed and tested the policies and procedures applied by the STCU for all Governing Party funded projects. In particular, the auditors selected seven different Institutes and six different projects funded with Canadian contributions to verify that the policies and procedures as annotated by the STCU were being applied at both the STCU and at the Institute level.

Observation

The Office of the Inspector General noted that no errors were found in the grant payments made to scientists. The auditors also reviewed the assets purchased for the six projects under review at the different Institutes in Kyiv and Kharkiv in the Ukraine and in Tbilisi, Georgia and found that they were all there and had an STCU inventory number on them.

The auditors did note that there was quite a spectrum of detail shown in the log books maintained by the project participants. Therefore the auditors noted that this is one area in need of improvement by program participants' in that it is the log books where the work of the scientists is annotated so that Senior Specialists can review it and make sure that the work on the project is in accordance with the objectives of the project(s). The problem the auditors noted is that most of the scientists and project managers are of Russian origin and the operating procedures for filling out the lab notebooks on the STCU web site is in English which is the working language of the STCU. As a result the log book entries were quite skimpy on a few of the projects the auditors reviewed and it was very difficult for the Canadian Scientific Advisor to determine whether the project participants actually spent the amount of time shown on their timecards correlated to the actual activity shown in their log books.

Recommendation

- (4) The Senior Specialist of the STCU should be responsible for ensuring that project participants record a summary of the results of their scientific activity in their log books in their own language. This requirement should be explained not only to the project managers but to each scientist assigned to the project(s). The Senior Specialist should perform this activity upon the first visit to the Institute and ensure the requirements of the STCU procedures for completing log book entries are explained to the project participants in their working language. Given the importance of this activity, the STCU may want to explore translating its log book**

procedures into Ukrainian and Russian on its web site.

STCU Response

The STCU agrees with this recommendation.

Controlling and Monitoring Costs at the Project Level

One major aspect of the monitoring function at the STCU is its project monitoring policies and procedures. In addition to being an important part of the management control framework, this is actually required under the signed Canadian MOU with the STCU.

As such, the STCU has formulated two policies: a Project Monitoring Policy and an Internal Financial Project Audit Policy. The following is a list of activities which the Centre uses to monitor each project:

- On Site Monitoring – the project coordinator (senior specialist), project accountant visit the recipient lead institute and other participating institutes to monitor the project work;
- Participating at Scientific Meetings – this takes place via specific scientific meetings related to the project;
- Trips Abroad by Project Participants – the Project Coordinator receives information on the status of a project through visits to collaborators in Canada, the United States or the EU;
- Participation in Auditing/Monitoring Carried out by the Parties - STCU staff also participate in auditing and/or monitoring trips carried out by the Parties at the Parties request;
- Communication with Foreign Collaborators – meeting with foreign collaborators at the STCU in Kyiv or abroad is useful in bringing new insights into specific projects;
- Day to Day Communications – the Project Coordinator and Project Accountant have many opportunities to meet with the project manager and key participants of a project in order to speak with them by phone, fax or e-mail. Changes in work plans, requests for grant payments, equipment purchases or trips are all occasions to take stock of the project.

As previously noted, the STCU has an excellent system of monitoring the financial expenditures of each project funded by the Governing Parties. The auditors noted that the CFO's office performs 100% monitoring of all projects funded by the STCU. Each project is visited by project accountants during the first six months of the project, at the 18th month stage and one month before project completion. The auditors reviewed the financial monitoring reports of each project funded with Canadian money and found that

while only minor observations were noted the same questions appeared to be posed to scientists on each occasion (the 6th month, 18th month and at the end of the project). This of course is redundant. For example, if a Former Weapon Scientist is asked if he or she has a relative working on the project team at the 6th month visit and the answer is No, there is no need to repeat the same question at the 18th and in the last project monitoring visits.

Observation

While this is a laudable objective by the CFO's office in performing 100% monitoring of each project, the Office of the Inspector General notes that the CFO's office could look at the possibility of reducing the level of monitoring of projects if the project monitoring team had a risk model in order to identify which projects and Institutes could be rated as a high, medium or low risk of making errors. The auditors note that the CFO's office is in a good position to do so at this juncture as it has the historical data to work with on the various Institutes and project managers who take advantage of STCU funding. The factors the CFO's office should take into account in redefining its business practice in monitoring of projects are:

- The results of previous monitoring visits;
- The materiality surrounding the project (ie. the number of Former Weapons Scientists assigned to the project and the dollar amount of equipment purchased for the project);
- The timeliness and accuracy of financial and project reports by the Project Manager to the STCU;
- The requirements of any MOU's or other agreements signed with any of the Governing Parties concerning the funding of a specific project.

Managing program risk is important to proactively address potential issues affecting program delivery. As part of a sound project management approach, risk management should be documented and monitored to mitigate any risk jeopardizing implementation. As noted during the audit, the STCU does not have a formal policy for risk management. Although senior managers of the STCU have a good understanding of the risks facing the organization, the approach to risk management has not been undertaken formally.

By developing a risk monitoring plans both the CAO's office and the CFO's office could then reassign its limited resources to other areas of financial and administrative management at the STCU.

The Office of the Inspector General is not the only Partner auditor who has brought this to the attention of the STCU. The Ernst & Young report dated November 3, 2008 done

on behalf of the European Commission also noted this deficiency. In its report dated November 3, 2008, it stated, "There is no formal risk management process in place. Informal activities via management meetings help to discuss different issues however it does not guarantee that all risks are identified and assessed properly. STCU could set up a risk management process on a high level in the organization. This would give STCU the opportunity to have sufficient insight in the strategic risks (impact and likelihood) which could influence the achievement of their objectives." See page 14.

Recommendation

- (5) Both the CAO's Office and the CFO's Office of the STCU should develop a risk monitoring plan using the risk factors mentioned above and present this plan to Executive Director and Deputy Executive Directors for approval. The risk factors are internal to the STCU and an off the shelf product will probably not be able to cover all the political, governmental, institutional factors which are inherent at the STCU. The STCU may want to ask its External Auditors for assistance.**

STCU Response

STCU notes that in this section of the report, it is unclear whether the recommendation refers only to financial risk from the projects, or to broader categories of program/strategic risk (which is, inter alia, the basis of the observation made in the November 2008 Ernest & Young report referenced in this section). To STCU management, it seems the recommendation is directed toward financial risk from the projects, and under this assumption, the STCU management disagrees with the recommendation. The STCU management disagrees for the following reasons: (1) the OIG is focusing only on the oversight aspect of the STCU project monitoring, whereas this is only one aspect of the STCU monitoring activity: face-to-face communications/contact/consultation with recipient scientists, as well as on-site STCU procedures training/review for the project team are also critical aspects of the activity; (2) given the amount of Party directed external audits that the STCU undergoes in a year, annual on-site policies and procedures to such a degree as to ensure that the STCU is successfully satisfying the demands of these many Party-sponsored external auditors.

STCU management feels that conducting annual on-site monitoring of a project is not an inefficient use of resources, and currently it is not taxing the STCU organization. On the contrary, based on the number of Party-directed reviews of STCU management and financial control practices, it is evident that the Parties

feel the need to review STCU activities frequently and thus STCU management feels that project monitoring once a year is the minimum that would be acceptable to the Funding Parties themselves. Only when the Funding Parties demonstrate a different attitude to this issue, would the STCU management then foresee an opportunity to relax its current oversight requirements.

ZID Response:

ZID apologizes for any confusion caused by the original recommendation shown above. It is proposed that the CFO and CAO institute an integrated risk monitoring plan which is common in most international and governmental organizations today. Integrated risk management is a continuous, proactive and systematic process to understand, manage and communicate risk from an organization-wide perspective. It is about making strategic decisions that contribute to the achievement of an organization's overall corporate objectives. One aspect of this plan of course would be the 100% oversight provided on all projects funded by Governing Parties as mentioned above. With an integrated plan, this allows senior managers to allocate their scarce resources where they are needed and if it is decided that there is a need for 100% verification year of the same projects years after year than this is an informed decision made in consultation with the plan. As noted above by the STCU, this has also been recommended not only by Ernst and Young but also by the external auditors of the STCU.

Asset Management

The auditors reviewed the STCU asset management policies and procedures to ensure that the assets are life-cycle managed and are protected.

The majority of the STCU assets (furniture and computers mainly) are old according to STCU staff members. However, given the uncertainty concerning the long-term future of the STCU, there has been hesitation by STCU senior managers in investing aggressively in new assets.

As for the protection of the assets at the STCU Headquarters in Kyiv, the auditors noted that there are two guards at the only entrance that accesses the STCU premises. While staff members do not have to wear individual identification cards to enter the premises, the auditors did note that being on the top floor of the building is a deterrent for most outsiders to try and break in unnoticed.

The CAO's Office performs an annual inventory count of all fixed assets located at the STCU Headquarters. The auditors reviewed the inventory count records of the CAO and no discrepancies were found. The auditors also noted that all the fixed assets

purchased for the specific projects reviewed contained STCU inventory stickers and tied into the asset listing provided by the CFO's Office.

There are no observations or recommendations in this area.

6.0 OTHER AREAS REVIEWED

Interest Income Allocated to Canada for Funds Paid to the STCU

Each funding party of the STCU is allocated interest based their percentage contribution to the STCU Administrative Operating Budget each year. The interest is calculated on the average monthly balance of cash in the bank for each funding party.

Observation

For the year 2008 (the year selected by the Office of the Inspector General for review) the auditors noted negative interest being charged to Canada for the month of January 2008 (\$600.99) The auditors also noted that there were two months in 2007 where Canada was charged negative interest.

The reason as explained by the Chief Financial Officer is "Canada has negative interest because it pays it invoices months after the projects start. For example, a project will be signed by the STCU Executive Director and in some cases grants will be paid out by the STCU before Canada pays the invoice the STCU sent for this particular project. In other words, cash is disbursed, before Canada pays their invoice for projects."

So where does the cash come from to fund the Canadian shortfall, the CFO explained, "it comes from the other parties ... thus when you see negative interest for Canada, it is Canada paying interest back to the other parties for the use of their funds."

The problem, as explained by DFAIT program staff, is compounded under the staggered payment structure which is allowed for under the STCU-DFAIT MOU and designed to allow for greater flexibility in financial management. This payment structure allows for a 5% payment to be made within one month after DFAIT's commitment to funding the project, 65% funding seven months thereafter and 30% twelve months after the second payment. The situation of negative interest accrued due to late payment of an invoice is thus prolonged until the next payment is made. As the STCU-DFAIT MOU does not prohibit payment for 100% of the project commitment as soon as the commitment is made, the Global Partnership Program should advance the entire commitment amount once the Project Agreement has been signed, in line with the current practice and agreements of other Funding Parties.

Recommendations

- (6) In order to avoid negative interest being incurred, the Global Partnership Program should ensure timely payment of invoices and, where financially feasible, provide up front funding for 100% of project costs within one month of the commitment being made.**
- (7) In order to compensate STCU for any negative interest incurred, the Global Partnership Program should discuss with STCU and with Canada's Treasury Board, as required, the possibility to include such compensation as an eligible payment within the STCU-DFAIT MOU.**

STCU Responses:

The STCU management wishes to express its full support to this particular recommendation (Recommendation #6). The STCU agrees with the OIG that DFAIT should consider financing its STCU projects 100% in advance. The STCU's experience with previous "staggered payment schedules" from a Funding Party is that the Funding Party budgets are very difficult to predict one year to the next (especially during turbulent economic conditions), and thus DFAIT would reduce its exposure to financing difficulties if it provided 100% of its project funds in advance.

The STCU management agrees with this recommendation (Recommendation #7), but wishes to clarify that DFAIT never "reached into its own pockets" to pay the STCU for the "negative interest" it incurred. The amount of interest that DFAIT would have received in both 2007 and 2008 was simply reduced because of the problems created by DFAIT funding not arriving to the STCU in a timely manner. This problem would be resolved if Recommendation #6 is implemented.

Value Added Tax (VAT)

The STCU as an organization is VAT exempt. However, the Recipient institutions are not exempt from the VAT, even if the STCU procures the goods and/or services on their behalf. Over the years, the STCU has engaged the government of the Ukraine in discussions to try to allow the exempt status to flow through to the Institute level.

On June 7, 2007, the Chief Administration Officer of the STCU drafted a letter to the Ukrainian Ministry of Finance asking that the STCU be exempt under Article 5.A of the Ukrainian Law. Article 5 of the Ukrainian VAT Law gives VAT exemption for "the operations in the frames of science and technology cooperation in accordance to the Agreement between the Ukraine and the EU ratified by the Law 368-15 dated

December 25, 2002. The Ukrainian Parliament has also endorsed this exemption.

Under Article X of the STCU Establishment Agreement, this also confirms the status of tax exemptions. This was further confirmed by the Tax Administration of the Ukraine in letter 21/10/99.

The STCU has over the years met with all relevant Ukrainian Government Authorities in an effort to resolve the problem of trying to receive back the VAT on all projects funded by the Ukraine. Since the only mechanism is one of obtaining pre-arranged exemption on projects, the STCU has tried to arrange and register a pilot project with the Minister of the Economy. However, the STCU has not been successful in its attempt to implement and register such a funded project due to:

- The amount of documentation required is burdensome and registration takes too long;
- The STCU has been unable to find a willing partner to enter into a VAT pilot project as the project manager has to also provide similar amounts of documentation to the various Ukrainian authorities as well;
- The operative commencement date of a project will be delayed for at least a month in order to obtain the tax exemption certificate;
- Bulk exemptions for regular and similar purchases from the same vendors are not possible so the exemption procedure must be made for each and every procurement action;
- Tax exemptions sometimes give rise to unnecessary attention by the tax authorities because of usual delays in issuing VAT Exemption Certificates by the Ministry of the Economy.

Recommendation

- (8) The STCU should continue to proceed to garner the support of Governing Partners and their respective Embassies in Kyiv by approaching the Ukrainian Government for the VAT exemption for all STCU purchases for scientific projects in the Ukraine. The STCU should also apply for the VAT exemption in Georgia and the other countries in which the STCU operates.**

STCU Response:

The STCU agrees with this recommendation.

220 Working Day Exemption for Scientists Working on STCU Funded Projects

Under current STCU procedures, a scientist working on a project funded by the

Governing Parties can only charge up to 220 days a year on that project. The CFO's Office prepares a 220 day report to identify all scientists who have charged more than 220 days to a project. Many of these are posted on the STCU web site in the interest of transparency. The STCU policy is that a scientist can claim grant payments for up to 242 days after the scientist obtains permission from the STCU Senior Specialist. According to the STCU, the 220 day limit for grant payments to scientists historically came from the US Department of Defence, whose draft project guidelines were used for the STCU at its inception.

Observation

During the course of our review, the auditors noted that there were over 25 scientists that charged over 220 days to projects in 2008. During the debriefing the Office of the Inspector General suggested that the Chief Financial Officer should also sign off on the permission form signed by the Senior Specialists to lessen the risk of collusion. The CFO raised the point that the real issue is not the arbitrary 220 day limit but the fact that some scientists (mostly project managers) should be kept gainfully employed beyond the 220 day limit since these individuals are working on key projects funded by the STCU. The auditors agreed to a certain extent that the 220 day limit is somewhat arbitrary given that there are approximately 260 to 270 working days each year, however, the auditors did note that it was not just project managers who were exceeding the 220 day limit but junior scientists as well.

If one of the goals of the STCU program is to help keep the FWS gainfully employed then the STCU should look at a realistic cut off point for working days on a project rather than relying on the one previously set by past STCU financial officials who probably had their own reasons for doing so. It should also be noted that in our interviews with the scientists working on the Canadian funded projects we found that most, if not all, of them at certain times during the project worked more than the 7.5 hours. The auditors noted that grantees routinely work more than the amount of hours they report on their respective time cards. So, the STCU, and in particular the funding Parties, are getting value for money when it comes to the actual time charged to specific projects by the scientists. Therefore, the cap of 220 days appears to be an arbitrary one.

As a result of this discussion, the CFO along with the Executive Director of the STCU performed an analysis of the work activity by a typical scientist on a project and they arrived at a more amenable limit of 250 days a year to charge to a project. The Inspector General agrees with the analysis shown to them after the exit debriefing and the auditors suggest that this new upper limit be presented to the Governing Board for discussion and possible approval.

Recommendation

- (9) **The Executive Director of the STCU along with the Chief Financial Officer should present the proposal of increasing the limit that project participants can charge to a project from the current 220 days to 250 days to an upcoming Governing Board meeting for approval. If approved by the Governing Board, any scientist who wants to charge more than 250 days to a project should first receive the approval of both the Senior Specialist and the donor nation which funds the project. A list of scientists who work more than 250 days a year should be made by the CFO's Office and shared with the Executive Director, Deputy Executive Directors and the donor nations on a quarterly basis.**

STCU Response:

The STCU management not only believes that the 220 work-day restriction is a policy that has become unnecessary over time, but that it is a policy that should be eliminated altogether. As OIG rightfully points out, the imposition of an arbitrary limit on the number of days that a project participant can work on a project could lead to corruptive behaviour, in that the person given authority to approve exceptions to this limit is at possible risk for collusion (e.g. through financial bribes). The STCU management believes that changing the amount of days requiring authorization from 220 days to 250 days is a good start, but this change does not remove the risk of collusion.

Furthermore, the STCU believes that there are other ways of achieving the goals of the 220 day rule. The STCU understands that this 220 day rule was put in place in the early days of the STCU to stop grantees from claiming more time than they actually work. The STCU management believes that today, this risk can be addressed through regular monitoring of work products generated by the grantees, ensuring that the time claimed is matched by the amount of results generated. The results of work could be confirmed through (but not limited to) the documented results in laboratory notebooks, the comparison of milestones achieved with the milestones outlined in the project work-plan, the development status of prototypes, etc. Thus, the STCU management will discuss this matter with the Advisory Committee, and then the Governing Board, in order to determine the best approach to this issue.

7.0 INSTITUTE VISITS AND THE SUMMARY OF BUDGET AMOUNTS BY PROJECT

In 2008 the STCU received \$15.5M in funding from three sources: Canada, the European Union and various funding partners. Canada contributed approximately 20% (\$3M) of the total funding. Our review examined 26% of Canada’s contribution representing approximately \$805,000 USD. Additionally, the review verified that the funding objectives were met as laid out in the project agreements approved by Canada and a review of the scientists’ log books showed that the projects were being implemented in an effective manner.

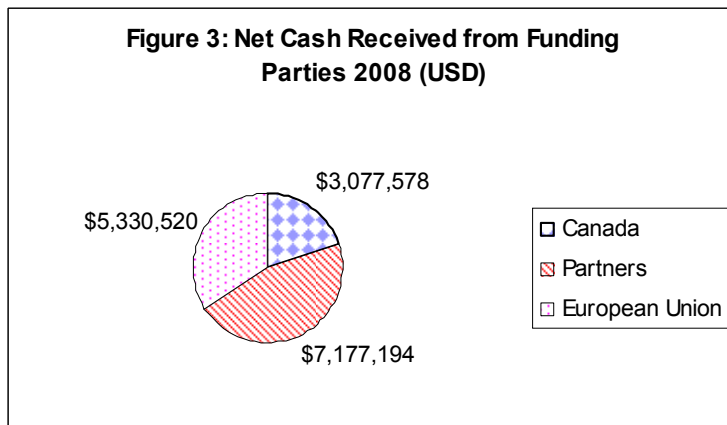


Table 1 – Summary of Institute Visits

| Institute Name | Project # | Canada’s contribution | Verified funding objectives | Verified log books |
|---|-----------|-----------------------|-----------------------------|--------------------|
| Institute of Bioorganic Chemistry and Petrochemistry | 3927 | \$264,531 | √ | √ |
| B. I. Verkin Institute of Low Temperature Physics and Engineering | 3718 | \$108,728 | √ | √ |
| B. I. Verkin Institute of Low Temperature Physics and Engineering | 4119 | \$12,000 | √ | √ |
| O. Ya. Usikov Institute of Radiophysics and Electronics | 3979 | \$120,404 | √ | √ |
| Georgian Technical University | 4170 | \$249,340 | √ | √ |
| Georgian Kanchaveli L. Research Institute of Plant Protection | 4326 | \$25,000 | √ | √ |
| Durmishidze Institute of Biochemistry and Biotechnology | 4674 | \$25,000 | √ | √ |

9.0 ACKNOWLEDGEMENTS

The Office of the Inspector General would like to thank the Executive Director of the STCU and his staff for their full cooperation and help during the course of the mid-term review of STCU’s operations. In particular, the OIG would like to thank both the CFO and the CAO and their respective staff for his help during the planning, field work and reporting phases of our review.

APPENDICES

Appendix 1 – Project # 4170

Appendix 2 – Project # 4326

Appendix 3 – Project # 4674

Appendix 4 – Project # 3979

Appendix 5 – Project # 3927

Appendix 6 – Project # 4119

Appendix 7 – Project # 3718

Appendix 8 – STCU Comments to the Observations and Recommendations

Appendix 1 – Project # 4170

Institute: Georgian Technical Institute

Project title: Novel indol-containing condensed tetracyclic systems with promising high antitubercular and antiviral activity: Synthesis and screening

Project description:

The basic statistics of the present-day global "tuberculosis problem" are well known: one-third of the global population is considered infected; 6 million new cases each year; 20% of adult death and 6% of infant deaths are attributable to TB. The increased incidence of drug-resistant tuberculosis certainly highlights the need for new antitubercular drugs. Equally urgent is the need for new antiviral agents, especially with the growing concern for the next influenza pandemic.

This proposal combines the expertise of Georgian and USA scientists to pursue the general goal of developing of a new novel generation compounds with antitubercular and antiviral activity based on the original indole-containing tetracyclic systems - isomeric dioxodihydro-1H-benzo[b]thiophene indoles and benzo[b]thiophene indoles. The strategy is based on literature precedents that show that the combination of two pharmacologically active bicyclic systems in one molecule can promote the increase of biological activity of the molecule and expand the spectrum of its pharmacological action.

Scientists interviewed:

- V. Ananiashvili
- M. Alaphishvili
- M. Maisuradze
- N. Gakhokidze

| Assets Verified that were Purchased with Canadian Funds | | | |
|--|-------------------|----------------------|-----------------|
| Description | Cost (USD) | STCU Serial # | Verified |
| Computer p43000/1gb ram/160gb hdd/8500GT/tv card/dvd rwkey/mouse/speak | 686.00 | N/A | √ |
| Monitor Samsung LCD 17 740N | 240.00 | N/A | √ |
| PRINTER CANON ALL IN ONE 3110 | 210.00 | N/A | √ |
| UPS 600WA | 50.00 | N/A | √ |
| | \$1,186.00 | | |

Appendix 2 – Project # 4326

Institute: L. Kanchaveli Research Institute of Plant Protection

Project title: Development of entomopathogenic nematodes and beneficial insects for biological plant protection in greenhouses

Project description:

The agricultural industry is considered as one of the more important productive sector in the economy of Georgia. The area of greenhouse crops in Georgia exceeds 350-400 hectare and is constantly growing. The most severe problems of plant production in greenhouse are insect pests and diseases. The key pests in Georgia greenhouse are sucking insects such as the greenhouse whitefly. In Georgia, the harvest wastes of cucumbers, tomatoes, or papers caused by pests, exceed 35-50% and may reach 60-80%. Approximately 2.5 to 3 tons of chemical pesticides are used annually in Georgia in an attempt to control greenhouse pests. However, the effectiveness of pesticides in Georgia has been drastically reduced due to a rapid development of resistance to all the approved chemicals. These phenomena have led to a considerable increase in pesticides consumption, which resulted in contamination of agricultural products with toxic chemical and environmental pollution. Consequently, the development of biocontrol to insect pests became a top priority in Georgia.

Scientists interviewed:

- C. ChkubianiSvili
- I. Malania
- I. Rijamadze
- M. Kakhadze
- M. Matiashvili
- N. Mikaia
- R. Skhirtladze
- T. Kuprashvili
- V. Yasnosh

| Assets Verified that were Purchased with Canadian Funds | | | |
|--|-------------------|----------------------|-----------------|
| Description | Cost (USD) | STCU Serial # | Verified |
| PC Alta | 736.12 | N/A | √ |
| Monitor Samsung | 359.92 | N/A | √ |
| Printer Canon Multifunctional | 247.80 | N/A | √ |
| Printer HP | 672.60 | N/A | √ |
| UPS APC | 129.80 | N/A | √ |
| | | | |
| | \$2,146.24 | | |

Appendix 3 – Project # 4674

Institute: Durmishidze Institute of Biochemistry and Biotechnology

Project title: Plants as tools for control and remediation of environment polluted by organochlorine toxicants

Project description:

The goal of the project is the creation of biochemical bases of ecological biotechnologies for: a) ecological risk assessment of environment polluted by organochlorine pesticides; and, b) the phytoremediation of environment polluted by organochlorine pesticides.

Organochlorine pesticides (chlordane, aldrine, lindane, dieldrine, DDT, etc.) are most dangerous chemical pollutants of the environment. In Georgia danger of environment pollution by organochlorine compounds is causing by obsolete pesticides or pesticides carrying in illegally. According to official data in soil and water the contents of some pesticides are very higher than limited concentrations.

Nowadays, the most effective biotechnology among the clean-up and long-term protection methods of the polluted environment is phytoremediation, which includes the planting of specially selected plants with high detoxification potential around the chemically polluted sites.

Scientists interviewed:

T. Ananiashvili
M. Gordeziani
M. Kurashvili
M. Pruidze
G. Adamia

Appendix 4 – Project # 3979

Institute: O. Ya. Usikov Institute of Radiophysics and Electronics

Project title: Studies of electromagnetic radiation mechanism in Roentgen and submillimeter region from electric discharge in electrolytes

Project description:

This project studies new mechanisms of generation of wideband electromagnetic radiation. It will develop methods of signal parameter measurements in a wide range from submillimeter to Roentgen. Electromagnetic radiation with high penetrability from electrical discharge in water -air system, radiation parameters and also processes in mediums with this radiation will be studied during this project. To obtain optimal radiation from given system the studies of physical chemical processes in water medium under the influence of electrical discharge will be done. Also the dependences of external factors such as applying magnetic field, surrounding temperature etc. on radiation parameters will be studied. Experimental investigations and obtained theoretical model will result in laboratory model of device for acceleration of discharge process using seed free electron beam created by energetic beam based on field emission. Also models of electrical discharge development in liquid medium based on plasmas waveguides will be offered.

Scientists interviewed:

B. Yefimov
O. Bulgakov
V. Zavertanny
O. Kuleshov
V. Karpenko
M. Khorunzhiy
S. Khomenko
V. Gurdzhyan
I. Hodak
A. Kats
A. Uzlenkov
E. Kchutoryan
A. Zabrodsij

Appendix 4 (con't): – Project # 3979

| Assets Verified that were Purchased with Canadian Funds | | | |
|--|-------------------|----------------------|-----------------|
| Description | Cost (USD) | STCU Serial # | Verified |
| In Russian | 616.17 | 200703245 | √ |
| In Russian | 4554.06 | LCRY0101J26197 | √ |
| In Russian | 867.78 | 04008567A | √ |
| In Russian | 660.80 | 84MOAD397407 | √ |
| In Russian | 768.32 | 79MOAD640499 | √ |
| In Russian | 239.55 | 803NDYG3R618 | √ |
| In Russian | 256.10 | HA19H9XPC01378 | √ |
| In Russian | 110.20 | JWDW050651 | √ |
| In Russian | 796.04 | 554591 | √ |
| APC Back ES 700 | 101.82 | S880744R17310 | √ |
| In Russian | 235.06 | 103635653181 | √ |
| In Russian | 235.07 | 105774733182 | √ |
| In Russian | 235.06 | 101565836821 | √ |
| | | | |
| | \$9,676.03 | | |

Appendix 5 – Project # 3927

**Institute: I.M. Frantsevich Institute of Problems of Materials Science
Institute for Bioorganic Chemistry and Petrochemistry**

Project title: New functional materials on the base of nano- and microcomposites

Project description:

Nowadays the main direction of application in computer technology, microelectronics, aviation, etc. is tendency to miniaturizing of mechanism components. Development of new functional materials (ultra thin films and their multi-layer composites, thick films with nano-size elements of structure, components of micro- and nanoelectronic mechanical systems) plays an important role for progress of micro-, nanoelectronics and instrument-making industry. Transfer from micro- to nanoobjects leads to fundamental change of system properties. Modification of interface at micro- and nanolevel, polymers molecular design, nanostructures directional self-assembly into more complicated functional assemblies are important elements for nanosystems creation.

The main goal of project is the creation of functional materials on the base of nano- and microcomposites that will increase the effectiveness of devices and equipments produced on their base.

Scientists interviewed:

E. Sheludko
V. Pilyavsky
L. Starzhinskaya
Y. Bogomolov
A. Bruzgin
Z. Kazantseva
P. Smertenko
G. Primenko
V. Tarakanov

Y. Sedov
I. Kadenko
V. Maidanyuk
V. Shevel
N. Sakhno
O. Davidovskaya
B. Rud
O. Paustovsky
E. Telnikov
O. Marchuk

Appendix 5 (con't): Project # 3927

| <u>Assets Verified that were Purchased with Canadian Funds</u> | | | |
|---|--------------------------|-----------------------------|------------------------|
| <u>Description</u> | <u>Cost (USD)</u> | <u>STCU Serial #</u> | <u>Verified</u> |
| DVD+/-RW Combo | 50.70 | 802HDDMOM962 | √ |
| Refrigerator | 480.30 | 20074703192-03298003503 | √ |
| UPS | 47.30 | LH42801C02797 | √ |
| 19" Monitor | 246.41 | 83704111142.00 | √ |
| Telephone set | 10.58 | 200710006753 | √ |
| Thermal electricfan | 24.17 | 1532986.00 | √ |
| Atomic force microscope NT-206 | 36645.00 | | √ |
| Computer | 391.88 | IE818836 | √ |
| 19" Monitor | 246.42 | ETLC 1080018370A0734202 | √ |
| UPS | 47.29 | LH42801002802 | √ |
| | | | |
| | \$38,190.05 | | |

Appendix 6 – Project # 4119

Institute: B.I. Verkin Institute for Low Temperature Physics and Engineering

Project title: Nanotubes production by electronic irradiation of layered superconductors towards insight into charge-density-waves and vortex matter

Project description:

Nanotubes of superconducting transition-metal dichalcogenides will be produced by means of electronic irradiation in 3 MeV Van de Graaff accelerator. The objective of the project is to advance the pilot nanotechnology of intense electronic irradiation of the layered structures for production of superconducting nanotubes via establishing constraints for the planar stability of weakly coupled multi-atomic close-packed layers, thermodynamic analysis of their closure energy considering the packing faults and dangling bonds, allocation of vacancies and thermal activation contribution into bending of the layers exposed to irradiation, production of the pilot nanotubes from the transition-metal dichalcogenides.

Scientists interviewed:

I. Barankov
V. Borysenko
I. Gospodarev
V. Ibulaev
M. Shvedun
S. Feodosyev
V. Sirenko

Appendix 7 – Project # 3718

Institute: B.I. Verkin Institute for Low Temperature Physics and Engineering

Project title: Neutral and charged nanostructures in liquid and solid helium

Project description:

Comprehensive experimental and theoretical investigations of the conditions for formation of new neutral nanosystems in solid and superfluid helium under different phase transitions will be carried out. Also charged low-dimensional nanostructures formed by "surface" electrons localized over liquid helium will be studied. It is expected that the conditions for realization of spinodal decay of 3He - 4He quantum solid solutions, as a means for obtaining various nanostructures and testing the theory of homogeneous nucleation, will be determined.

Scientists interviewed:

O. Zadorozhko
A. Neoneta
O. Rybalko
V. Nikolaenko
S. Sokolov
M. Mikhin
E. Rudavskii

Appendix 7 (con't): Project # 3718

| Assets Verified that were Purchased with Canadian Funds | | | |
|--|-------------------|----------------------|-----------------|
| Description | Cost (USD) | STCU Serial # | Verified |
| Turbomolecular pump | 10706.00 | | √ |
| AVS-47B AC Resistance Bridge (Picowatt) | 5721.85 | 836A6B2C2P7E7F1 | √ |
| In Russian | 21697.72 | | √ |
| In Russian | 15918.00 | 1156078 | √ |
| AC Resistance Bridge | 2745.00 | 6250 | √ |
| Analog PID Controller SRS SIM 960 | 1925.00 | 6566 | √ |
| In Russian | 470.50 | EH910450 | √ |
| In Russian | 151.49 | CNC0S04059 | √ |
| In Russian | 151.48 | CNC0J66762 | √ |
| In Russian | 590.66 | N/A | √ |
| In Russian | 217.66 | 709JA3CY00682 | √ |
| In Russian | 1864.16 | EH220627 | √ |
| In Russian | 792.88 | 0722-B040145 | √ |
| In Russian | 151.49 | CNC0J66779 | √ |
| Lock-in SR844 | 9295.00 | 48915 | √ |
| In Russian | 230.86 | 709NDSKFZ750 | √ |
| In Russian | 230.87 | 709NDUNFZ782 | √ |
| In Russian | 508.38 | N/A | √ |
| In Russian | 507.38 | N/A | √ |
| APC Back-UPC | 95.13 | N/A | √ |
| APC Back-UPC | 95.13 | N/A | √ |
| APC Back-UPC | 95.13 | N/A | √ |
| Mainframe SRS SIM900 | 1095.00 | 72642 | √ |
| In Russian | 255.71 | BN61-01235A | √ |
| PC | 445.97 | N/A | √ |
| | | | |
| | \$75,958.45 | | |

Appendix 8 – STCU Comments to the Recommendations

