Title:

SIBERIAN CHEMICAL COMBINE LABORATORY
PROJECT WORK PLAN, FISCAL YEAR 1999

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Siberian Chemical Combine [SKhK] Laboratory Project Work Plan

Fiscal Year 1999

DOE MPC&A Project

SEVERSK, TOMSK REGION, RUSSIA

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Siberian Chemical Combine [SKhK], Laboratory Project Work Plan

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with inputs from SKhK, Laboratory Project Team Personnel.

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SECTION I

FOREWORD

FOREWORD

The *Siberian Chemical Combine [SKhK], Laboratory Project Work Plan [Plan]* is intended to assist the US Laboratory Project Team, and Department of Energy [DOE] staff with the management of the FY99 joint material protection control & accounting program [MPC&A] for enhancing nuclear material safeguards within the Siberian Chemical Combine.

The DOE/Russian/Newly Independent States, Nuclear Material Task Force, uses a project work plan document for higher-level program management. The *Siberian Chemical Combine [SKhK], Laboratory Project Work Plan* is a component of the Russian Defense related Sites' input to that document. In addition, it contains task descriptions and a Gantt Chart covering the FY99 time-period.

This FY99 window is part of a comprehensive, Project Status Gantt Chart for tasking and goal setting that extends to the year 2003. Secondary and tertiary levels of detail are incorporated therein and are for the use of laboratory project management.

The *Siberian Chemical Combine [SKhK], Laboratory Project Work Plan* is a working document, and additions and modifications will be incorporated as the MPC&A project for SKhK evolves.

SECTION II

VISION STATEMENT

VISION STATEMENT

SIBERIAN CHEMICAL COMBINE [SKhK]

It is envisioned that an enhanced material protection, control and accounting [MPC&A] system for safeguarding all weapons-useable nuclear material [HEU & PU] will be operational at all plant sites of the Siberian Chemical Combine [SKhK].

SECTION III

PROJECT OVERVIEW

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Name: Siberian Chemical Combine, Siberian Group of Chemical Enterprises

Abbreviation: SKhK, SGCE [Tomsk-7]

I. Site Description

The Siberian Chemical Combine [SKhK] is located on the Tom River within the "closed city" of Seversk in south central Russia. It is fifteen kilometers northwest of Tomsk, the principal city of the Tomsk Region, and occupies more than two hundred km².

Seversk, formerly Tomsk-7, has one hundred twenty thousand inhabitants, of which SKhK employs approximately eighteen thousand. SKhK is a multifunction special nuclear material [SNM] production, and processing complex - the largest of its kind in the world. Open literature sources quote about seventy tons of plutonium have been produced and/or processed for the Russian Defense Ministry at SKhK. Currently, several tens of metric tons of both high-enriched uranium [HEU] and plutonium [Pu] are in process or storage at various locations within SKhK.

Activities include the reprocessing of spent nuclear fuel, conversion of HEU oxide into HEU hexafluoride, centrifuge enrichment of uranium, production of nuclear weapons grade plutonium, blending of HEU into low-enriched uranium [LEU], and the manufacture of plutonium and uranium weapon components. It is one of the sites selected for the storage of plutonium triggers from dismantled warheads and has been proposed as a storage site for other fissile materials.

With its conversion from strictly military- to civilian-related functions, SKhK now produces thermal energy, electric power, low-enriched uranium for commercial reactor fuel, and manufactures civilian products, e.g., superfine powders for ceramics, superconductors, high-energy permanent magnets, and home fixtures.

SKhK consists of six main sites: Reactor Plant, Radiochemical Plant, Chemical Metallurgical Plant, Experimental Physics Plant, Uranium Enrichment Plant, and Conversion [Sublimation] Plant. Each plant, while independent both physically and operationally, is, nonetheless, interconnected by a common function: the production and processing of special nuclear material [SNM]. The material protection control and accounting [MPC&A] program further integrates this function through enhanced nuclear safeguards.

0.1.1.02.1 Reactor Plant Site [RPS]

The RPS consists of two operating, light-water-cooled, graphite-moderated, dual-purpose, weapons-grade, plutonium production reactors that continue to generate thermal and electrical power for the cities of Tomsk and Seversk. Both reactors are scheduled for shutdown in the year 2000. In addition to the SNM in the reactor fuel, large quantities of weapon-grade SNM are stored within the RPS boundary.

0.1.1.02.2 Radiochemical Plant Site [RCPS]

The RCPS is a reprocessing facility for both Russian and other nations' spent fuel. Facilities within this site process both plutonium and uranium compounds. In addition to in-stream processing, a large storage facility for SNM exists within the RCPS boundary. One metric ton of PuO_2 from reprocessed reactor fuel is added into storage each year. It is anticipated that this site will continue current operations for the foreseeable future.

0.1.1.02.3 Chemical Metallurgical Plant Site [CMPS]

Recovery and purification of HEU and Pu, including the casting of metal components, are carried in the CMPS. HEU metal from dismantled weapons is oxidized in this facility. The CMPS also includes a storage facility for SNM. Current operations at this site will continue for the foreseeable future.

0.1.1.02.4 Uranium Enrichment Plant Site [UEPS]

Centrifuge facilities within the UEPS boundary produce LEU for commercial reactor fuel. The UEPS presently blends $[\text{HEU}]\text{F}_6$ to $[\text{LEU}]\text{F}_6$ as part of the US/Russian HEU/LEU Purchase Agreement¹. In addition to its production capabilities, the UEPS includes a large SNM storage facility.

0.1.1.02.5 Conversion [Sublimation] Plant Site [CSPS]

Uranium oxide is converted into UF_6 within the CSPS, as the source of feed material for the UEPS. In addition, an SNM storage facility is located within the CSPS boundary.

0.1.1.02.6 Experimental Physics Plant Site [EPPS]

The EPPS contains three shutdown, plutonium-production reactors as well as storage facilities for SNM. The shutdown production reactors are currently undergoing decommissioning and dismantling activities that are monitored by a bilateral agreement between the United States and Russia. Present activities include experimentation related to reactor material science and engineering.

¹ HEU/LEU Agreement between the United States and Russian Federation.

II. Material Protection Control & Accounting [MPC&A] Objectives & Strategies

The MPC&A objective for SKhK is to bring all weapon-grade SNM under enhanced safeguards by the year 2003. This will be accomplished by upgrading current MPC&A systems at specific plant sites, followed by integrating the physical protection, MC&A, and access control functions through a site-wide computer network .

The importance of upgrading MPC&A at SKhK cannot be overemphasized. SKhK is a major nuclear complex of the Russian Federation both in terms of the quantities and desirability of the SNM produced, processed, and stored within its separate plant site boundaries.

To protect these materials in the new open and transparent Russian environment, the implementation of enhanced MPC&A systems is vital. In order to provide the highest level of security, physical as well as procedural, upgrades must be put in place. Timeliness of installation of these enhanced MPC&A systems is an important factor in ensuring that current inventories are quickly established, verified, and maintained under enhanced safeguards. To meet this goal, the SKhK Project Team is implementing a set of tasks that define the work to be accomplished in a systematic way. Section V in this document, [Annex I] lists these tasks and the budget required for achieving them within their FY schedules.

The US Project Team strategy is to proceed with rapid MPC&A enhancements at the highest priority plant sites ahead of facility characterizations and design studies. This is consistent with the concept of accelerated technology deployment defined in the Unified US/Russian Plan². In keeping with this guidance, it is now time to begin negotiating the development of a site-wide, unified MPC&A Plan for task implementation. These tasks are to be jointly defined by US & SKhK technical experts to achieve MPC&A goals based on comprehensive site characterization.

Access to SKhK facilities, as well as the site characterization information necessary to implement site-wide MPC&A enhancements, has been limited up to now by sensitivity. Because of this restriction, the strategy has been to develop a "limited access" MPC&A model for the highest priority facilities, e.g., RCPS. At these facilities, the US and Russian Team members are jointly developing systems that incorporate essential elements for physical protection and material control and accounting. These systems will then serve as models for implementation of MPC&A upgrades by SKhK staff at less accessible sites. It is incumbent upon SKhK personnel to bring all sites up to the standards of those participating in the joint-site program through training and "lessons learned", thereby minimizing the negative impact of a "weak link."

Accomplishments, on-going efforts, and plans for future upgrades are described below for each plant site.

² United States / Russian Plan

0.1.1.02.1 Reactor Plant Site [RPS]

The RPS is the designated model plant with the highest SKhK priority for implementation of physical protection tasks. The initial upgrades at the RPS address the obvious physical protection concerns. Portal and hand-held radiation monitors and metal detectors have been implemented at the pedestrian and vehicle access control points of the RPS perimeter. The site perimeter and internal buildings are currently undergoing major physical protection upgrades. These include vibration, microwave, and motion sensors, upgraded illumination, emergency power, closed-circuit television [CCTV] surveillance, sentry shelters, Sector-M booths, and a central alarm station. A comprehensive vulnerability assessment will follow the initial work to define additional upgrades. Material control and accountability [MC&A] measures planned for this site include monitoring and access control systems for material storage areas, measurement and bar-coding equipment, and a computerized material accounting system.

0.1.1.02.2 Radiochemical Plant Site [RCPS]

The RCPS is the model plant site for MC&A tasks. Site characterization, the establishment of Material Balance Areas [MBAs] and the identification of Key Measurement Points [KMPs] for each MBA were previously determined by International Science and Technology Center [ISTC] Project-40³. Specific tasks included identifying measurement instrumentation and specifications for each KMP.

All requested MC&A equipment for the Radiochemical Plant Site has been delivered. On-site training as well as training at the US manufacturers' facilities is continuing. On-going tasks include computerized materials accounting, hold-up measurements, rapid inventory methods, gamma-ray, and neutron measurements, scales and weights, and the installation of tank volume measurement equipment and a video monitoring system for a storage facility.

The RCPS is the second-highest SKhK priority for physical protection upgrades and equipment is being procured for near-term installation. These include vibration, microwave, and motion sensors, as well as perimeter illumination and CCTV. Upon completion of these upgrades, SKhK will perform a vulnerability assessment and analysis. Based on the results, recommendations for further physical protection upgrades will be evaluated and implemented.

0.1.1.02.3 Chemical Metallurgical Plant Site [CMPS]

Vehicle and pedestrian portal monitors, hand-held radiation detectors, and metal detectors have been implemented at all the perimeter access control points. The first wait-in vehicle monitoring station in Russia will be completed in the summer of 1998 at the CMPS. As the third-highest SKhK priority site for physical protection upgrades, a task to develop the conceptual design for physical protection upgrades was begun in 1998. With the development of an equipment list, procurement and installation are expected to begin in FY99. A task to implement computerized MC&A in support of the HEU/LEU purchase agreement has begun. Upgraded scales and weights are being implemented.

0.1.1.02.4 Uranium Enrichment Plant Site [UEPS]

Vehicle and pedestrian portal monitors, hand-held radiation detectors, and metal detectors have been implemented at all the perimeter access control points. As the fourth-highest SKhK priority site for physical protection upgrades, a task to develop the conceptual design for physical protection upgrades was begun in 1998. With the development of an equipment list, procurement is expected to begin in early FY99, with installation scheduled to begin in the summer of 1999. MC&A measures in support of HEU/LEU blending activities include computerized materials accounting and will be addressed and implemented as SKhK resources allow. Gamma-ray measurements, scales and weights are currently being implemented.

0.1.1.02.5 Conversion [Sublimation] Plant Site [CPS]

Vehicle and pedestrian portal monitors, hand-held radiation detectors, and metal detectors have been implemented at all the perimeter access control points. Physical protection upgrades have not been addressed for the immediate future. MC&A measures in support of HEU/LEU blending activities include computerized materials accounting and will be addressed and implemented as SKhK resources allow.

0.1.1.02.6 Experimental Physics Plant Site [EPPS]

Vehicle and pedestrian portal monitors, hand-held radiation detectors, and metal detectors have been implemented at all the perimeter access control points of the EPPS. Although planning for physical protection upgrades has begun, the EPPS is not a high-priority site in FY99.

0.1.1.02.7 Site-Wide [SW]

Portal and vehicle monitoring equipment and metal detectors have been installed at the perimeters of the six major plant sites and the three access control points of the city of Seversk. Three vehicle monitors for plutonium facilities are also equipped with neutron panels for improved sensitivity.

The installation of site-wide access control and MC&A information management systems for the plant sites has begun. It includes badge fabrication, Sector-M booths, and a fiber optic backbone to network the six main plant sites and the central administration building. It will provide badges for employees at the individual plant sites and at the central administration building as well as carry information for the physical protection and MC&A systems. The access control system will be integrated with the physical protection upgrades to control access to sensitive areas within the plants. The first 10-km of the total 45-km fiber optic cable run has been laid.

Scales and weighing systems have been installed at several plant sites and this activity will expand significantly in the future to include other locations.

Equipment for site-wide, radio communication system upgrades has been delivered. Plans have been developed for improving telecommunication, implementing rapid inventory methods using bar codes, and modern digital storage monitoring technologies.

HEU/LEU Conversion Program

Interest was expressed by SKhK to apply MC&A enhancements at sites involved in the HEU/LEU Conversion Program⁴. An agreement was reached to initiate a computerized, material's accounting program for these functionally similar sites in the near future. The goal is to supplement the present paper accounting system with more precise measurements that can be entered manually into a computer system. The present plan is to learn from the task to introduce computerized MC&A at the Radiochemical Plant.

III. Accomplishments

0.1.1.02.1 Reactor Plant Site [RPS]

- Four PM-700 pedestrian portal radiation monitors installed and operating at site entrance access control points; 12/96
- Four pedestrian metal detectors delivered, installed and operating; 12/96
- Hand-held radiation-monitors delivered and operating; 12/96
- One VM-250 vehicle portal radiation monitor delivered and operating; 09/97
- Physical protection upgrades to site perimeter and internal structures:
 - 50% of the Delfin-M vibration fence has been installed with 10 % operational; 06/98
 - 10% of the electric power upgrades are operational; 06/98
 - 80% of the illumination standards have been installed; 06/98
 - 10% of the illumination upgrades are operational; 06/98
 - 25% of the cable ducting has been installed; 06/98
 - 12% of the perimeter guard path has been upgraded; 06/98
 - 12% of the perimeter exclusion zone has been upgraded; 06/98
 - Sentry Shelters: three of eight have been built & one is operational; 06/98
 - Microwave sensors: 20% installed with 10% operational; 06/98
 - CCTV have been procured; 04/98
 - Internal sensors have been procured; 04/98
 - Site visit by US experts observing testing of first perimeter zone; 06/98
- Access control upgrades:
 - Zirconiy central alarm system procured; 04/98
 - Computer system for Zirconiy system has been procured; 04/98
 - Sector-M booths: six have been procured. 04/98

0.1.1.02.2 Radiochemical Plant Site [RCPS]

- Six PM-700 pedestrian portal radiation monitors installed and operating at all site entrance access control points; 08/96
- One PM-700 installed @ interior access control point of PuO₂ storage facility; 05/98
- Six pedestrian metal detectors delivered, installed and operating; 12/96
- Hand-held radiation-monitors delivered and operating; 12/96
- Two VM-375 vehicle portal radiation monitors delivered; 08/97

⁴ The HEU/LEU Conversion Program involves the Chemical Metallurgical, Uranium Enrichment, and the Conversion [Sublimation] Plant Sites.

- All requested MC&A equipment delivered:
 - In-line gamma-ray densitometer designed and built by SKhK; 05/98
 - HPGE gamma-ray spectrometer; 06/97
 - Alpha spectrometer; 05/98
 - Flat-squared neutron coincidence counter; 06/97
 - Atomic emission spectrometer; 06/97
 - Support computers and accessories; 06/97
 - Training completed for all US-supplied equipment; 05/98
- Computerized Materials Control and Accounting Task signed; 08/97
- Rapid Inventory bar-code equipment delivered and demonstrated; 09/97
- Gamma-ray isotopic measurement system delivered; 03/98
- Gamma-ray measurement workshop presented; 08/98
- Neutron measurement workshop presented; 06/98
- Tank volume measurement equipment installed; 06/98
- Scales and weights installed; 09/98
- Digital video for storage vault monitoring system: delivered & demonstrated; 04/98
- Physical protection upgrades to site perimeter and internal structures:
 - Comprehensive design for physical protection upgrades has been completed; 05/98
 - Microwave and interior sensors have been procured; 09/98
 - Delfin-M vibration fence procured; 04/98
 - Contract to install Delfin-M and sensors has been signed; 09/98
 - Site visit by US experts. 06/98

0.1.1.02.3 Chemical Metallurgical Plant Site [CMPS]

- Five reconfigured CDM-496 pedestrian portal radiation monitors delivered, installed, and operating at access control points of the site perimeter; 12/96;
- Five pedestrian metal detectors delivered, installed, and operating; 12/96
- Hand-held radiation-monitors delivered and operating; 12/96
- One VM-250 vehicle portal radiation monitor, delivered; 04/96
- One wait-in-vehicle monitoring station nearing completion; 06/98
- Conceptual design for physical protection perimeter upgrades signed; 04/98
- Computerized MC&A for HEU/LEU blending has been signed; 05/98
- Scales and weights installed. 09/98

0.1.1.02.4 Uranium Enrichment Plant Site [UEPS]

- Six reconfigured CDM-496 pedestrian portal radiation monitors delivered, installed, and operating at access control points of the site perimeter; 05/96;
- Six pedestrian metal detectors delivered, installed, and operating; 05/96
- Hand-held radiation-monitors delivered and operating; 05/96
- Three VM-250 vehicle portal radiation monitor, delivered; 05/97
- Two neutron panel vehicle monitors delivered; 09/97
- Gamma-ray isotopic measurement system delivered; 03/98
- Gamma-ray measurement workshop presented; 08/98
- Conceptual design for physical protection perimeter upgrades has been signed; 09/98
- Scales and weights installed. 09/98

0.1.1.02.5 Conversion [Sublimation] Plant Site [CPS]

- Three reconfigured CDM-496 pedestrian portal radiation monitors delivered, installed, and operating at access control points of the site perimeter; 11/96
- One PM-700, pedestrian portal monitor @ interior building access control point; 05/98
- Three pedestrian metal detectors operating at site perimeter access control points; 11/96
- Hand-held radiation monitors operating; 11/96
- One VM-375, vehicle portal monitor delivered. 08/97

0.1.1.02.6 Experimental Physics Plant Site [EPPS]

- Four reconfigured CDM-496 pedestrian portal radiation monitors delivered, installed, and operating at access control points of the site perimeter; 12/96;
- Four pedestrian metal detectors delivered, installed, and operating; 12/96
- Hand-held radiation-monitors delivered and operating; 12/96
- One VM-250 vehicle portal radiation monitor delivered; 09/97
- One neutron panel vehicle monitor delivered. 09/97

0.1.1.02.7 Site-Wide [SW]

- Twenty-nine radiation portal monitors installed and operating; 05/98
- Fifteen additional vehicle monitors, including neutron panels, delivered; 09/97
- Five VM-250 vehicle portal monitors operating at the three entrances to Servesk; 05/98
- Hand-held radiation-monitoring equipment operating; 12/96
- Cross-training of central repair specialists at two-day workshop for portal monitoring maintenance; 05/98
- Scales, weighing systems, and seven computers delivered & installed at plant sites involved in HEU/LEU blending; 06/98
- Radio communications system equipment delivered. 07/98

0.1.1.02.7.1 Site-Wide [SW] Access Control

- Conceptual design of automated access control system; 04/98
- Control servers procured; 06/98
- Badge-making equipment procured; 04/98
- Badge-making equipment installation task, signed; 06/98
- Access control database [ORACLE] procured; 06/98
- Central administration database design/install task, signed; 06/98
- Central administration database interface development:
 - Badge system interface design/install task, signed; 06/98
 - Sector-M interface design/install task, signed; 06/98
 - Workstations software development task, signed; 06/98
 - LAN design and equipment list task signed; 06/98
- Computers for security workstations, procured; 06/98
- Trenching tool for laying fiber optics cable, procured; 04/98
- Communication loop work plan development task, signed; 04/98
- Communication loop installation task, signed; 04/98
- First 10-km of fiber optics cable, in place; 07/98
- Remaining 35-km of fiber optics cable procured. 04/98

TABLE I Schedule - Plant Sites

WBS [Number]	Facility [Plant Site]	Initial Survey [Start date]	Commissioning [Target Date]	Completion [Target Date]
0.1.1.02.1	Reactor	October 1995	June 1999	October 1999
0.1.1.02.2	Radiochemical	October 1998	June 2000	October 2000
0.1.1.02.3	Chemical Metallurgical	April 1998	October 2000	December 2000
0.1.1.02.4	Uranium Enrichment	June 1998	October 2000	December 2000
0.1.1.02.5	Conversion [Sublimation]	October 2000	June 2001	December 2002
0.1.1.02.6	Experimental Physics	October 2000	June 2002	December 2002
0.1.1.02.7	Site-Wide	October 1995	June 2002	December 2002

FIGURE I Siberian Chemical Combine [SKhK]

SECTION IV

GANTT CHART

SECTION V

ANNEX I

FY98 / FY99 BUDGET PLANNING

@

TASK LEVEL BY LABORATORY

FY98 / FY99 Budget Planning @ Task Level By Laboratory

0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.1	Reactor Plant Site [RPS]											
.1.1	Obvious Physical Protection System [PPS] Upgrades	06/01/97	09/30/99	\$ -	\$ -	\$ 505,000	\$ -	\$ -	\$ -	\$ 546,300	\$1,051,300	\$-
.1.1.1	PPS Upgrades: Conceptual Design [COMPLETED]	06/01/97	03/16/98			\$ -				\$-	\$-	
.1.1.2	[PPS] Upgrades - Installation	06/01/97	06/15/99			\$ -				\$ 315,000	\$315,000	
.1.1.3	Zirkoniy System: Comprehensive Work Plan [COMPLETED]	04/15/98	09/30/98			\$ -				\$-	\$-	
.1.1.4	Zirkoniy System Equipment: Procure [COMPLETED]	04/15/98	07/31/98			\$ -				\$-	\$-	
.1.1.5	Zirkoniy System Computer Equipment: Procure [COMPLETED]	06/01/97	09/30/98			\$ -				\$-	\$-	
.1.1.6	Zirkoniy System Equipment: Install & Implement	04/15/98	12/15/98			\$ -				\$49,800	\$49,800	
.1.1.7	Zirkoniy System: Adjust, Operate, Train	04/15/98	12/15/98			\$ -				\$38,000	\$38,000	
.1.1.8	Illumination System Upgrade [COMPLETED]	09/01/97	09/30/98			\$ -				\$-	\$-	
.1.1.9	CCTV: Conceptual Design [COMPLETED]	09/01/97	05/21/98			\$ -				\$-	\$-	
.1.1.10	CCTV: Comprehensive Work Plan [CWP] [COMPLETED]	04/15/98	07/31/98			\$ -				\$-	\$-	
.1.1.11	CCTV: Procure Equipment [COMPLETED]	04/15/98	07/31/98			\$ -				\$-	\$-	
.1.1.12	CCTV: Install	04/15/98	02/01/99			\$ -				\$69,600	\$69,600	
.1.1.13	Delfin-M Phase I: Procure [COMPLETED]	06/01/97	09/30/97			\$ -				\$-	\$-	
.1.1.14	Delfin-M Equipment Phase II: Procure [COMPLETED]	07/01/97	09/30/97			\$ -				\$-	\$-	
.1.1.15	Sektor-M Booths: Procure	04/15/98	11/01/98			\$ -				\$58,000	\$58,000	
.1.1.16	Sektor-M Booths: Install / Implement	12/01/98	06/01/99			\$ 75,000				\$-	\$75,000	
.1.1.17	Sentry Shelters: Design / Install	04/15/98	11/30/98			\$ -				\$15,900	\$15,900	
.1.1.18	Microwave Equipment & Sensors	06/01/97	09/30/99			\$ 50,000				\$-	\$50,000	
.1.1.19	Additional Sensors	07/01/97	11/30/98			\$ 50,000				\$-	\$50,000	
.1.1.20	Local Area Network [LAN]: Implement	01/01/99	09/30/99			\$ 145,000				\$-	\$145,000	
.1.1.21	PPS Trial Operation: Align, Tune & Train	03/01/99	09/30/99			\$ 185,000				\$-	\$185,000	
.1.2	US & Russian Integrated Safeguards & Security: Analyze					\$ 50,000				\$-	\$50,000	
	Total: Reactor Plant Site [RPS]			\$-	\$-	\$555,000	\$-	\$-	\$-	\$546,300	\$1,101,300	\$-

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.2	Radiochemical Plant Site RCPS]											
.2.1	Obvious Physical Protection System Upgrades - Phase I			\$ -	\$ -	\$ 615,000	\$ -	\$ -	\$ 365,000	\$ -	\$980,000	\$1,440,000
.2.1.1	Physical Protection Upgrades: Conceptual Design [COMPLETED]	02/01/97	03/31/98						\$ -	\$0	\$0	
.2.1.2	Physical Protection Upgrades: Final Design [COMPLETED]	02/01/97	06/01/98						\$ -	\$0	\$0	
.2.1.3	Delfin-M: Procure [COMPLETED]	01/01/98	05/30/98			x			\$ -	\$0	\$0	
.2.1.4	Delfin-M: Install	06/01/98	09/30/99						\$ -	\$0	\$0	
.2.1.5	Sensors: Procure [COMPLETED]	06/01/98	09/30/98					\$ -			\$0	
.2.1.6	Sensors: Install [COMPLETED]	06/01/98	09/30/98						\$ -	\$0	\$0	
.2.1.7	Illumination: Design	11/01/98	02/28/99						\$ 10,000	\$0	\$10,000	\$0
.2.1.8	Illumination: Procure [COMPLETED]	07/01/98	09/30/98			\$ 250,000					\$250,000	\$50,000
.2.1.9	Illumination: Install	05/01/99	09/30/99						\$ 100,000	\$0	\$100,000	\$150,000
.2.1.10	CCTV: Conceptual Design	01/01/99	03/31/99						\$ 10,000	\$0	\$10,000	\$0
.2.1.11	CCTV: Comprehensive Work Plan [CWP]	02/28/99	05/31/99						\$ 10,000	\$0	\$10,000	\$0
.2.1.12	CCTV: Procure					\$ -					\$0	\$300,000
.2.1.13	CCTV: Install	05/01/99	09/30/99						\$ 125,000	\$0	\$125,000	\$125,000
.2.1.14	Zirkony System: Comprehensive Work Plan [ZSCWP]	01/01/99	03/31/99						\$ 10,000	\$0	\$10,000	\$10,000
.2.1.15	Zirkony System Equipment: Procure	01/01/99	09/30/99			\$ 100,000					\$100,000	\$100,000
.2.1.16	Zirkony System: Install / Implement	10/01/98	09/30/99						\$ 50,000		\$50,000	
.2.1.17	Zirkony System: Adjust, Operate & Train	10/01/98	09/30/99						\$ 50,000		\$50,000	
.2.1.18	Sentry Shelters: Design and Install								\$ -		\$0	\$20,000
.2.1.19	Sektor-M Booths: Procure @ [\$25,000/each]	03/01/99	09/30/99			\$ 50,000					\$50,000	\$375,000
.2.1.20	Sektor-M Booths: Install & Implement								\$ -		\$0	\$75,000
.2.1.21	Local Area Network [LAN]: Procure	01/01/99	09/30/99			\$ 65,000					\$65,000	\$0
.2.1.22	Local Area Network [LAN]: Implement	01/01/99	09/30/99			\$ 150,000					\$150,000	\$50,000
.2.1.23	PPS: Align, Tune, Train & Trial Operation								\$ -		\$0	\$185,000
.2.2	US & Russian Integrated Safeguards & Security: Analyze	10/01/98	09/30/99			\$ 50,000					\$50,000	\$0
.2.3	Tank Volume Measurement - Phase I: Analyze/Implement	12/01/96	12/30/98	\$ 40,000						\$40,000	\$80,000	\$0
.2.4	Tank Volume Measurement - Phase II: Implementation Support	08/01/98	07/31/99	\$ 100,000						\$0	\$100,000	\$165,000
.2.5	Tank Volume Devices: Calibration	10/01/98	09/30/99	\$ 95,000							\$95,000	\$100,000
.2.6	MC&A Equipment In Support of Project ISTC-40	06/01/96	06/30/99		\$ 100,000					\$63,000	\$163,000	\$65,000
.2.7	Computerized MC&A	08/01/97	03/31/99		\$ 100,000					\$137,000	\$237,000	\$50,000
.2.8	Neutron Measurements of Special Nuclear Material	04/01/98	09/30/99		\$ 50,000					\$18,400	\$68,400	\$0
.2.9	Gamma-ray Measurements at RCPS: Test & Evaluate [Completed]	10/01/97	09/30/98			\$ -					\$0	
.2.10	Gamma-ray Measurements at RCPS: Implement	10/01/98	09/30/99			\$ 80,000					\$80,000	
.2.11	Digital Video Monitoring/Storage Facility - Phase I: T&E [Completed]	10/01/97	06/30/98		\$ -					\$0	\$0	\$0
.2.12	Digital Video Monitoring/Storage Facility - Phase II: Implement	10/01/98	03/31/99		\$ 100,000					\$0	\$100,000	\$60,000
	Total: Radiochemical Plant Site RCPS]			\$235,000	\$350,000	\$745,000	\$0	\$0	\$365,000	\$258,400	\$1,953,400	\$1,880,000

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.3	Chemical Metallurgical Plant Site [CMPS]											
.3.1	Obvious Physical Protection System Upgrades - Phase I	10/01/98	09/30/99	\$-	\$-	\$40,000	\$-	\$-	\$-	\$-	\$40,000	\$700,000
.3.1.1	Physical Protection Upgrades: Conceptual Design [Completed]	04/15/98	08/15/98			\$ -				\$0	\$0	\$0
.3.1.2	Physical Protection Upgrades: Final Design	08/15/98	02/15/99			\$ 40,000				\$0	\$40,000	
.3.1.3	Delfin-M: Procure					\$ -				\$0	\$0	\$600,000
.3.1.4	Delfin-M: Install					\$ -				\$0	\$0	\$100,000
.3.1.5	Sensors: Procure					\$ -				\$0	\$0	
.3.1.6	Sensors: Install					\$ -				\$0	\$0	
.3.1.7	Illumination: Design					\$ -				\$0	\$0	
.3.1.8	Illumination: Procure					\$ -				\$0	\$0	
.3.1.9	Illumination: Install					\$ -				\$0	\$0	
.3.1.10	CCTV: Conceptual Design					\$ -				\$0	\$0	
.3.1.11	CCTV: Comprehensive Work Plan [CWP]					\$ -				\$0	\$0	
.3.1.12	CCTV: Procure					\$ -				\$0	\$0	
.3.1.13	CCTV: Install					\$ -				\$0	\$0	
.3.1.14	Zirkony System: Comprehensive Work Plan [ZSCWP]					\$ -				\$0	\$0	
.3.1.15	Zirkony System Equipment: Procure					\$ -				\$0	\$0	
.3.1.16	Zirkony System: Install / Implement					\$ -				\$0	\$0	
.3.1.17	Zirkony System: Adjust, Operate & Train					\$ -				\$0	\$0	
.3.1.18	Sentry Shelters: Design / Install					\$ -				\$0	\$0	
.3.1.19	Sektor-M Booths: Procure @ [\$25,000/each]					\$ -				\$0	\$0	
.3.1.20	Sektor-M Booths: Install / Implement					\$ -				\$0	\$0	
.3.1.21	Local Area Network [LAN]: Procure					\$ -				\$0	\$0	
.3.1.22	Local Area Network [LAN]: Implement					\$ -				\$0	\$0	
.3.1.23	PPS: Align, Tune, Train & Trial Operation					\$ -				\$0	\$0	
.3.2	Gamma-ray Measurements: Test & Evaluate					\$ -				\$0	\$0	
.3.3	Gamma-ray Measurements: Implement					\$ -				\$0	\$0	
.3.4	Wait-In-Vehicle SNM Monitoring Station	03/01/98	12/31/99		\$ 150,000					\$0	\$150,000	\$0
.3.5	Computerized MC&A	04/01/98	12/31/98				\$ 50,000			\$0	\$50,000	\$0
	Total: Chemical Metallurgical Plant Site [CMPS]			\$0	\$150,000	\$40,000	\$50,000	\$0	\$0	\$0	\$240,000	\$700,000

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.4	Uranium Enrichment Plant Site [UEPS]											
4.1	Obvious Physical Protection System Upgrades - Phase I			\$ -	\$ -	\$ 200,000	\$ 120,000	\$ -	\$ -	\$ -	\$ 320,000	\$ 120,000
4.1.1	Physical Protection Upgrades: Conceptual Design						\$ -			\$0	\$ -	\$0
4.1.2	Physical Protection Upgrades: Final Design	10/01/98	04/30/99				\$ 20,000				\$ 20,000	\$20,000
4.1.3	Delfin-M: Procure	10/01/98	09/30/99			\$ 200,000					\$ 200,000	\$100,000
4.1.4	Delfin-M: Install	10/01/98	09/30/99				\$ 100,000				\$ 100,000	
4.1.5	Sensors: Procure						\$ -				\$ -	
4.1.6	Sensors: Install						\$ -				\$ -	
4.1.7	Illumination: Design						\$ -				\$ -	
4.1.8	Illumination: Procure						\$ -				\$ -	
4.1.9	Illumination: Install						\$ -				\$ -	
4.1.10	CCTV: Conceptual Design						\$ -				\$ -	
4.1.11	CCTV: Comprehensive Work Plan [CWP]						\$ -				\$ -	
4.1.12	CCTV: Procure						\$ -				\$ -	
4.1.13	CCTV: Install						\$ -				\$ -	
4.1.14	Zirkoniy System: Comprehensive Work Plan [ZSCWP]						\$ -				\$ -	
4.1.15	Zirkoniy System Equipment: Procure						\$ -				\$ -	
4.1.16	Zirkoniy System: Install / Implement						\$ -				\$ -	
4.1.17	Zirkoniy System: Adjust, Operate & Train						\$ -				\$ -	
4.1.18	Sentry Shelters: Design / Install						\$ -				\$ -	
4.1.19	Sektor-M Booths: Procure @ [\$25,000/each]						\$ -				\$ -	
4.1.20	Sektor-M Booths: Install & Implement						\$ -				\$ -	
4.1.21	Local Area Network [LAN]: Procure						\$ -				\$ -	
4.1.22	Local Area Network [LAN]: Implement						\$ -				\$ -	
4.1.23	PPS: Align, Tune, Train & Trial Operation						\$ -				\$ -	
4.2	Gamma-ray Measurements at UEPS: Test & Evaluate [COMPLETE]	10/01/97	09/30/98			\$ -					\$ -	
4.3	Gamma-ray Measurements at UEPS: Implement	10/01/98	09/30/99			\$ 80,000					\$ 80,000	
	Total: Uranium Enrichment Plant Site [UEPS]			\$ -	\$ -	\$ 280,000	\$ 120,000	\$ -	\$ -	\$ -	\$ 400,000	\$120,000

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.5	Conversion [Sublimation] Plant Site [CSPS]											
.5.1	Obvious Physical Protection System Upgrades. Phase I.			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 30,000
.5.1.1	Physical Protection Upgrades: Conceptual Design					\$ -					\$ -	\$10,000
.5.1.2	Physical Protection Upgrades: Final Design										\$ -	\$20,000
.5.1.3	Delfin-M: Procure										\$ -	
.5.1.4	Delfin-M: Install										\$ -	
.5.1.5	Sensors: Procure										\$ -	
.5.1.6	Sensors: Install										\$ -	
.5.1.7	Illumination: Design										\$ -	
.5.1.8	Illumination: Procure										\$ -	
.5.1.9	Illumination: Install										\$ -	
.5.1.10	CCTV: Conceptual Design										\$ -	
.5.1.11	CCTV: Comprehensive Work Plan [CWP]										\$ -	
.5.1.12	CCTV: Procure										\$ -	
.5.1.13	CCTV: Install										\$ -	
.5.1.14	Zirkony System: Comprehensive Work Plan [ZSCWP]										\$ -	
.5.1.15	Zirkony System: Procure Equipment										\$ -	
.5.1.16	Zirkony System: Install / Implement										\$ -	
.5.1.17	Zirkony System: Adjust, Operate & Train										\$ -	
.5.1.18	Sentry Shelters: Design / Install										\$ -	
.5.1.19	Sektor-M Booths: Procure @ [\$25,000/each]										\$ -	
.5.1.20	Sektor-M Booths: Install & Implement										\$ -	
.5.1.21	Local Area Network [LAN]: Procure										\$ -	
.5.1.22	Local Area Network [LAN]: Implement										\$ -	
.5.1.23	PPS: Alignment, Tuning, Training & Trial Operation										\$ -	
.5.2	Gamma-ray Measurements at CSPS: Test & Evaluate					\$ -					\$ -	\$125,000
.5.3	Gamma-ray Measurements at CSPS: Implement										\$ -	
.5.4	Wait-In-Vehicle SNM Monitoring Station at CSPS: Implement										\$ -	
.5.5	Computerized MC&A										\$ -	\$0
	Total: Conversion [Sublimation] Plant Site [CSPS]			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 155,000

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.6	Experimental Physics Plant Site [EPPS]											
.6.1	Obvious Physical Protection System Upgrades - Phase I			\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$20,000	\$0
.6.1.1	Physical Protection Upgrades: Conceptual Design	10/01/98	09/30/99						\$ 20,000		\$20,000	\$0
.6.1.2	Physical Protection Upgrades: Final Design										\$0	
.6.1.3	Delfin-M: Procure										\$0	
.6.1.4	Delfin-M: Install										\$0	
.6.1.5	Sensors: Procure										\$0	
.6.1.6	Sensors: Install										\$0	
.6.1.7	Illumination: Design										\$0	
.6.1.8	Illumination: Procure										\$0	
.6.1.9	Illumination: Install										\$0	
.6.1.10	CCTV: Conceptual Design										\$0	
.6.1.11	CCTV: Comprehensive Work Plan [CWP]										\$0	
.6.1.12	CCTV: Procure										\$0	
.6.1.13	CCTV: Install										\$0	
.6.1.14	Zirkoniy System: Comprehensive Work Plan [ZSCWP]										\$0	
.6.1.15	Zirkoniy System: Procure Equipment										\$0	
.6.1.16	Zirkoniy System: Install / Implement										\$0	
.6.1.17	Zirkoniy System: Adjust, Operate & Train										\$0	
.6.1.18	Sentry Shelters: Design / Install										\$0	
.6.1.19	Sektor-M Booths: Procure @ [\$25,000/each]										\$0	
.6.1.20	Sektor-M Booths: Install & Implement										\$0	
.6.1.21	Local Area Network [LAN]: Procure										\$0	
.6.1.22	Local Area Network [LAN]: Implement										\$0	
.6.1.23	PPS: Align, Tune, Train & Trial Operation										\$0	
	Total: Experimental Physics Plant Site [EPPS]			\$ -	\$ -	\$ -	\$ -	\$ -	\$ 20,000	\$ -	\$20,000	\$0

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.7	Site-Wide Tasks [SW]											
.7.1	Site-Wide Access Control											
.7.1.1	Conceptual Design [IT] [COMPLETED]	06/01/97	05/21/98			\$ -					\$ -	
.7.1.2	Badge Production System: Procure [COMPLETED]	04/15/98	09/30/98			\$ -					\$ -	\$0
.7.1.3	Badge Production System: Install	06/15/98	02/28/99			\$ -				\$16,200	\$ 16,200	\$0
.7.1.4	Work Stations: Procure	10/01/98	09/30/99			\$ 190,000				\$26,500	\$ 216,500	\$0
.7.1.5	Software Development	06/15/98	09/30/99			\$ 200,000					\$ 200,000	\$0
.7.1.6	Central Database Software: Develop	06/19/98	12/15/98			\$ -				\$151,800	\$ 151,800	\$0
.7.1.7	Central Database Software: Install	06/19/98	12/31/98			\$ -				\$179,100	\$ 179,100	
.7.1.8	Fiber Optics Phase II: Comprehensive Work Plan [COMPLETED]	04/15/98	09/30/98			\$ -					\$ -	
.7.1.9	Fiber Optics - Phase I: Procure / Install [COMPLETED]	09/01/97	09/30/98			\$ -					\$ -	
.7.1.10	Fiber Optics - Phase II: Procure [COMPLETED]	04/15/98	09/30/98			\$ -					\$ -	
.7.1.11	Fiber Optics - Phase II: Install	04/15/98	09/30/99			\$ -				\$95,400	\$ 95,400	
.7.1.12	Fiber Optics: Completion	10/01/98	09/30/99			\$ 210,000					\$ 210,000	
.7.1.13	Database Software [Oracle]: Procure [COMPLETED]	04/15/98	07/31/98			\$ -					\$ -	
	Total: Access Control			\$-	\$-	\$600,000	\$-	\$-	\$-	\$469,000	\$ 1,069,000	\$0
.7.2	Site-Wide Material Protection, Control & Accounting [MPC&A]											
.7.2.1	Site-Wide MPC&A Plan: Develop	10/01/98	09/30/99		\$ 100,000					\$0	\$100,000	\$0
.7.2.2	TID @ All Plant Sites: Workshop & Evaluation [COMPLETED]	05/01/96	12/01/97					\$ -		\$0	\$0	\$0
.7.2.3	TID @ All Plant Sites: Implementation	12/15/97	09/30/01					\$ 80,000		\$6,000	\$86,000	\$0
.7.2.4	Physical Inventory Taking [PIT]: Procedures & Demonstration	08/01/98	09/30/99	\$ 120,000						\$0	\$120,000	\$0
.7.2.5	Analytical Measurement & Laboratory Standards Control Program	10/01/98	09/30/01					\$ 80,000		\$0	\$80,000	\$0
.7.2.6	Weighing Systems Phase I	11/01/96	03/01/99	\$ -						\$40,000	\$40,000	\$0
.7.2.7	Weighing Systems Phase II	08/01/98	12/01/99	\$ 100,000						\$350,000	\$450,000	\$300,000
.7.2.8	Measurement Control Program - Weight, Volume / NDA	02/01/98	09/30/01					\$ -		\$30,000	\$30,000	\$80,000
.7.2.9	Calibration and Measurement Control for Weighing Systems	10/01/98	09/30/99					\$ 100,000			\$100,000	\$115,000
.7.2.10	Bulk Volume Measurements Control Program	10/01/98	09/30/01					\$ -		\$0	\$0	\$80,000
.7.2.11	Continuous, Automatic, Verification Inventory System [CAVIS]	10/01/98	09/30/99					\$ -			\$0	\$225,000
.7.2.12	Information Security	10/01/98	09/30/99			\$ 55,000				\$0	\$55,000	\$55,000
.7.2.13	Rapid Inventory Systems for SNM: Develop	06/01/98	09/30/99				\$ 390,000				\$390,000	
.7.2.14	Hold-up Measurement/Control System [HMSII] - Phase I: Investigate	12/03/96	12/30/98							\$6,200	\$6,200	\$75,000
.7.2.15	Hold-up Measurement/Control System [HMSII] - Phase II: Implement	10/01/98	09/30/99				\$ 110,000			\$0	\$110,000	\$40,000
.7.2.16	Computerized MC&A @ RP/CM/EP/UE/CS, Plant Sites	06/01/99	06/01/00		\$ 100,000					\$0	\$100,000	\$250,000
	Total: MPC&A			\$ 220,000	\$ 100,000	\$ 55,000	\$ 500,000	\$ 260,000	\$ -	\$ 432,200	\$ 1,567,200	\$930,000

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0.1.1.02	Siberian Chemical Combine [SKhK] - Tomsk-7 / Seversk	Start	End	BNL	LANL	LLNL	ORNL	PNNL	SNL	FY98 Carryover	FY99 DOE Target	FY99 Lab Target
.7.3	Physical Protection [PP]											
.7.3.1	NM PM w/S & Hand- Held detectors: T&E, I [COMPLETED]		06/30/97		\$ -					\$0	\$0	\$0
.7.3.2	NM PM w/S, Hand & Metal Detectors: T&E, I [COMPLETED]				\$ -					\$0	\$0	\$0
.7.3.3	NM Vehicle, Pedestrian & H-H Detectors @ Control Points: Procure	08/01/96	01/31/99		\$ 100,000					\$106,400	\$206,400	\$0
.7.3.4	PM Diagnostic & Maintenance Equipment	10/01/98	03/31/99		\$ 65,000					\$0	\$65,000	\$0
Total: Physical Protection [PP]				\$ -	\$ 165,000	\$ -	\$ -	\$ -	\$ -	\$ 106,400	\$271,400	\$0
.7.4	Other											
.7.4.1	Inter-Site Transport: Evaluate Technology [COMPLETED]	12/01/96	06/30/98						\$ -	\$0	\$0	\$0
.7.4.2	Statistical Evaluation - Phase I: NM Delta in Bulk Form [COMPLETED]	06/01/96	09/30/97							\$0	\$0	
.7.4.3	Statistical Evaluation Phase II: NM Delta in Bulk Form	10/01/98	09/31/99		\$ 20,000					\$0	\$20,000	
.7.4.4	Automated Transport Security System [ATSS]: Design Analysis	05/13/97	05/31/98				\$ 20,000			\$50,000	\$70,000	
.7.4.5	HEU/LEU Purchase: SKhK, Mayak, K-45, Sverdlovsk						\$ -			\$0	\$0	\$50,000
.7.4.6	Initial Radio Upgrades [COMPLETE]	07/03/97	09/30/98							\$0	\$0	\$0
.7.4.7	Telecommunications Enhancements for MPC&A	10/01/98	09/30/99					\$ -		\$5,000	\$5,000	\$0
.7.4.8	CAD System Design Equipment [COMPLETE]	03/01/98	09/30/98			\$ -				\$46,047	\$46,047	
.7.4.9	Measurement Control Workshop	08/01/98	07/31/99	\$ -						\$0	\$0	\$215,000
.7.4.10	Analytical Measurement Support, DA: Program Development	10/01/98	09/30/99				\$ 40,000				\$40,000	
.7.4.11	Safeguards Effectiveness Evaluation	10/01/98	09/30/99					\$ -		\$0	\$0	\$50,000
.7.4.12	Evaluate Potential Out-year MPC&A System Failure							\$ -			\$0	\$0
Total: Other				\$ -	\$ 20,000	\$ -	\$ 60,000	\$ -	\$ -	\$101,047	\$181,047	\$315,000
PM01	FY99 Project Team Meetings			\$ 35,000	\$ 100,000	\$ 35,000	\$ 35,000	\$ 70,000	\$ 35,000		\$310,000	\$30,000
PM02	FY99 Project Management & Coordination US			\$ 50,000	\$ 300,000	\$ 100,000	\$ 50,000	\$ 60,000	\$ 50,000		\$600,000	\$70,000
Totals w/Carryover				\$540,000	\$1,185,000	\$2,410,000	\$815,000	\$380,000	\$450,000	\$1,913,347	\$7,713,347	\$4,200,000
PM03	FY98 Carryover										\$0	
PM04	FY98 Carryover [Committed]										\$1,913,347	

Budgets

\$1,913,347 \$5,800,000 \$4,200,000
5800000
\$0

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.1 Reactor Plant Site [RPS]

.1.1 Obvious Physical Protection Upgrades @ RPS [LLNL] November 1996 - October 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 736,300

Description:

This task is a roll-up of the multiple contracts with SKhK and several Russian vendors to implement Obvious Physical Protection Upgrades at the Reactor Plant Site.

Russian Federation Ministry of Interior [MVD] Guards patrol the 4.5-kilometer perimeter of the Reactor Plant Site [RPS] where two operating, dual-purpose plutonium production reactors are located as well as an inventory of high-enriched uranium [HEU] driver rods. Reprocessed fuel from these reactors provides an additional metric ton of plutonium oxide [PuO₂] each year to the storage facility of the Radiochemical Plant Site. The US-assisted core conversion project may replace the natural uranium fuel with HEU fuel to limit plutonium production, thereby increasing the HEU inventory within the RPS. The main physical protection concern at the RPS is the large and sensitive storage facilities reportedly within its boundaries.

The main structures within the RPS include:

- Building 450
A nine-story structure with two reactors [ADE-4 and ADE-5] and SNM stored on the premises;
- Building 451
Connected to Building 450, with both auto and rail access control points;
- Building 454
Administrative facility housing plant management, site classification department, and medical checkpoints. SNM is stored in the building;
- Building 455
Manufactured-product storage;
- Building 460
Personnel access control point;
- Building 491
Located approximately 400 meters from the RPS perimeter and protected by second fence and associated sensors.

Proposed Physical Protection system upgrades include:

- Modernization of physical protection and alarm systems;
- Repair and modernization of the existing perimeter;
- Intrusion detection sensors in sensitive interior spaces;
- A central alarm system to monitor physical protection systems;
- Further upgrades that will be determined after a vulnerability assessment.

Proposed Upgrade Elements include:

- Perimeter intrusion detection and alarm systems
 - vibration [Delfin-M]
 - microwave sensors
 - illumination system
 - closed-circuit television [CCTV]
- Interior detection and alarm systems
 - vibration detectors
 - motion detectors
 - central alarm system
- CCTV monitoring and illumination of sensitive buildings and access paths;
- Enclosures around SNM facilities;
- Access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- "Zirconiy" as the central alarm system. This task will be implemented in several contracts with Russian entities: SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company.

Summary Tasks:

.1.1.1 Physical Protection Upgrades: Conceptual Design – [completed 3/16/97]	.1.1.10 CCTV Equipment: Procure [completed 7/31/98]
.1.1.2 Zirconiy System: Comprehensive Work Plan.	.1.1.11 CCTV: Install
.1.1.3 Zirconiy System Equipment: Procure [completed 7/31/98]	.1.1.12 Delfin-M: Phase I Procure [completed 9/30/97]
.1.1.4 Zirconiy System Computer Equipment: Procure [completed 9/30/98]	.1.1.13 Delfin-M: Phase II Procure [completed 9/30/97]
.1.1.5 Zirconiy System Equipment: Install and Implement	.1.1.14 Sector-M Booths: Procure
.1.1.6 Zirconiy System: Adjust, Operate & Train	.1.1.15 Sector-M Booths: Install & Implement
.1.1.7 Illumination System Upgrade [Plan completed 9/30/98]	.1.1.16 Sentry Shelters: Design and Install
.1.1.8 CCTV: Conceptual Design [completed 5/21/98]	.1.1.17 Microwave Equipment & Sensors
.1.1.9 CCTV: Comprehensive Work Plan [completed 7/31/98]	.1.1.18 Additional Sensors
	.1.1.19 Local Area Network [LAN]: Implement
	.1.1.20 Physical Protection System: Align, Tune, & Train

Status:

Eleron completed the conceptual design in 1997. Supplemental funding of \$200,000 was received in FY98 to provide FY97 Sector-M Booths. Contracts were placed for equipment with Eleron and Dedal State Enterprise. Installation began in the summer of 1997 and all of the perimeter upgrade equipment was delivered for installation in the summer of 1998. LLNL received FY funds in the amount of \$1,300,000 for implementation of Phase II upgrades including illumination, CCTV and the 'Zirconiy' access system. The perimeter lighting, CCTV, and Zirconiy systems were procured in April 1998. Installation is currently in progress. In June 1998 a delegation of US experts visited the site perimeter to observe operational testing of the first sector of perimeter upgrades. The upgraded elements are to be completed in June 1999.

.1.2 US & Russian Integrated Safeguards & Security Planning & Analysis Techniques [LLNL] May 1996 – March 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 50,000

Description:

The task objective is to apply vulnerability assessment techniques and approaches to a specific facility to analyze potential improvements in safeguards and security. Weaknesses and subsequent upgrades identified by the assessments would be considered candidates for future physical protection tasks. SKhK will prepare a description of its methods for assessing insider and outsider threats and describe how its MPC&A program is evaluated for effectiveness. The task includes a two-week workshop at SKhK on integrated safeguards and security planning and analysis, and vulnerability assessment tools and techniques.

Status:

The Vulnerability Assessment Workshop was held in May 1996. The follow-on tasks require SKhK to conduct a vulnerability assessment on an actual facility of their choice. A Russian version of the ASSESS interactive menus was completed in the summer of 1997. The task has been expanded and now includes both the Reactor Plant, and Radiochemical Plant sites.

.2 Radiochemical Plant Site [RCPS]

.2.1 Obvious Physical Protection [PP] Upgrades @ RCPS - Phase I [SNL] February 1997 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 1,230,000

Description:

This task is a roll-up of the multiple contracts to implement Obvious Physical Protection Upgrades at the Radiochemical Plant Site.

This task will upgrade existing physical protection systems around the 5.5-kilometer perimeter of the RCPS and upgrade intrusion detection and alarms to interior spaces of the plant. According to SKhK, many metric tons of plutonium oxide [PuO₂] are stored in a special storage facility at RCPS. Moreover, one additional metric ton is added to storage each year from reprocessed spent reactor fuel. A central alarm system will be provided to monitor physical protection systems. Follow-on upgrades will be considered after the vulnerability assessment has been completed.

Proposed Physical Protection system upgrades include:

- Modernization of physical protection and alarm systems;
- Repair and modernization of the existing perimeter;
- Sensors in sensitive interior areas for intrusion detection in interior spaces;
- A central alarm system to monitor physical protection systems; and further upgrades will be considered following the vulnerability assessment.

Proposed Upgrade Elements include:

- Improving existing perimeter intrusion detection and alarm systems;
 - vibration [Delfin-M] and microwave sensor systems;
- Interior detection and alarm systems
 - vibration detectors
 - motion detectors
 - central alarm system
- Closed-circuit television monitoring (CCTV) and illumination of sensitive buildings and access paths;
- Enclosures around SNM facilities;
- Access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- Perimeter illumination systems, CCTV, and implementation of Zirconiy as the central alarm system. This task will be implemented in several contracts with Russian companies: SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company.

Summary Tasks:

.2.1.1	PP Upgrades Conceptual Design:	.2.1.13	CCTV: Install
.2.1.2	Final Design	.2.1.14	Zirconiy System: Work Plan
.2.1.3	Delfin-M: Procure	.2.1.15	Zirconiy System: Procure
.2.1.4	Delfin-M: Install	.2.1.16	Zirconiy System: Install / Implement
.2.1.5	Sensors: Procure.	.2.1.17	Zirconiy System: Adjust, Operate, & Train
.2.1.6	Sensors: Install	.2.1.18	Sentry Shelters: Design & Install
.2.1.7	Illumination: Design	.2.1.19	Sector-M Booths: Procure
.2.1.8	Illumination: Procure	.2.1.20	Sector-M Booths: Install & Implement
.2.1.9	Illumination: Install	.2.1.21	Local Area Network [LAN]: Procure
.2.1.10	CCTV: Conceptual Design	.2.1.22	Local Area Network: Implement
.2.1.11	CCTV: Work Plan	.2.1.23	PPS: Align, Tune, Train & Trial Operation
.2.1.12	CCTV: Procure		

Status:

A preliminary equipment list for the Obvious PP Upgrades was delivered to SNL in September 1997. Based on a comparison with the Reactor Plant Site list, LLNL proceeded with the procurement of the initial equipment. The final design was delivered in May 1998. Construction-ready design with drawings and certification by MINATOM are expected by June 1998. In addition, LLNL began procurement of the Delfin-M fence from Dedal. A supplementary request for \$700K for additional equipment was approved, although only \$640K has been delivered to SNL, less \$70K for LLNL. An FY98 supplementary request for an additional \$1.5M for CCTV and illumination was initially denied. Subsequently, a supplement of \$350K was allocated in June. PNNL will procure \$380K worth of additional sensors. A delegation of US technical experts visited the perimeter of the RCPS in June to observe the ongoing upgrades. At that time it was observed that the fence line was being moved outward and that trees were being removed to facilitate the operation. Discussions are continuing concerning cost sharing for the removal of trees to extend the fence line an additional 30 meters.

.2.2 US & Russian Integrated Safeguards & Security Planning & Analysis Techniques [LLNL] May 1996 – March 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 50,000

Description:

The objective is to share vulnerability assessment techniques and approaches by applying them to a specific Russian facility to analyze potential improvements in safeguards and security. Potential weaknesses and additional upgrades identified by the assessments would be considered candidates for future physical protection tasks. SKhK will describe its methods for assessing insider and outsider threats and how the existing MPC&A program is evaluated for effectiveness. The task includes a two-week workshop at SKhK on integrated safeguards and security planning and analysis, and vulnerability assessment tools and techniques.

Status:

The Vulnerability Assessment Workshop was held in May 1996. The follow-on tasks require SKhK to conduct a vulnerability assessment on an actual facility of their choice. A Russian version of the ASSESS interactive menus was completed in the summer of 1997. The task has been expanded to now include both the Reactor Plant and Radiochemical Plant sites.

.23 Tank Volume Measurements Phase I: Analyze/Implement [BNL] May 1997 – January 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 243,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 80,000

Description:

A tank volume measurement system is to be installed in the input Accountability Dissolver Tank in the Radiochemical Plant Site at a Material Balance Area boundary. The system will be installed, calibrated, and tested by SKhK personnel with technical support from BNL. SKhK personnel attended training at BNL in June 1997 to review system installation and operation methods prior to its deployment at SKhK. The system will provide for material balance around the "Purex" process, and its operation will be evaluated for acceptability and for potential uses elsewhere, e.g., in plutonium storage tanks.

Status:

The contract was signed in December 1996; however, start-up was delayed until May 1997. SKhK specialists attended a Workshop on Volume Measurements at BNL in June 1997. At this workshop SKhK experts presented a Russian document and viewgraphs and made a definitive contribution to the workshop. SKhK provided the initial deliverable reports and an invitation for BNL experts to visit Seversk to confirm installation specifications before the end of the year.

Long-lead time equipment items have been procured and Individual Validated Licenses for Export Control have been processed. Equipment arrived in Seversk in mid-May 1998. In June 1998 SKhK, with BNL assistance, installed a bubbler-probe tank, volume measurement system on the dissolver tank.

In Phase II, SKhK specialists will be prepared to assume a larger role in the assembly and installation of the equipment in the product tank. However, SKhK specialists will require support and LABVIEW software training in order to develop the requisite expertise in writing volume measurement applications and in interfacing the TVM equipment with the process control and CoreMAS LAN systems. The LABVIEW training is a necessary step for SKhK to achieve sustainability of the TVM.

.2.4 Tank Volume Measurement Implementation Support Phase II [BNL] August 1998 – July 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 100,000

Description:

In June 1989 a tank volume measurement (TVM) system was installed in the input Accountability Dissolver Tank at the Radiochemical Plant Site under **.2.3 Tank Volume Measurement Phase I**. The system was installed, calibrated, and tested by SKhK personnel with technical support from BNL. The system provides material balance around the "Purex" process, and its operation is being evaluated for acceptability and for potential uses elsewhere, e.g., in plutonium storage tanks. **Phase II** addresses the installation of additional TVM systems in product storage tanks.

Transfer of solution out of the plutonium product tank is achieved by pressurizing the tank to five atmospheres. The safety rating for the pneumatic scanner and pressure gauge lines and connections is ten atmospheres.

The following protective measures will be incorporated into the tank volume measurement [TVM] system:

- Relief valves between the differential pressure lines to protect the Paroscientific Pressure Gauge from over pressurization
- Computer-activated airflow valve to stop the flow of air out of the tank. The valve will block air from being forced up the tubes and out of the process cell during periods of pressurization
- Modified data collection software for continuous measurement of the level probe during the emptying of the tank.

Status:

Phase II Task Order Agreement was negotiated during the June 1998 installation visit to Seversk.

.25 Tank Volume Devices: Weight-Based Method for Calibration [BNL] July 1998-September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 95,000

Description:

Measurement of the volumes of liquids in tanks is one of the important components together with measurement of the concentration of nuclear materials of good MC&A in the radiochemical industry. Improvement of the quality of nuclear materials accounting may be achieved by implementing computerized procedures for processing information, and also by increasing the accuracy of liquid volume measurement. In addition to incorporation of instruments with improved accuracy into the system of volume measurement, it is also essential to incorporate up-to-date methods for calibrating tank volume measurement devices.

The objectives of this task are:

- To install and evaluate a computerized system for calibrating tanks using a weight-based tank calibration [WBTC] method at the SKhK Radiochemical Plant Site, and,
- To apply and evaluate statistical methods and software used in the analysis of tank calibration data.

One part of this task will involve review of various methods for calibrating tank volume. SKhK, in collaboration with BNL will install a computerized system for tank calibrating using the weight-based method. SKhK, in collaboration with Pacific Northwest Laboratories [PNNL], will apply and demonstrate statistical techniques for evaluating tank volume calibration data.

Status:

This new task supports **.24 Tank Volume Measurements - Phase II: Implementation Support.**

The task will be negotiated in FY99.

2.6 MC&A Equipment In Support of ISTC Project -40 [LANL] June 1996 – June 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 163,000

Description:

The goal of International Science and Technology Center [ISTC] Project-40 was to analyze the requirements for nuclear safeguards at large Russian fuel cycle facilities using the RCPS as a reference for establishing a Russian national standard. The work begun under ISTC Project-40, addressed a part of the MC&A requirements for the RCPS and complements the MC&A projects now underway at SKhK. In addition to providing and implementing equipment, the present program will support SKhK personnel training.

MC&A equipment provided by the present program includes:

- An alpha spectrometer with associated hardware and software,
- An inductively coupled plasma atomic emission spectrometer,
- A gamma-ray spectrometer based on a high-purity germanium detector,
- An in-line gamma-ray densitometer,
- A passive neutron coincidence counter, and,
- Four Pentium-based personal computers

Status:

This task was signed in June 1996, but the project was delayed by debate concerning the type, amount, and specifications of the equipment. In October 1996, SKhK announced that it had found an alternate source for the laboratory densitometer and would like to design and build its own in-line densitometer system. In August 1997, the task was modified to include the costs to design and fabricate a Russian, in-line densitometer. The neutron coincidence counter, gamma ray and alpha spectrometers were delivered to SKhK in the summer of 1997. The specifications for the plasma emission spectrometer were finalized, and the procurement occurred in the spring of 1998. The computers were also delivered.

Task *Deliverable 3.1*, a report, written in the Russian language, describing the equipment requirements, was delivered to the US project team in September 1996. All of the equipment has been delivered. Training in the US at the manufacturers' locations for the alpha spectrometer, gamma-ray spectrometer [EGG/Ortec, Oak Ridge, TN], and the atomic emission spectrometer [Perkin Elmer, Stamford, CT] was arranged for March 1998. An SKhK delegation of three technical experts attended the training sessions.

.2.7 Computerized Material Control and Accounting [LANL] August 1997 – March 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 237,000

Description:

The purpose of this task is to test, evaluate, implement, and demonstrate a method for performing computerized nuclear materials control and accounting at the Radiochemical Plant Site.

Functional requirements:

- Data acquisition,
- Interface to measurement instruments,
- Statistical analysis,
- Record keeping and reporting, and,
- Other MC&A functions required by the RCPS.

Included in the task is a determination of the requirements for computer security and a demonstration of prototype computer hardware and software required to perform basic MC&A functions specific to the operations of the Radiochemical Plant Site.

Status:

The original task was transferred from the Chemical Metallurgical Plant Site to the RCPS. SKhK technical specialists attended a two-week Computerized MC&A Workshop at Los Alamos in August 1997. The Statement of Work to begin implementing computerized MC&A at the RCPS was negotiated and signed at that time. Moreover, NTS Windows, SQL Server, Visual Basic, and CoreMAS programs were delivered to SKhK for their information and use.

Two technical experts from LANL visited SKhK in February 1998 to install and demonstrate the use of CoreMAS; provide advanced training on LANL-developed computerized MC&A systems; deliver and install the latest version of the CoreMAS; and discuss the status of progress on the deliverables. The first deliverable was made at the end of May 1998.

.2.8 Neutron Measurements of Special Nuclear Material [LANL] April 1998 – October 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 68,400

Description:

The purpose of the task is to test, evaluate, and implement neutron measurement methods for the rapid nondestructive assay of special nuclear materials at the Radiochemical Plant Site. The techniques consist of active and passive neutron coincidence counting of bulk uranium and plutonium samples, and will be used to complement gamma-ray spectroscopy techniques to determine isotopic composition. This information will enable a more accurate determination of SNM at key measurement points within a material balance area at the Radiochemical Plant Site.

Status:

The task was signed in April 1998. Two neutron-measuring systems, the HLNCC and the Flat-Squared Counter have been delivered to Seversk as part of the equipment task in support of ISTC Project-40. The technical lead traveled to Seversk in June 1998 and conducted a workshop on neutron measurement techniques.

.2.9 Gamma-ray Measurements at the Radiochemical Plant Site [RCPS]: Test and Evaluate [LLNL] October 1997 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

SKhK will implement a system of gamma-ray isotopic, non-destructive analysis [NDA] measurements to support MC&A of SNM at the Radiochemical Plant Site. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the RCPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the RCPS.

Status:

LLNL has received and approved measurement plans. U-Pu Inspectors from Canberra were delivered in the spring of 1998. The U-Pu Inspectors are planar HPGEs with graded collimator shields for isotopic measurements of uranium and plutonium. FRAM analysis will be evaluated under a contract and equipment provided by Los Alamos. LLNL technical experts will present gamma-ray software upgrading and training workshop in July 1998.

.2.10 Gamma-ray Measurements at the Radiochemical Plant Site [RCPS]: Implement [LLNL] October 1998 – June 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 80,000

Description:

Following **.2.9 Gamma-ray Measurements at the Radiochemical Plant Site [RCPS]: Test and Evaluate**, SKhK will implement a system of gamma-ray isotopic, non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials [SNM] at the RCPS. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the RCPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the Radiochemical Plant Site.

Status:

This task will be negotiated in FY99.

.2.11 Digital Video Monitoring Systems for a Storage Facility- Phase I: Test and Evaluate [LANL] October 1997 – June 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

The purpose of this task was to install, test and evaluate an automated, video monitoring system at a trial storage facility. The goal was to demonstrate physical and material protection, control, and accountability techniques that enhance the safeguards and security of nuclear materials stored and processed in the RCPS.

Status:

This technology was first introduced to SKhK during the June 1996 site visit by US MPC&A experts. A draft SOW was presented, reviewed, and signed during the visit. A LANL technical expert traveled to SKhK and demonstrated the technology in October 1996. The equipment was procured and delivered in the spring of 1998. A team of LANL technical experts traveled to Seversk in April 1998 to assemble and demonstrate. The task has been successfully completed.

.2.12 Digital Video Monitoring Systems for a Storage Facility-Phase II: Implement [LANL] October 1998 – March 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 100,000

Description:

This task is the follow-on to **.2.11 Digital Video Monitoring Systems for a Storage Facility-Phase I: Test and Evaluate**.

SKhK will install the digital video system at the storage facility of the RCPS.

Status:

A **Statement of Work** will be drafted for negotiations in early FY99.

3 Chemical Metallurgical Plant Site [CMPS]

3.1 Obvious Physical Protection Upgrades - Phase I [LLNL] October 1998 – September 1999

Actual Cost To Date:		FY99 Request:	
US Personnel:	\$	US Personnel	\$
Russian Personnel:	\$	Russian Personnel:	\$
Equipment:	\$	Equipment:	\$
Total:	\$	FY99 Target +Carryover:	\$ 40,000

Description:

This task is a roll-up of the multiple contracts to implement obvious physical protection upgrades at the Chemical Metallurgical Plant Site. This is a high-priority site [#3] for physical protection upgrades, following the Reactor Plant and Radiochemical Plant Sites.

Proposed Physical Protection system upgrades include:

- Modernization of existing perimeter, physical protection & alarm systems;
- Sensors in sensitive interior areas for intrusion;
- A central alarm system to monitor physical protection systems;
- Follow on upgrades will be considered following the vulnerability assessment.

Proposed Upgrade Elements include:

- Existing perimeter intrusion detection and alarm system
-replace vibration [Delfin-M] and microwave sensor systems;
- Interior detection and alarm systems
-vibration detectors; motion detectors; central alarm system
- [CCTV] and illumination of sensitive buildings and access paths;
- Enclosures around SNM facilities;
- Access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- Perimeter illumination systems, CCTV, and implementation of "Zirconiy" as the central alarm system. This task will be implemented in several contracts with Russian entities: SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company.

Summary Tasks:

.3.1.1 PP Upgrades: Conceptual Design	.3.1.13 CCTV: Install
.3.1.2 PP Upgrades: Detailed Design	.3.1.14 Zirconiy: Work Plan
.3.1.3 Delfin-M: Procure	.3.1.15 Zirconiy: Procure
.3.1.4 Delfin-M: Install	.3.1.16 Zirconiy: Install and Implement
.3.1.5 Sensors: Procure	.3.1.17 Zirconiy: Adjust, Operate, & Train
.3.1.6 Sensors: Install	.3.1.18 Sentry Shelters: Design & Install
.3.1.7 Illumination: Design	.3.1.19 Sector-M Booths: Procure
.3.1.8 Illumination: Procure	.3.1.20 Sector-M Booths: Install & Implement
.3.1.9 Illumination: Install	.3.1.21 Local Area Network [LAN]: Procure
.3.1.10 CCTV: Conceptual Design	.3.1.22 Local Area Network: Implement
.3.1.11 CCTV: Work Plan	.3.1.23 PPS: Align, Tune, Train & Trial Operation
.3.1.12 CCTV: Procure	

Status:

Contract signed in April 1998 with SNPO Eleron to develop Conceptual Design by end FY98.

.3.2 Gamma-ray Measurements: Test & Evaluate [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

SKhK will implement a system of gamma-ray isotopic, non-destructive analysis [NDA] measurements to support MC&A of SNM at the Chemical Metallurgical Plant Site. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the CMPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the CMPS.

Status:

This task will be negotiated in FY99 pending a FY99 budget supplement.

.3.3 Gamma-ray Measurements: Implement [LLNL]

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

Following .3.2 Gamma-ray Measurements: Test & Evaluate, SKhK will implement a system of gamma-ray isotopic non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials [SNM] at the CMPS. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the CMPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the CMPS.

Status:

This task will be negotiated in FY99 pending a budget supplement.

.3.4 Wait-In-Vehicle SNM Monitoring Station at Chemical Metallurgical Plant Site: Implement [LANL] March 1998 – December 1999

Actual Cost To Date:

US Personnel:	\$ 50,000
Russian Personnel:	\$ 238,000
Equipment:	\$ 83,771
Total:	\$ 371,771

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 150,000

Description:

The purpose of this task is to design, construct, test, evaluate, and implement a SNM wait-in-vehicle monitoring station at the Chemical Metallurgical Plant Site for vehicles entering and exiting the plant site. This monitor is the first of its type to be constructed and installed in a Russian facility. The justification for this station is based on the higher detection sensitivity provided by this type of monitor, and on the quantities of desirable SNM present within the CMPS. This task will address the preparation of the construction site and access paths, the design and construction of the monitoring station, the facility to house the electronic control components and guard force, and the trenching and laying of the cables required for control, utilities, communication, and power. It will also include the installation of detectors; data acquisition, analysis and control electronics; the traffic monitoring devices, and other related hardware; as well as the calibrating, testing, and implementing of the monitoring station. Los Alamos National Laboratory will provide the detectors and associated data acquisition, analysis and control electronics required to perform the wait-in-vehicle monitoring operation.

Status:

The design and construction of the monitoring station structures are complete. The detectors and data acquisition, control, and analysis systems were procured from TSA, Longmont, Colorado. A delegation of SKhK technical experts from the Chemical Metallurgical Plant site traveled to TSA in April 1998 for training and acceptance testing. LANL technical experts will travel to Seversk in August to install and calibrate the detection system.

3.5 Computerized MC&A at Chemical Metallurgical Plant Site [ORNL] April 1998 – December 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 50,000

Description:

During the US site visit to Seversk in March 1997, SKhK presented a draft proposal for an MC&A system for HEU/LEU facilities other than the Chemical Metallurgical Plant Site. In June, a proposal for a similar system at the CMPS was presented to a US, HEU/LEU monitor. In a subsequent meeting with SKhK personnel, Victor Petrushev and Alexander Yarygin in August 1997, Victor indicated that the critical issue was the need for precise measurement equipment for the three plant sites involved in the HEU/LEU project: Chemical Metallurgical, Conversion [Sublimation], and Enrichment plant sites. The goal was to supplement the present paper accounting system with more precise measurements that could be entered manually into a computer system. The present plan is to learn from the task to introduce Computerized MC&A at the RCPS. The cost estimate is one million US dollars. The equipment required includes three Shufflers, weighing equipment, etc.

Status:

SKhK drafted a proposal in spring 1998 to procure and deliver measurement equipment and computers for supplementing the paper-based MC&A system at the Chemical Metallurgical Plant Site. Following MINATOM approval, a task was signed in May 1998.

.4 Uranium Enrichment Plant Site [UEPS]

.4.1 Obvious Physical Protection Upgrades @ UEPS Phase I [ORNL] October 1998 – April 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 120,000

Description:

This task is a roll-up of the multiple contracts to implement Obvious Physical Protection Upgrades at the Uranium Enrichment Plant Site.

The Uranium Enrichment Plant Site contains three special nuclear material storage areas. In addition, highly enriched uranium hexafluoride is blended with low enriched uranium on site as part of the HEU/LEU blend-down program. This task will initially provide for "Obvious Physical Protection Upgrades. It will enhance existing physical protection systems installed on the perimeter of the UEPS, and augment intrusion detection to interior spaces of the UEPS. Moreover, a central alarm system will be provided to monitor physical protection systems. Follow-on upgrades will be considered after the vulnerability assessments have been completed.

Proposed Physical Protection system upgrades include:

- Modernization of existing perimeter, physical protection and alarm systems;
- Sensors in sensitive interior areas for intrusion detection;
- Central alarm system to monitor PP; & follow-on upgrades after vulnerability assessment.

Proposed Upgrade Elements include:

- Existing perimeter intrusion detection and alarm system
-replace vibration [Delfin-M] and microwave sensor systems;
- Upgrade interior detection and alarm systems
-vibration detectors; motion detectors; central alarm system
- Provide/replace closed circuit monitoring & illumination: sensitive buildings/access paths;
- Enclosures around SNM facilities; access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- Perimeter illumination systems, CCTV, and implementation of "Zirconiy" as the central alarm system. This task will be implemented as several contracts with SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company:

Summary Tasks:

.4.1.1 PP Upgrades: Conceptual Design	.4.1.8 Illumination: Procure
.4.1.2 PP Upgrades: Detailed Design	.4.1.9 Illumination: Install
.4.1.3 Delfin-M: Procure	.4.1.10 CCTV: Conceptual Design
.4.1.4 Delfin-M: Install	.4.1.11 CCTV: Work Plan
.4.1.5 Sensors: Procure.	.4.1.12 CCTV: Procure
.4.1.6 Sensors: Install	.4.1.13 CCTV: Install
.4.1.7 Illumination: Design	.4.1.14 Zirconiy: Work Plan

.4.1.15	Zirconiy: Procure	.4.1.20	Sector-M Booths: Install & Implement
.4.1.16	Zirconiy: Install / Implement	.4.1.21	Local Area Network [LAN]: Procure
.4.1.17	Zirconiy: Adjust, Operate, & Train	.4.1.22	Local Area Network: Implement
.4.1.18	Sentry Shelters: Design & Install	.4.1.23	PPS: Align, Tune, Train & Trial Operation
.4.1.19	Sector-M Booths: Procure		

Status:

A preliminary proposal was received in December 1996 but the task was postponed at SKhK's request pending the completion of higher priority tasks. It was re-scoped as a design and planning task for FY98 with a requested budget of \$100,000. A task order with SNPO Eleron for the conceptual design will be signed in summer 1998.

.4.2 Gamma-ray Measurements at UEPS: Study, Test & Evaluate Data Analysis Techniques [LLNL] October 1997 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

SKhK is implementing a system of gamma-ray isotopic non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials [SNM] at the UEPS. This includes development and integration of a measurement control program for NDA measurements into an implementation plan for the RCPS. SKhK is preparing a report on the implementation of gamma-ray spectrometric nondestructive assay at the Uranium Enrichment Plant Site.

Status:

LLNL has received, and approved measurement plans. U-Pu Inspectors were received from Canberra and delivered in the spring of 1998. The U-Pu Inspectors are planar HPGE with graded collimator shield for isotopic measurements of uranium and plutonium. FRAM analysis will be evaluated under a contract and equipment provided by Los Alamos. LLNL technical experts will present a gamma-ray software upgrading and training workshop in July 1998.

.4.3 Gamma-ray Measurements at UEPS: Implement [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 80,000

Description:

Following 4.2 Gamma-ray Measurements at UEPS: Study, Test & Evaluate Data Analysis Techniques.3.2, SKhK will implement a system of gamma-ray isotopic non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials at the UEPS. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the UEPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the UEPS.

Status:

This task will be negotiated in FY99 pending a budget supplement.

.5 Conversion [Sublimation] Plant Site [CSPS]

.5.1 Obvious Physical Protection Upgrades @ CSPS Phase I

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

This task is a roll-up of the multiple contracts to implement Obvious Physical Protection Upgrades at the Conversion [Sublimation] Plant Site.

Proposed Physical Protection system upgrades include:

- Modernization of physical protection and alarm systems;
- Repair and modernization of the existing perimeter;
- Sensors in sensitive interior areas for intrusion detection in interior spaces;
- A central alarm system to monitor physical protection systems;
- Follow on upgrades will be considered following the vulnerability assessment.

Proposed Upgrade Elements include:

- Existing perimeter intrusion detection and alarm system
-replace vibration [Delfin-M] and microwave sensor systems;
- Upgrade interior detection and alarm systems
-vibration detectors; motion detectors; central alarm system
- Provide/replace CCTV monitoring, illumination of sensitive buildings and access paths;
- Enclosures around SNM facilities;
- Provide access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- Perimeter illumination systems, CCTV, and implementation of "Zirconiy" as the central alarm system. This task will be implemented as several contracts with SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company.

Summary Tasks:

.5.1.1 PP Upgrades: Conceptual Design	.5.1.13 CCTV: Install
.5.1.2 PP Upgrades: Detailed Design	.5.1.14 Zirconiy: Work Plan
.5.1.3 Delfin-M: Procure	.5.1.15 Zirconiy: Procure
.5.1.4 Delfin-M: Install	.5.1.16 Zirconiy: Install / Implement
.5.1.5 Sensors: Procure.	.5.1.17 Zirconiy: Adjust, Operate, & Train
.5.1.6 Sensors: Install	.5.1.18 Sentry Shelters: Design & Install
.5.1.7 Illumination: Design	.5.1.19 Sector-M Booths: Procure
.5.1.8 Illumination: Procure	.5.1.20 Sector-M Booths: Install / Implement
.5.1.9 Illumination: Install	.5.1.21 Local Area Network [LAN]: Procure
.5.1.10 CCTV: Conceptual Design	.5.1.22 Local Area Network: Implement
.5.1.11 CCTV: Work Plan	.5.1.23 PPS: Align, Tune, Train & Trial Operation
.5.1.12 CCTV: Procure	

Status:

Currently planned for FY00 with Scope and Conceptual Design prepared in early FY00.

.5.2 Gamma-ray Measurements at CSPA: Test and Evaluate [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

SKhK will implement a system of gamma-ray isotopic non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials [SNM] at the CSPA. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the RCPS. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the CSPA.

Status:

This task will be negotiated in FY99 pending a budget supplement.

.5.3 Gamma-ray Measurements at CSPA: Implement [LLNL]

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

Following **.5.2 Gamma-ray Measurements at CSPA: Test and Evaluate**, SKhK will implement a system of gamma-ray isotopic non-destructive analysis [NDA] measurements to support MC&A of Special Nuclear Materials [SNM] at the CSPA. This will include development and integration of a measurement control program for NDA measurements into an implementation plan for the CSPA. SKhK will prepare a report on the implementation of gamma-ray spectrometric nondestructive assay at the CSPA.

Status:

This task will be negotiated in FY99 pending a budget supplement.

.6 Experimental Physics Plant Site [EPPS]

.6.1 Obvious Physical Protection Upgrades @ EPPS Phase I [SNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 20,000

Description:

This task is a roll-up of the multiple contracts to implement Obvious Physical Protection Upgrades at the Experimental Physics Plant Site. The proposed Physical Protection System Upgrades include:

- Modernization of physical protection and alarm systems;
- Repair and modernization of the existing perimeter;
- Sensors in sensitive interior areas for intrusion detection in interior spaces;
- A central alarm system to monitor physical protection systems;
- Follow on upgrades will be considered following the vulnerability assessment.

Proposed Upgrade Elements include:

- Existing perimeter intrusion detection and alarm system
-replace vibration [Delfin-M] and microwave sensor systems;
- Upgrade interior detection and alarm systems
-vibration detectors; motion detectors; central alarm system
- Provide CCTV monitoring and illumination of sensitive buildings and access paths;
- Enclosures around SNM facilities;
- Provide access control to sensitive areas within the plant;
- Emergency power system [3 kW];
- Perimeter illumination systems, CCTV, and implementation of "Zirconiy" as the central alarm system. This task will be implemented as several contracts with SKhK, Eleron, Dedal State Enterprise, ALGONT, and IT Company.

Summary Tasks:

.6.1.1 PP Upgrades: Conceptual Design	.6.1.13 CCTV: Install
.6.1.2 PP Upgrades: Detailed Design	.6.1.14 Zirconiy: Work Plan
.6.1.3 Delfin-M: Procure	.6.1.15 Zirconiy: Procure
.6.1.4 Delfin-M: Install	.6.1.16 Zirconiy: Install / Implement
.6.1.5 Sensors: Procure.	.6.1.17 Zirconiy: Adjust, Operate & Train
.6.1.6 Sensors: Install	.6.1.18 Sentry Shelters: Design & Install
.6.1.7 Illumination: Design	.6.1.19 Sector-M Booths: Procure
.6.1.8 Illumination: Procure	.6.1.20 Sector-M Booths: Install / Implement
.6.1.9 Illumination: Install	.6.1.21 Local Area Network [LAN]: Procure
.6.1.10 CCTV: Conceptual Design	.6.1.22 Local Area Network: Implement
.6.1.11 CCTV: Work Plan	.6.1.23 PPS: Align, Tune, Train & Trial Operation
.6.1.12 CCTV: Procure	

Status:

Currently planned for FY00 with Conceptual Design in early FY99. Procurements will begin pending FY99 supplements to budget.

.7 Site-Wide [SW]

.7.1 Site-Wide Access Control [LLNL] June 1997 - October 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 2,909,726

Description:

This task rolls up a number of contracts addressing several technologies that constitute site-wide access control. It is led by LLNL and involves contracts with SKhK as well as several Russian suppliers, including Dedal State Enterprise, SNPO Eleron, IT Company, and ALGONT.

The task supports the procurement and installation of a fiber optic network for site-wide access control and physical protection for an MC&A information management system for the plant sites within SKhK. It includes a badge fabrication system, Sector-M Booths, and a 45-km fiber optic backbone to link the six main plant sites and the administration building in a communications network. It provides badges for employees at the separate plant sites as well as at the administration building in Seversk, and carries information for the physical protection and MC&A systems. Further, it will provide additional Eleron Sector-M access control booths and access control database software.

Six Sector-M booths will be evaluated at the RPS in Phase I. This access control system will be integrated with the physical protection upgrades to control access to sensitive areas within the plant sites. The first 2.2-km of the total 45-km fiber optic cable has been installed.

Summary Tasks:

.7.1.1	Conceptual Design [IT]	.7.1.8	Fiber Optics Phase II: Work Plan
.7.1.2	Badge Production System: Procure	.7.1.9	Fiber Optics Phase-I: Procure / Install
.7.1.3	Badge Production System: Install	.7.1.10	Fiber Optics Phase II: Procure
.7.1.4	Work Stations: Procure	.7.1.11	Fiber Optics Phase II: Install
.7.1.5	Software Development	.7.1.12	Fiber Optics: Completion
.7.1.6	Central Database Software: Develop	.7.1.13	Database Software [Oracle]: Procure
.7.1.7	Central Database Software: Install		

Status:

An access control workshop was presented at LLNL in December 1996 and a common approach to site-wide access control was agreed upon. The contract was signed in November 1996, and has subsequently been revised to reflect the subcontracting of equipment purchase directly by LLNL rather than through SKhK. LLNL has received the conceptual design study by IT Company of Russia and is proceeding with the procurement of equipment and negotiations for installation and implementation. A request of \$1,300,000 was made for FY98 Phase II for further upgrades, including the remaining 35-km of fiber optic network backbone. Contracts for network design, hardware equipment, management workstation, software requirements, and the first set of network workstations was signed in June 1998.

.7.1.1 Conceptual Design [IT Company] [LLNL] June 1997 – May 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

This conceptual design task contains an in-depth report by the IT Company describing the envisioned SKhK site-wide access control system.

Status:

Completed [5/21/98]

.7.1.2 Badge Production System: Procure [LLNL] April 1998 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

This task supports the procurement of actual hardware to make badges to support the Data Card Image Card II Printer and the HID ISO Proximity II ID Passive Thin Card.

Status:

The task was signed in April1998 and a system demonstration is expected by the end of August 1998.

.7.1.3 Badge Production System: Install [LLNL] June 1997 – May 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 16,2000

Description:

Following the successful demonstration of the tabletop, proof-of-principle by IT Company, the badge making system will be installed at the SKhK administration, including room preparation.

Status:

.7.1.4 Work Stations: Procure [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 216,500

Description:

The procurement by IT Company of six work station servers that will be located in each of the six plant sites.

Status:

Several contracts were signed in June 1998.

.7.1.5 Software: Develop [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 200,000

Description:

This task provides for the development of the software interfaces for the site-wide access control system by IT Company. This includes the development of:

- Design of the central database system,
- Design of the real-time subsystem of the central database,
- Installation and debugging of the central database,
- Installation of the Central database at the SKhK Administration Building,
- Interface to the badge-production system,
- Interface to the Sector-M Booths,
- Demonstration of the interface of the central database to the Sector-M booths,
- Software for workstations,
- Demonstration of Security system workstations,
- Local Area Network [LAN] equipment list,
- Procurement of LAN equipment,
- It will also include a tasks with SKhK to develop the work plan for and the
- Installation of the badge-production hardware

Status:

.7.1.6 Central Database Software: Develop [LLNL] June 1998 – December 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 151,800

Description:

Prior to committing to a full-scale deployment of the site-wide access control system, LLNL has tasked IT Company to provide a tabletop demonstration of the system. The demonstration will consist of the site-wide authorization system software, ORACLE database software, badge-making process, and access authorization of Sector-M Booths.

This task provides for the development of the software interfaces for the site-wide access control system by IT Company. This includes the development of:

- Design of the central database system,
- Design of the real-time subsystem of the central database.

Status:

.7.1.7 Central Database Software: Install [LLNL] June 1998 – December 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 179,000

Description:

Installation and debugging of the central database, and installation of the Central database at the SKhK Administration Building,

Status:

.7.1.8 Fiber Optics Phase II: Comprehensive Work Plan [LLNL] April 1998 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

Installation of the remaining 35 km of fiber optics backbone.

Status:

Completed.

.7.1.9 Fiber Optics Phase I: Procure / Install - [LLNL] September 1997 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

This task provides for the procurement of the first 10km of the fiber optic backbone.

Status:

Completed.

.7.1.10 Fiber Optics Phase II: Procure [LLNL] April 1998 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

Procuring cable and connectors for 35 km.

Status:

This was signed in April 1998 and has been completed.

.7.1.11 Fiber Optics Phase II: Install [LLNL] April 1998 – September 1998

Actual Cost To Date:

US Personnel: \$
Russian Personnel: \$
Equipment: \$
Total:

FY99 Request:

US Personnel \$
Russian Personnel: \$
Equipment: \$
FY99 Target + Carryover: \$ 95,400

Description:

Install the remaining 35km of fiber optic cable backbone.

Status:

This was signed in April 1998.

.7.1.12 Fiber Optics: Completion [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 210,000

Description:

Interface and define the equipment between all the facilities.

Status:

This task will be negotiated in FY99.

.7.1.13 Access Control Database Software [Oracle]: Procure [LLNL] April 1998 - July 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

Procured, IT Company.

Status:

Completed in June 1998.

.7 Site-Wide [SW]

.7.2 Site-Wide Material Control & Accounting [MC&A]

Description:

Seventeen site-wide MC&A tasks are either active or being negotiated in FY99. These tasks include:

- MPC&A Plan Development,
- Tamper Indicating Device Evaluation and Implementation,
- Physical Inventory Taking, Transfer Accountancy, and Material Balance Closure Procedures and Demonstration,
- Analytical Measurements and Laboratory Standards Control Program,
- Weighing Systems,
- Measurement Control Program,
- Calibration and Measurement Control for Weighing Systems,
- Bulk Volume Measurements Control Program,
- Continuous Automatic Verification Inventory System,
- Information Security,
- Rapid Inventory Systems,
- Hold-up Measurements Control System, and,
- Computerized Material Accounting.

Status:

.7.2.1 Site-Wide [MPC&A] Plan: Develop [LANL] TBD – October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 100,000

Description:

This task will review the overall MPC&A requirements of a selected facility and develop a design and plan for the implementation of several tasks as part of an integrated package. The package will initially include the development of a computerized MC&A system; gamma-ray and neutron measurements; bar codes, holdup and weight measurements.

Status:

Statement of Work [SOW] has been drafted but not presented. This task has been modified and the requested amount of support is \$100,000.

.7.2.2 Tamper Indicating Device [TID] at All Plant Sites: Workshop and Evaluation [PNNL] May 1996 – December 1997

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

The original task order is segmented into three subtasks:

- Workshop on TIDs,
- A comparison of US and Russian seals and TIDs, and,
- Implementation of a TID and seals program at SKhK.

The purpose of the TID Workshop was to show SKhK the 'how and why' of the US nuclear material accountability program at DOE facilities. During the workshop, SKhK personnel had an opportunity to study and evaluate different varieties of American TIDs and to identify weaknesses and strengths of each type. SKhK will decide if they wish to continue and move forward in developing and implementing a structured TID program at their sites.

Status:

The task order was signed in June 1996. PNNL experts conducted the workshop during the week of October 7-10, 1996. Plant personnel provided five thousand TIDs for evaluation and PNNL is currently awaiting the report evaluating the TIDs.

.7.2.3 TID at All Plant Sites: Implementation [PNNL] December 1997 – September 0001

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 86,000

Description:

This task will place TIDs on containers of special nuclear material at all sites within SKhK and implement a computerized database to track TID usage. It will integrate the database with the Rapid Inventory and Computerized MC&A tasks pending the completion of successful testing, and evaluation of Task **.7.2.2 Tamper Indicating Device (TID) Workshop and Evaluation.**

Status:

Currently planned for FY99.

.7.2.4 Development of Comprehensive Procedures For Physical Inventory Taking, Transfer Accountancy, and Material Balance Closure [BNL] August 1998 - September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 120,000

Description:

This task will be executed in three phases:

Phase I- Physical Inventory Taking at an Item Facility

One major goal of improvements in material protection, control, and accounting is to perform a physical inventory taking [PIT] of the nuclear material present at nuclear facilities. A PIT includes ensuring that all nuclear material on inventory is included in the facility records and the content of items or containers [or at least a appropriate random sample thereof] corresponds to the declared values. It is the purpose of Phase I of this task to prepare for and demonstrate the comprehensive procedures for a PIT on a sub-population of nuclear material items at an item facility. SGCE staff gained experience for the task by employing rapid inventory procedures at an SKhK facility.

Phase II- Transfers Accountancy Procedures and Demonstration

A second major goal of MPC&A improvements is to verify/confirm transfers of the nuclear material that moves between material balance areas [MBAs] in the same or different nuclear facility. Planning and demonstrating the procedures for the transfer accountancy are important to ensure that all items involved in the transfers are included in the records for both MBAs. The content of items should correspond to the recorded values; shipper/receiver differences based on measurements should be analyzed; and transfer under seal should be investigated.

Phase III- Material Balance Closure

A third major goal, the most complicated of the three, is closing the material balance at a bulk processing facility. Thus, building upon the foundation of work covering the PIT and transfer accountancy, the material balance for a processing facility, over a specified period of time, shall be closed and evaluated as part of the task.

Status:

Planned negotiations in FY99.

**.7.2.5 Analytical Measurements and Laboratory Standards Control Program [PNNL]
October 1998 - September 0001**

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 80,000

Description:

Status:

7.2.6 Weighing Systems Phase I [BNL] November 1996 – March 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 384,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 40,000

Description:

The weighing of materials is a key component of the inventory process. This task was initiated to not only upgrade the weighing equipment at SKhK, but also to examine the entire metrology process including certification of standards, manufacture of working standards, calibration, weighing procedures, and the statistics associated with the weighing operations. SKhK provided a comprehensive report, which included flow diagrams for all the major processes, weighing requirements, computer networks for data transfer, and a detailed equipment list including requirements for certified mass standards and the manufacture of working standards. The report provided the basis of the procurement of scales from the leading scale manufacturers, Mettler-Toledo and Sartorius.

This task has been prepared in two phases. It is for large-scale implementation of improved scales throughout SKhK. It involves a substantial acquisition of equipment, including computers obtained from commercial suppliers [procured by ORNL]. In addition, a Bulk Measurement Control Workshop will be included in Phase II.

Status:

- The Phase I contract was signed in December 1996. The first phase of implementation took two years because of delays in obtaining licenses, and finalizing the equipment list. The revised equipment list was finalized and supplemental funding was provided to account for the increase in equipment cost based on discussions between US, SKhK experts and the major scale vendors, Mettler-Toledo and Sartorius, with representatives in Russia.
- The equipment: 29 digital scales ranging from the precision laboratory analytical balances for weighing gram size samples up to the rugged industrial scales at the 6000 kilogram level for the bulk containers was delivered and installed in 1998.
- SKhK was provided with a number of Pentium-type computers and software that will be used in automating the weighing operations. Certified mass standards were purchased from Metron-Sib in Siberia that will be used for both calibration of the large scales and by SKhK for the production of working standards needed during daily plant operations.
- SKhK is utilizing this equipment to develop operating procedures and training programs. Installation and acceptance took place in March and April 1998 at the Radiochemical Plant, Chemical Metallurgical Plant, Conversion [Sublimation] Plant, and Enrichment Plant sites. BNL technical experts will travel to Seversk in July 1998 to verify installation, resolve any operational issues and begin negotiations for Phase II.

.7.2.7 Weighing Systems Phase II [BNL] August 1998 – December 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 450,000

Description:

A bulk measurement workshop is being planned in which US and Russian metrology experts will exchange information on weighing methodologies and the statistics of bulk measurements. In addition, it is expected that this phase of the task, covering the remaining weigh stations in these plants, will be initiated by mid-summer, 1998.

Status:

Planned for FY99.

.7.2.8 Measurement Control Program: Weights, Volume / NDA [PNNL] February 1998 – September 0001

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 30,000

Description:

Status:

\$30,000 Carryover.

.7.2.9 Calibration and Measurement Control for Weighing Systems [BNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 100,000

Description:

The purpose of the task is to develop and implement a calibration and measurement control program that will account for the uncertainties associated with nuclear material weight measurements. This program will be essential to close the material balance of a physical inventory. The task will consider the entire scale calibration and weighing processes, compare US and Russian requirements, agree on the method of statistical analysis, and arrive at an acceptable approach for SKhK.

The task includes two workshops:

- one for metrology experts at SKhK who will examine both the practical aspects of weight measurements, including modern electronic scale characteristics, calibration procedures, and the manufacture and use of working standards; and,
- one probably at the RMTC in Obninsk, where experts will examine statistical analysis of measurement control data collected to support the measurement process.

The products of the task will be the plans and procedures for measurement control at SKhK to be in compliance with emerging Russian regulations and consistent with modern, accepted practices.

Status:

Proposed for FY99, pending budget approval.

.7.2.10 Bulk Volume Measurements Control Program [PNNL] October 1998 - September 0001

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

Status:

.7.2.11 Continuous Automated Verification Inventory System [CAVIS] / Modular Storage Vault [ORNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

This task is to provide for two hundred Russian-made, Continuous Automated Verification Inventory System sensors computer-monitoring systems, and two modular storage vaults. This task is not intended to provide storage capacity, but rather to test and evaluate a continuous verification system in a Russian production environment. SKhK currently stores 20,000 individual special nuclear material items in multiple special storage facilities. The continuous verification is intended to improve material control while at the time reducing costly inventory requirements. The modular storage vaults are required to provide a controlled test facility. If the demonstration is successful, provision of additional sensors would be considered; however, provisions for an additional storage vaults would not be the responsibility of the current MPC&A program.

Status:

On-hold. The task priority has been re-evaluated and assigned second priority status for FY99 with a budget of \$225,000 for development of a modular storage vault.

.7.2.12 Information Security for MC&A [LLNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 55,000

Description:

This task is to facilitate the training of SKhK personnel in information and network security by using courses from Russian vendors, e.g. IT. Course included:

- Scientific Information Center for Security Problems;
- St. Petersburg Network Security Administration Course;
- Network Academy [LANIT] in Moscow; and,
- Information System Security Foundations for Windows NT.

The task covers travel, accommodations, tuition and time costs.

Status:

Funding for existing Russian courses presented by commercial enterprises.

**.7.2.13 Rapid Inventory Systems for Special Nuclear Materials: Develop [ORNL] June 1998
– November 1999**

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$	50,000
Russian Personnel:	\$	150,000
Equipment:	\$	190,000
FY99 Target +Carryover:	\$	390,000

Description:

The purpose of this task is to test, evaluate, and implement methods for rapid inventory taking and confirmation of the presence of special nuclear material utilizing established bar-code technology and a simplified computer accounting system. The methods will be evaluated under actual field conditions and the practicality for near-term implementation at other SKhK plant sites will be established. The implementation of rapid inventory systems will be coordinated with the computerized accounting system task to provide a basic computerized accounting system database. Implementation will begin in the PuO₂ storage facility of the RCPS and the experience gained there will be transferred to other plants. BNL has primary responsibility to support procedures and methodologies for performing inventories. LANL has the primary responsibility for coordinating this system with the computerized inventory accounting system. ORNL has provided bar code and computer equipment. This task will result in placing approximately 64,000 items of special nuclear material in a computerized accounting system with identified machine-readable barcodes.

Status:

This task was signed under the LANL Master Task Order during the June 1996 site visit. A detailed equipment list will be developed as part of the work plan. The need for additional equipment will be determined as the project progresses and as jointly agreed upon by the US implementation team and SKhK. An initial deliverable was rejected by ORNL in August 1997 because it did not include the specific information required by the Statement of Work. Two ORNL technical specialists visited SKhK in September 1997 to demonstrate the use of the equipment that had already been delivered. The original scope of the task was too optimistic and difficult to manage, so it has been re-scoped by ORNL.

.7.2.14 Holdup Measurement and Control System [HMSIII] Monitoring - Phase I: Investigate [ORNL] December 1996 December 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 6,200

Description:

This task separates the automated collection of holdup data from the item inventory; it is a follow-on task to 7.2.13 **Rapid Inventory Systems for Special Nuclear Materials:**

Develop:

SKhK personnel responsible for implementing barcode-based inventories were not interested in measurements of in-process holdup. One system to integrate NaI-based gamma-ray spectrometry equipment with a barcode reader/computer will be provided. Software to analyze collected data will also be provided. The software code will be provided to allow translation of the user interface into Russian. SKhK will implement the first system to measure special nuclear material in the RCPS.

Status:

SKhK specialists attended a Holdup Monitoring Fundamentals Workshop at LANL in November 1996. SKhK has surveyed its processes for holdup and characterized process holdup points in a database for eventual input into the HMS3 software database. In June 1997, multi-channel analyzers, gamma-ray detectors, palmtop bar code reading computers, power supplies, and cabling were delivered. Testing and calibration of the equipment began in July 1997. Additional desktop and laptop computers were delivered in August 1997.

Tentative Schedule:

- September 1997 - SKhK will begin bar coding of identified holdup points; HMS3 software to be delivered, begin document translation;
- November 1997 to June 1998 - SKhK will field test the integrated system with HMS3 software;
- October 1998 - Submission of final report detailing the work and the results of using the ORNL-supplied system and HMS3 software.

Awaiting funding: \$6,200 Carryover; \$75,000 FY99 Lab Target Budget.

.7.2.15 Holdup Measurement and Control System [HMSIII] Monitoring - Phase II: Implement [ORNL] October 1998 - September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 110,000

Description:

This task separates the automated collection of holdup data from the item inventory, it is a follow-on task to the Rapid Inventory Systems Task. SKhK personnel responsible for implementing barcode-based inventories were not interested in measurements of in-process holdup. One system to integrate NaI-based gamma-ray spectrometry equipment with a barcode reader/computer will be provided. Software to analyze collected data will also be provided. The software code will be provided to allow translation of the user interface into Russian. SKhK will implement the first system to measure special nuclear material in the RCPS.

Status:

SKhK specialists attended a Holdup Monitoring Fundamentals Workshop at LANL in November 1996. SKhK has surveyed its processes for holdup and characterized process holdup points in a database for eventual input into the HMS3 software database. In June 1997, multi-channel analyzers, gamma-ray detectors, palmtop bar code reading computers, power supplies, and cabling were delivered. Testing and calibration of the equipment began in July 1997. Additional desktop and laptop computers were delivered in August 1997.

Tentative Schedule:

- September 1997 - SKhK will begin bar coding of identified holdup points; HMS3 software to be delivered, begin document translation;
- November 1997 to June 1998 - SKhK will field test the integrated system with HMS3 software;
- October 1998 - Submission of final report detailing the work and the results of using the ORNL-supplied system and HMS3 software.

\$150,000 FY99 lab Target Budget.

.7.2.16 Computerized MC&A for the other SKhK Plant Sites [LANL] June 1999 – June 2000

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 100,000

Description:

A task to perform site-wide implementation of computerized MPC&A at the remaining plant sites to provide an integrated nuclear material accounting system. The prospects for this task will depend on the experience resulting from the initial implementation of a computerized MC&A system at the Radiochemical Plant Site.

Status:

At present, this task is a placeholder in anticipation of the successful completion of the Computerized MC&A task at the Radiochemical Plant Site, at which time a second SKhK plant site will be selected on a priority basis for implementation. This task; however, probably will not be implemented in FY99.

.7 Site-Wide [SW]

.7.3 Physical Protection [PP]

Description:

Twenty-seven Category-II SNM pedestrian portal monitors are in operation at the principal access control points of the six plant sites of SKhK and the main entrances to the city of Seversk. Twenty-seven handheld monitors were also supplied at these locations to assist in personnel protection, material control and resolving radiation alarms. Complementing the pedestrian portal monitors are twenty-seven Russian-made metal detectors. Additional pedestrian monitors are scheduled for installation at the access control portals of interior buildings at several plant sites during the summer of 1998.

Fifteen drive-through vehicle portal monitors, including both two- and three-pillar versions, are being implemented site-wide in 1998. The reliability of these monitors when subjected to severe environmental conditions was demonstrated in extensive operational testing throughout several Siberian winters.

Vehicle portal monitoring at plutonium sites is being augmented with neutron detection panels for improved sensitivity. The panels were designed, fabricated, and tested at the Los Alamos National Laboratory.

A wait-in-vehicle monitoring station, the first of this type in Russia, is under construction at the Chemical Metallurgical Plant site. Acceptance testing of the radiation detectors and the data acquisition and control systems was successfully performed in May 1998 at the manufacturer's facility. Installation and calibration in Seversk are scheduled for August 1998. All vehicle monitors are scheduled for installation and operation during 1998.

.7.3.1 Nuclear Material Portal Monitoring Using Plastic Scintillation and Hand-Held Radiation Detectors: Test, Evaluate, and Implement [LANL] June 1995 - September 1997

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 264,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

The purpose of this task is to evaluate the suitability of US Category II SNM pedestrian, vehicle, and handheld monitors for the access control portals of SKhK facilities, including a determination of the procedures and methods for monitoring personnel, packages, containers, and vehicles. The furnished equipment included two TSA-700 Pedestrian Portal Monitor, one TSA-250 Drive-Through Vehicle Portal Monitor, twenty-four TSA- CDM crash-door monitors, and two TSA Hand-held monitors. SKhK, with US assistance, was tasked to re-design and fabricate the equivalent of six additional pedestrian portal monitors from the twenty-four crash-door monitors. Deliverables include a detailed work plan to install, calibrate, test, and evaluate the furnished equipment. The final report describes the activities completed in the execution of the task, problems encountered, resolution, and recommendations for follow-on tasks.

Status:

This task was successfully completed in September 1997. The evaluation resulted in a follow-on task [.7.3.2] to deliver pedestrian portal monitors for all the remaining access control portals of the six major plant sites at SKhK. SKhK reconfigured the crash-door monitors and improved upon the reliability of the vehicle portal monitor with an additional heater to survive the Siberian winter.

.7.3.2 Nuclear Material Portal Monitoring using Plastic Scintillation and Hand-held Radiation and Metal Detectors: Test, Evaluate, and Implement [LANL] September 1995 - June 1997

Actual Cost To Date:		FY99 Request:	
US Personnel:	\$	US Personnel	\$
Russian Personnel:	\$	Russian Personnel:	\$
Equipment:	\$	Equipment:	\$
Total:	\$ 898,600	FY99 Target +Carryover:	\$ 0

Description:

This task is the follow-on to task 7.3.1 Nuclear Material Portal Monitoring Using Plastic Scintillation and Hand-Held Radiation Detectors: Test, Evaluate, and Implement. It includes a full complement of portal monitoring equipment, with twenty-seven Russian-made pedestrian metal detectors, for the main access control points of the six major facilities, and the city of Seversk.

The furnished equipment included:

- four modified TSA-600 Pedestrian Portal Monitors,
- four TSA-700 kits,
- material for completing assembly of the TSA-700 kits,
- forty-eight TSA-CDM crash-door monitors,
- eleven hand-held monitors,
- twenty-eight Eleron Priznak Metal Detectors, and,
- one video camera.

Status:

This task was successfully completed in September 1997. The purchase, delivery, installation, and implementation of twenty-eight metal detectors by Eleron was a successful groundbreaking exercise in procuring Russian-made equipment. SKhK staff reconfigured the crash-door monitors.

.7.3.3 Nuclear Material Vehicle and Pedestrian Portal Monitors Using Plastic Scintillation and Hand-held Radiation Detectors for Control Access Points @ SKhK & City of Seversk: Procure [LANL] August 1996 – February 1999

Actual Cost To Date:

US Personnel:	\$ 50,000
Russian Personnel:	\$ 85,000
Equipment:	\$ 710,000
Total:	\$ 845,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 206,400

Description:

This task provides fourteen additional vehicle portal monitors, including neutron monitors and a vehicle wait-in station, to instrument all major vehicle portals at all SKhK plant sites and the perimeter of the city of Seversk. Included, are:

- One drive-through vehicle monitor with neutron panels for the Experimental Physics Plant Site;
- One drive-through vehicle monitor with additional horizontal detector and one pedestrian portal monitor for the Conversion [Sublimation] Plant Site;
- One drive-through vehicle monitor for the Reactor Plant Site;
- One vehicle monitoring station for the Chemical Metallurgical Plant Site;
- Two drive-through vehicle monitors with additional horizontal detectors and one pedestrian portal monitor for the Radiochemical Plant Site;
- Three drive-through vehicle monitors, one with neutron detection panels, and one pedestrian portal monitor at the Enrichment Plant Site;
- Five drive-through vehicle monitors for the main access control points to the city, and,
- Fourteen hand held radiation monitors.

Status:

Equipment procurement began in September 1996. The neutron panels were designed, fabricated, and tested at LANL, and shipped in August 1997. They were installed and calibrated by LANL specialists in September 1997. The SKhK level-of-effort to design and construct the vehicle wait-in monitoring station was negotiated as a separate task. The list of spare parts required for long-term sustainability is being negotiated.

.7.3.4 Diagnostic and Maintenance Equipment for Portal Monitors [LANL] October 1998 – March 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 65,000

Description:

This task will provide the funding to purchase oscilloscopes, voltmeters, and other diagnostic and maintenance equipment to support calibrating and maintaining thirty-one pedestrian portal monitors and fifteen vehicle portal monitors. The task will not support the necessary funding for a complete complement of equipment.

Status:

Planned for FY99.

.7 Site-Wide [SW]

.7.4 Site-Wide Other

“Other” Site-Wide tasks, which do not fall into a specific MPC&A category, include:

- Inter-site Transportation of Sensitive Materials Upgrades,
- Statistical Evaluation of Holdup
- Discrepancies in Bulk Materials,
- Automated Transport Security System,
- HEU/LEU Purchase Involving SKhK, Mayak, K-45, and Sverdlovsk,
- Radio Communications Upgrades,
- Telecommunications Enhancements,
- Computer Assisted Drafting Equipment,
- Measurement Control Workshops,
- Analytical Measurement Support,
- Safeguards Effectiveness Evaluation, and,
- Evaluation of MPC&A System Failure Modes.

.7.4.1 Inter-site Transportation of Sensitive Materials Upgrades: Evaluate Technology [SNL] December 1996 – June 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 16,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 271,400

Description:

This task provided secure vehicles [truck and escort van] for inter-site transportation of special nuclear material. The truck is a heavy-duty transportation vehicle modified by a Russian contractor for use on site. The escort van for security guards has also been modified for SKhK use.

Status:

In October 1996, the cost of the upgraded vehicle was \$355,400 according to a response to an RFQ issued by SKhK. The contract was revised to allow SNL to purchase the vehicle directly from the vendor. A Russian KMAZ truck was modified by KBATO, a Russian company. The final design includes substantial access delay. A modified personnel van to carry escorts is also being supplied under this contract.

Delivery and implementation of both vehicles occurred in spring 1998, and a functional demonstration is scheduled for June 1998. A follow-on task for additional sets of vehicles will be administered out of the crosscutting transportation project.

.7.4.2 Statistical Evaluation of Holdup Discrepancies in Bulk Materials – Phase I: Develop Standard Methodology [LANL] June 1996 – September 1997

Actual Cost To Date:

US Personnel: \$
Russian Personnel: \$
Equipment: \$
Total: \$

FY99 Request:

US Personnel \$
Russian Personnel: \$
Equipment: \$
FY99 Target +Carryover: \$ 0

Description:

This proposal was put forward by Mikhail Kuzminykh at the urging of SKhK Director General Khandorin during the Project Team site visit in October 1995.

Status:

This task was signed in June 1996. The Workshop on Statistical Methods of Analyzing Material Balances for Material in Bulk Form was held in Los Alamos from July 22-26, 1996. Six SKhK staff attended the workshop along with US experts in statistical analysis.

Deliverables completed in September 1996:

- 4.3, a Model Software Program for the Industry Standard,
- 4.4, Protocol of the Results of the Workshop, and deliverable
- 4.5, A List of Hardware and Software for the Execution of the Work Plan.

A follow-on workshop was held in Los Alamos in August 1997. The task was completed with the delivery of the final report in the fall of 1997.

FY99 funds are requested to develop a follow-on task.

.7.4.3 Statistical Evaluation of Holdup Discrepancies in Bulk Materials – Phase II: Develop Standard Methodology [LANL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 20,000

Description:

The funding for this task is to develop a “follow-on” programs to **.7.4.2 Statistical Evaluation of Holdup Discrepancies in Bulk Materials – Phase I: Develop Standard Methodology**

Status:

Scheduled for FY99.

.7.4.4 Automated Transport Security System [ATSS]: Design Analysis [ORNL] May 1997 – May 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 70,000

Description:

Eleron is assembling an Automated Transportation Security System (ATSS) for use in Russia. The ATSS project provides approximately thirty-five hardened railcars with enhanced security systems, satellite tracking and communications. SKhK provided one of the prototype model 61-524 railcars to Eleron. In this task ORNL has contracted SKhK to interface with Eleron to review the transportation tasks, provide input, point out potential problems, and assist with the interface between the transportation tasks and the MPC&A tasks at SKhK. This coordination could result in cost savings if both the fixed sites and transportation teams keep open channels of communication. If similar MC&A systems are being placed at the sites, it may be possible for the transportation system to automatically access information for use during transport, or there may be site-specific work that could assist the sites in the use and loading of the transportation casks.

Status:

The modified railcar was delivered to SKhK in early 1998. A technical expert from SNL visited SKhK in the spring of 1998 to inspect and evaluate the upgrades to the 61-524 rail car. On the basis of the successful inspection of the railcar, approval was received from DOE-HQ to proceed with the rapid upgrades to the rest of the railcars.

\$50,000 Carryover.

.7.4.5 HEU/LEU Purchase Involving SKhK, Mayak, K-45, and Sverdlovsk [ORNL]

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$	
Russian Personnel:	\$	
Equipment:	\$	
FY99 Target +Carryover:	\$	0

Description:

In discussions in August 1997, SKhK supports the idea, although premature, of coordinating activities associated with the HEU/LEU purchase agreement, such as the labeling of containers with barcodes, tags, measurements and procedures to facilitate verification of materials transported between the Russian facilities.

Status:

SKhK, when presented with the idea, was not interested in pursuing this task at this time.

.7.4.6 Initial Radio-communications Upgrades [PNNL] Month YEAR – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 450,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

The radio communications enhancements will include:

- Development of a General User Requirements Document [radio system equipment needs assessment],
- Maintenance Program Plan for routine, preventative, and emergency maintenance,
- Installation Plan that includes facility modifications, equipment installation, acceptance testing, and field testing,
- Radio Use Plan that addresses training and operations/emergency procedures,
- Installation/implementation of the system, and,
- Testing of the system and hosting an on-site visit and demonstration.

Status:

SKhK personnel solicited input from the Motorola dealer in Tomsk. PNNL personnel reviewed the proposals to ensure that an adequate, cost-effective system is provided. A workshop was held at Rhode Schwarz in Munich, Germany, with SKhK and PNNL specialists. The equipment list was finalized and procurement of equipment is in process. PNNL requested a supplemental \$100,000 for FY98 to reflect an increase in the cost of the equipment. Equipment negotiations fell through with Capital Technologies and the PNNL team was re-directed to RCC and a \$450K equipment order is in place.

.7.4.7 Telecommunications Enhancements for MPC&A [PNNL] October 1998 - September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$ 450,000

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 5,000

Description:

The radio system upgrade installed in July 1998 will be started in September 1998 and completed during FY99. The objective is to identify and implement uses of the radio system to increase overall protection of SKhK. An example is optimizing the manner in which physical protection system alarms are transmitted to the site command center. The radio system will be used for primary and/or backup data transmission. US experience will be combined with existing SKhK practice to arrive at the most efficient approach to system optimization.

Status:

.7.4.8 Computer-Aided Drafting [CAD] Design Equipment [LLNL] March 1998 – September 1998

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 46,047

Description:

This task provides computer-aided drafting equipment to expedite the development of detailed design plans for the implementation of physical protection upgrades.

Status:

The equipment list was provided to LLNL by SKhK team members and currently the equipment is being procured.

FY98 Carryover: \$46,047

.7.4.9 Measurement Control Workshop [BNL] August 1998 – July 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 0

Description:

Status:

.7.4.10 Analytical Measurement Support: Destructive Analysis Program Development [ORNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target + Carryover:	\$ 40,000

Description:

This task will address the requirements for analytical measurements at SKhK, including laboratory destructive analysis methods. The objective is to determine the need to upgrade measurement equipment as required. Measurement methods would include uranium concentration analysis using the Davis-Gray titration technique and plutonium concentration methods using coulometry.

Status:

The execution of this task will depend on the availability of supplemental FY99 funding.

.7.4.11 Safeguards Effectiveness Evaluation [PNNL] October 1998 – September 1999

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$	
Russian Personnel:	\$	
Equipment:	\$	
FY99 Total:	\$	0

Description:

The overall effectiveness of the existing and planned SKhK safeguards system will be evaluated in this task. The emphasis will be on identifying and evaluating factors that could lead to reduced-effectiveness in the future with varying degrees of management attention and institutional control. Factors evaluated will include system operability versus time, staff, and management motivation versus time and events, and societal and cultural factors.

Status:

The execution of this task will depend on the availability of supplemental FY99 funding.

**.7.4.12 Evaluate Potential Out-Year MPC&A System Failure Modes [PNNL] October 1998
– September 1999**

Actual Cost To Date:

US Personnel:	\$
Russian Personnel:	\$
Equipment:	\$
Total:	\$

FY99 Request:

US Personnel	\$
Russian Personnel:	\$
Equipment:	\$
FY99 Target +Carryover:	\$ 0

Description:

The long-term viability of MPC&A systems will be assessed in terms of the impact of potential failure modes. Failure modes will be identified based on US and international experiences and include the effects of a lack of: spare parts, proper maintenance, operator and/or management training, operator and/or management interest or incentive, and actions by those attempting to subvert the systems.

Status:

The execution of this task will depend on the availability of supplemental FY99 funding.

PM01: US Project Team Meetings

Laboratory Budget:

• BNL	\$ 35,000	• ORNL	\$ 35,000
• LANL	\$100,000	• PNNL	\$ 70,000
• LLNL	\$ 35,000	• SNL	\$ 35,000

Total FY99 \$310,000

Description:

Host meetings and/or travel to various US sites for regular Project Team Coordination meetings to review the status of the project, plan future tasking activities, exchange experiences, identify problems, and develop corrective actions. PNNL will host the Joint Project team Meeting in the US in FY99.

PM02: US Project Team Management and Coordination

Laboratory Budget:

• BNL	\$ 50,000	• ORNL	\$ 50,000
• LANL	\$ 300,000	• PNNL	\$ 50,000
• LLNL	\$ 100,000	• SNL	\$ 50,000

Total FY99 \$ 600,000

Description:

To organize and manage the project effectively, detailed plans are developed individually by each US laboratory and maintained and updated periodically to coordinate and integrate MPC&A activities across the entire Siberian Chemical Combine. The size of the Combine, the number and diversity of major facilities, the multiple contracts, and the number of US laboratories participating in the project require considerable and constant management oversight in order to coordinate efforts, identify problems, and develop corrective actions.

The Project Team Leader [LANL] is the point of contact with the Department of Energy and maintains the liaison with the DOE/HQ, SKhK, and the other laboratory team members, oversees budget planning, and coordinates the Project Team activities.

SECTION VII

ANNEX II

- **Project team Personnel**
- **Siberian Group of Chemical Enterprises**
- **SKhK Site Personnel**

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I. DOE / HQ Personnel

• Gary Tittermore	DOE Program Manager
• Art Trujillo	DOE

II. US Project Team Personnel

Richard E. Morgado	LANL Project Leader
• Bruce Barry	SNL
• Bill Buckley	LLNL
• Leslie Fishbone	BNL
• Jim Jarrett	PNNL
• Bill Toth	ORNL

III. SKhK Personnel

[Director and Staff]

• Gennady Petrovich Khandorin	Director General
• Igor Vladimirovich Goloskokov	Deputy Director General
• Vladimir Mikhailovich Kondakov	Chief Engineer
• Gennady Sergeevich Andreev	Deputy Chief Engineer
• Sergei Petrovich Kurdyanko	Chief Mechanical Engineer
• Evgeni J. Shevchenko	Engineer

[Department Personnel]

• Gennady Tikhonovich Kirillov	Head of Department of Nuclear Safety
• Vladimir Ivanovich Sinyaevsky	Head of Department
• Mikhail Kondratevich Kuzminykh	Head of Department
• Alexander Mikhailovich Runda	Deputy Department Head, Security
• Vladimir Vasilyevich Evseyenko	Deputy Department Head
• Serge Nikolayevich Gerasimov	Deputy Department Head

[Plant Site Directors]

• Valery Ivanovich Fatin	Reactor
• Vladimir Alexandrovich Skuratov	Radiochemical
• Gennady Grigorievich Shadrin	Chemical Metallurgical
• Maxim Ivanovich Sterkhov	Uranium Enrichment
• Yuri Fedorovich Kobzar	Conversion [Sublimation]
• Petr Grigovievich Savinykh	Experimental Physics

IV. Project Personnel By Name

NAME	LAB	TELEPHONE	FACSIMILE	E-MAIL
Acobyan, Raymond	LANL	505 667 2075	505 667 0978	acobyan@lanl.gov
Berry, R. Bruce	SNL	505 845 8018	505 844 0001	rbberry@sandia.gov
Bicha, Wes	ORNL	423 576 7136	423 574 4643	bichawj@ornl.gov
Bonner, Mike	BNL	516 344 3340	516 344 7533	mbonner@bnl.gov
Buckley, Bill	LLNL	510 423 4581	510 422 3160	wbuckley@llnl.gov
Fishbone, Leslie	BNL	516 344 4227	516 344 7533	fishbone@bnl.gov
Griggs, James	PNNL	509 372 4158	509 372 4316	jr_griggs@ccmail.pnl.gov
Jarrett, Jim	PNNL	509 372 4347	509 372 4316	jh_jarrett@pnl.gov
Logsdon, Randy	LLNL	510 424 5587	510 423 4451	logsdon1@llnl.gov
Martin, Elgin R.	LANL	505 665 0499	505 665 3657	raymartin@lanl.gov
Morgado, Richard	LANL	505 667 2013	505 667 0978	rmorgado@lanl.gov
Rodriguez, Cheryl	LANL	505 667 9058	505 667 0978	crodriguez@lanl.gov
Rosev, Boris	LANL	505 665 6304	505 667 0978	borris_rosev@lanl.gov
Suda, Sylvester	BNL	516 344 2469	516 344 7533	suda@bnl.gov
Toth, Bill	ORNL	423 574 7345	423 574 4643	tothwj@ornl.gov
Weil, Brad	ORNL	423 574 7147	423 574 4643	weilbs@ornl.gov
Zardecki, Andrew	LANL	505 665 2812	505 667 7626	azz@lanl.gov

V. Project Personnel By Laboratory

NAME	LAB	TELEPHONE	FACSIMILE	E-MAIL
Bonner, Mike	BNL	516 344 3340	516 344 7533	mbonner@bnl.gov
Fishbone, Leslie	BNL	516 344 4227	516 344 7533	fishbone@bnl.gov
Suda, Sylvester	BNL	516 344 2469	516 344 7533	suda@bnl.gov
Acobyan, Raymond	LANL	505 667 2075	505 667 0978	acobyan@lanl.gov
Martin, Elgin R.	LANL	505 665 0499	505 665 3657	raymartin@lanl.gov
Morgado, Richard	LANL	505 667 2013	505 667 0978	Rmorgado@lanl.gov
Rodriguez, Cheryl	LANL	505 667 9058	505 667 0978	Crodriguez@lanl.gov
Rosev, Boris	LANL	505 665 6304	505 667 0978	Borris_rosev@lanl.gov
Buckley, Bill	LLNL	510 423 4581	510 422 3160	wbuckley@llnl.gov
Logsdon, Randy	LLNL	510 424 5587	510 423 4451	logsdon1@llnl.gov
Bicha, Wes	ORNL	423 576 7136	423 574 4643	bichawj@ornl.gov
Toth, Bill	ORNL	423 574 7345	423 574 4643	tothwj@ornl.gov
Weil, Brad	ORNL	423 574 7147	423 574 4643	weilbs@ornl.gov
Zardecki, Andrew	LANL	505 665 2812	505 667 7626	azz@lanl.gov
Griggs, James	PNNL	509 372 4158	509 372 4316	jr_griggs@ccmail.pnl.
Jarrett, Jim	PNNL	509 372 4347	509 372 4316	jh_jarrett@pnl.gov
Berry, R. Bruce	SNL	505 845 8018	505 844 0001	rbberry@sandia.gov

- **Siberian Group of Chemical Enterprises**
- **SKhK Site Personnel**

Siberian Group of Chemical Enterprises	2
• Director General.....	2
• Deputy Director General	2
• Chief Engineer	2
0.1.1.02 Siberian Chemical Combine [SKhK]	2
.1 Reactor Plant Site [RPS]	2
• Director	2
• Chief Engineer	2
• Deputy Chief Engineer	2
.2 Radiochemical Plant Site [RCPS]	2
• Director	2
• Chief Engineer	2
• Deputy Chief Engineer	2
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• Chief Engineer	2
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• Chief Engineer	2
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• Director	3
• Deputy Director	3
• Chief Engineer	3
Others.....	3
• Deputy Department Head, Security.....	3
• Head of Department of Nuclear Safety.....	3
• Deputy Department Head	3
• Head of Department	3
• Head of Department	3
• Engineer	3
• Chief Engineer	3
• Deputy Chief Engineer	3
• Chief Mechanical Engineer	3

[Siberian Group of Chemical Enterprises]

1 Kurchatov Street
Seversk, Tomsk Region, 636070
Russia

FAX: (3822) 724 446

E-mail: PN=SIBHIMKOMBINAT/O=TOMSK.SC/@sovmail.sprint.com

Combine Activities:

Production and processing of fissionable materials for power and military

Production of heat and electrical power

Small-series production of super-pure substances

Production of high-energy magnets and other materials

Director General

Gennady Petrovich Khandorin
Phone: 770 784

Deputy Director General

Igor Vladimirovich Goloskokov
FAX: 8-3822-724 446
Phone: 3824 22 32 30

Chief Engineer

Vladimir Mikhailovich Kondakov
Phone: 770 784

0.1.1.02 Siberian Chemical Combine

.1 Reactor Plant Site [RPS]

Phone: 48 800
941 employees
Production of thermal and electric power

Director

Valery Ivanovich Fatin
Phone: 48800

Chief Engineer

Alexander Alexandrovich Tsyganov
Phone: 48910

Deputy Chief Engineer

Vladimir Alexandrovich Kitter
Phone: 43864

Deputy Chief Engineer

Mikhail Mikhailovich Korotkevich

**.3 Chemical Metallurgical Plant Site
[CMPS]**

Phone/FAX: 779 612

2,200 employees

Production of HEU metal, manufacture of
magnetic alloys, magnets, and ultra-dispersive
powders

Director

Gennady Grigorievich Shadrin
Phone: 21373

Chief Engineer

Vladimir Vasilievich Skripnikov
Phone: 48478

.2 Radiochemical Plant Site [RCPS]

Phone: 47636
1,235 employees
Processing of irradiated uranium, production of
ultra-dispersive powders, purification of raw
materials, preservation of surface radioactive
waste sites and burial of liquid waste

Director

Vladimir Alexandrovich Skuratov
Phone: 484 403

Chief Engineer

Alexander Sergeevich Riabov
Phone: 48108

**.4 Uranium Enrichment Plant Site
[UEPS]**

Phone: 62750

1,420 employees

Recovery of enriched uranium
Production of stable isotopes

Director

Maxim Ivanovich Sterkhov

Chief Engineer

Yuri Semyonovich Shulgov

**.5 Conversion [Sublimation] Plant Site
[CSPS]**

Phone: 48871

975 employees

Processing of uranium products: hydrofluoric
gas, ferric fluoride, refractory metals and rare-
earth elements

Director

Yuri Fedorovich Kobzar

Phone: 29764

Chief Engineer

Valery Vladimovich Lazarchuck

Phone: 29741

**.6 Experimental Physics Plant Site
[EPPS]**

Phone: 48847

608 employees

Decommissioned reactor facility

Research on reactor materials

Production of gaseous and liquid nitrogen and
oxygen

Director

Petr Grigorievich Savinykh

Phone: 21062

Deputy Director

Yuri Ilyich Kabanov

Phone: 24042

Chief Engineer

Andrei Georgievich Nikolaev

Phone: 46250

Others

Vladimir Vasilyevich Evseyenko

Deputy Department Head

Alexander Mikhailovich Runda

Deputy Department Head, Security

Gennady Tikhonovich Kirillov

Head of Department of Nuclear Safety

Serge Nikolayevich Gerasimov

Deputy Department Head

Vladimir Ivanovich Sinyaevsky

Head of Department

Mikhail Kondratevich Kuzminykh

Head of Department

Evgeni J. Shevchenko

Engineer

Vladimir Mikhailovich Kondakov

Chief Engineer

Gennady Sergeevich Andreev

Deputy Chief Engineer

Sergei Petrovich Kurdynko

Chief Mechanical Engineer