Insight

International Chornobyl Centre Magazine Issue 14, 2005

- UKRAINE BUILDS UP NUCLEAR POWER
- SHELTER STABILIZATION–ACTION STARTED
- SLAVUTYCH COMMUNITY IS WORKING

INSIGHT'S REGISTERED SUPPORTER

dti

Department of Trade and Industry

Contact: Mr. Trevor Hayward, DTI
1 Victoria Street,
London SW1H 0ET;
tel: +44 20 7215 3800;

E-mail: trevor.hayward@dti.gsi.gov.uk

The UK Department of Trade and Industry is pleased to be associated with and provide support to the ICC and its achievements

CONTENTS

"Insight", Issue 1(14), 2005

Editorial Board: **Yevgen Garin, Volodymyr Udovychenko, Victor Odynytsia, Larysa Nikitenko, Svitlana Lynkevych**

Literature editors: **Mary Donovan, Mykola Kurylchyk**
Translator: **Oksana Barbarova**

Photomaterials: **Kostiantyn Diordiev, Katherine Antonova**

Computer version design, layout: **Kathrine Antonova**

Our address: 7/1, 77th Gvardeyskoy Divisii Str.,
Slavutych, Kyiv Region, 07100, Ukraine
Tel. +380 (4479) 2-30-16; Fax +380 (4479) 2-81-44

Magazine layout prepared by the Chornobyl Centre in Slavutych

CHORNOBYL center

Advertising and supporter rates can be obtained from
Svitlana Lynkevych at ICC
E-mail: inform@chornobyl.net
Web: www.chornobyl.net

WORK FOR SAFETY'S SAKE

The global man-made catastrophe that happened at Chornobyl nearly 20 years ago is leaving one infallible warning for the world to remember: all advanced scientific, technical, economic, and humanitarian tools should be used in order to prevent events of this kind. The Chornobyl Centre in Slavutych has become one of the important links in long-term process for eliminating consequences of the nuclear disaster. Next year the Centre will celebrate its tenth anniversary.

Thorny Path to Modern Business

Many interesting events can be singled out from the Chornobyl Centre's biography. The scientific and technical institution grew stronger due to technical and financial assistance of the United States of America represented by the Department of Energy (DOE) and the Pacific Northwest National Laboratory (PNNL). Later, governments of the United Kingdom, Germany, France, and Japan joined the international collaborative effort. Thanks to their assistance, Slavutych has a state of the art technical basis able to implement modern international projects, which are not limited to addressing the issues of Chornobyl.

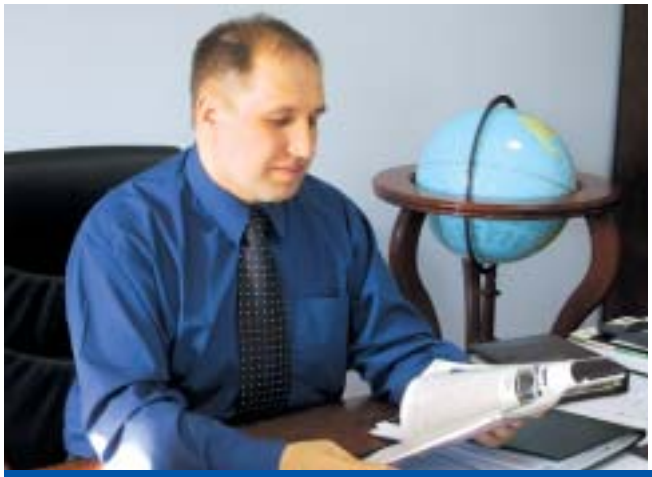
Still, international assistance does not usually last for a long time, and the state's help could not be counted on. Prospects of progressive development, but not humiliating survival, motivated Slavutych people towards basic knowledge in the area of business processes. Mr. Yevgen Garin, Co-ordinating Director of the Chornobyl Centre, describes the process in the following way: "Having applied business approaches to scientific activity and achieved attractiveness of our services at national and international levels, we gradually achieved total financial sustainability. We are no longer beggars and expectants; now our team can say to the world business community: "Give us work and you will have a high-quality outcome."

We Do Have Proposals for Both: Ukraine and the World

The experience that has been accumulated during years allows the Centre to render expert, engineering, scientific, and technical services in the area of nuclear and radiation safety, nuclear facilities decommissioning, emergency response and radioecology to the power branch of Ukraine and other countries.

Implementation of quality management system and its certification based on ISO standard requirements are among the key factors providing a systematic increase in the Centre's competitiveness.

The Chornobyl Centre co-ordinated efforts to develop the common informational system on the Chornobyl accident consequences known as 'French and German



▲ *Yevgen Garin, Co-ordinating Director of the Chornobyl Centre*

Initiative". The information gathered may be of a significant benefit to all countries utilising nuclear energy in the matter of applying the experience gained in Chornobyl first and foremost for the prevention of similar accidents in future. This also refers to the involvement of the Chornobyl Centre in the international Shelter Implementation Plan (SIP). In collaboration with Russian colleagues (IBS Company), the CC is working towards the development of the Integrated Shelter Database that will form a basis for planning all further activities at the Shelter under the conditions of maximum efficiency and minimum exposure of personnel.

Jointly with their American and British colleagues, experts of the International Radioecology Laboratory research radiation effects in the world of post-Chornobyl flora and fauna, ability of wild animals' adaptation to the conditions of continuously increased radiation background. For instance, currently the specialists study a serious problem of radionuclides migration out of the Chornobyl exclusion zone via birds.

Several years ago, prominent Ukrainian scientists and politicians forecasted that the CC's potential to become a test ground for perfection of up-to-date approaches not only for safe utilisation of nuclear energy, but also to general safety of the humanity. Cynical and large-scale terrorist attacks that have shocked the world during the last several years confirmed a necessity to involve all possible means and specific institutions into a struggle against the disaster. The CC did not stay away from the global problem and such direction as 'physical security of nuclear facilities and nuclear materials' appeared in its portfolio. Currently, the Centre is accomplishing a large-scale project for upgrading physical security systems in 40 oncology clinics of Ukraine.

Today the CC's interests spread beyond the Ukrainian borders. The Centre's staff are welcomed at many prestigious public and nuclear forums in various corners of the world. Taking into account the urgency of this individual issue, they organise workshops and specific conferences, impact state policy regarding nuclear energy and its environment effects.

The guests are greeting Khmelnitsk inhabitatants. Commisioning of Unit2 Khmelnitsk NPP

UKRAINE BUILDS UP NUCLEAR POWER

Last year's commissioning of two new power units at Rivne and Khmelnitsky NPPs has no doubt become a remarkable event for the Ukrainian energy sector. The protracted construction that had been awaiting western financial support was over as Ukrainian government decided to take the matter into its own hands. Could these two giant generators have been abandoned as hopeless? This is more of a rhetorical question. In the course of the 20-year run-up to the event, millions had been invested into Khmelnitsky unit 2 (KhNPP-2) and Rivne unit 4 (RNPP-4) to bring them up to a 70% to 80% completion level. Closure of Chornobyl NPP in 2000 not only provided an economic basis for replacement of the lost capacities, it also launched a professional challenge against, and organizational test, for the Ukrainian power industry.

Overcoming moratorium and... nuclear fears

At 11:55 hours, 8 August 2004, Khmelnitsky unit 2 was connected to the Ukrainian grid. Its construction period of 20 years has probably beaten all world records.

It began in 1983, and commissioning was planned for 1991. However, a year before, the progress was suspended by a moratorium on construction of new NPPs on the territory of Ukraine as decreed by the parliament, Verkhovna Rada. The world community was facing the effects of Chornobyl. The moratorium only consolidated the unfavourable consequences of the accident for Ukraine's nuclear power. This rendered equipment already in place useless and caused eventual energy losses of billions of kilowatt-hours for the Khmelnitsky unit. The moratorium was lifted in October 1993. Completion of KhNPP-2 and RNPP-4 was included as a compensatory measure into a memorandum of understanding signed in December 1995 between Ukraine, G7 countries and the European Commission. However, western partners made no haste in keeping their promises, which prompted Ukraine to consolidate its own finances. Half of the costs required for KhNPP were obtained due to a flexible policy and by issuing Energoatom's bonds. Optimised expenditure reduced the construction costs by almost half as compared to the initial estimate.

KhNPP, with its two units, has an annual production capacity of 13.5 to 14 billion kWh of electricity that is twice as cheap as thermal generation. A set of safety improvement and upgrade measures turned KhNPP-2 into the safest one among Ukraine's operating units with VVER-1000 reactors. It has a capacity of 1000 MW electric and 3000 MW thermal. The unit pioneered among national VVER-1000 reactors to

become fully loaded with a new improved type of fuel. The so-called alternative fuel assemblies are of Russian make coming from the Novosibirsk plant of chemical concentrates. Their main distinctive feature is a higher efficiency and economy.

Two months after KhNPP-2, another protracted construction came out with Rivne unit 4, number fifteen for Ukraine's nuclear power. **It was pilot connected to the grid on 10 October 2004.**
The construction commenced in 1984 and commissioning was scheduled for 1991. The moratorium on nuclear development halted the construction that was 70% complete. In 1990 – 1991, unit operator personnel were trained. Completion of the unit, however, only became possible in 1997 when the government issued a resolution to financially support construction of KhNPP-2 and RNPP-4. Ukraine managed to commission the new Rivne unit at its own expense. A western loan of 125 million dollars was only intended to introduce advanced reactor safety systems.

RNPP-4 is a power unit of installed electrical capacity 1000 MW with water-moderated power reactor. Its thermal capacity is 3000 MW. The new unit uses Russian fuel produced by the Novosibirsk plant of chemical concentrates, with 163 fuel assemblies installed in the reactor core. It is capable of producing 6.5 billion kWh of electricity at rated power.

New units meet world safety standards

Experts would often refer to the indisputable and logical breakthrough of Ukraine in nuclear power as "for the first time". For the first time, in Ukraine and in the ex-USSR, two new power units were commissioned based on a complete safety analysis in accordance with applicable national requirements and regulations as well as with IAEA recommendations.

For the first time, a Ukrainian expert provided scientific support to the procedures of supervision and control over nuclear fuel loading opertations and pre-operational physical testing (which used to be previously assigned solely to the staff of the Russian Research Centre "Kurchatov Institute").

Implementing an upgrade programme resulted in significant changes to the RNPP-4 design, especially to replace outdated diagnostic, monitoring, and control systems for the unit with state-of-the-art ones. The design changes were based on NPP operation experience in Ukraine and in other countries as well as on IAEA recommendations.

A computerized radiation control system was introduced at the new KhNPP unit to run in parallel with the existing radioecological monitoring system. The system provides real-time data on radiation situation on-site and within the sanitary protection zone. The new computerized process control system is set up with the most advanced techniques. This and other equipment, mostly of Ukrainian make, replaced the old items that were installed in early 90s.

After commissioning the two units, Ukraine looks ahead with confidence.

Experts consider the Khmelnitsky site as one with the best prospects for further development of nuclear power in Ukraine. Accordingly, construction of the third and fourth power units is planned there.

At Rivne NPP, the first and second units will expire in 2010 and 2011 respectively. Therefore, residents of the satellite town of Kuznetsovsk are happy that commissioning of the fourth unit will provide them with work for at least another 30 years. There are also good reasons to hope that the fifth and sixth units will come into life in the future.

The two new units have promoted Ukraine to rank third in Europe by nuclear generation capacity.

▲ *New Unit of Khmelnitsk NPP.*
The Ukrainian Government plans to support construction of nuclear units

CHORNOBYL DECOMMISSIONING

It was past noon on December 15, 2000 when unit 3, the last one operating at Chornobyl, was shut down for good as the Ukraine demonstrated its goodwill in fulfilling its international commitments. The nuclear power plant entered decommissioning, the final stage of its life cycle. The other two units at the site also failed to exhaust their lifespan and were closed prior to date in 1991 and in 1996.

This was largely a forced development that prevented timely preparations for decommissioning and financing the associated activities, in particular setting up a decommissioning fund as provided for by the Law on the Use of Nuclear Energy and Radiation Safety. At the present time, the plant solely relies on the state budget and faces lack of appropriations against demand.

About decommissioning

Decommissioning refers to a set of activities to be performed in order to put a facility out of operation upon completion of its life cycle. In doing so, applicable safety rules for the personnel, general public, and environment should be met.

A number of IAEA Member States have already gained decommissioning experience, which is mostly based on individual cases. Among 555 nuclear power reactors constructed worldwide, 108 have been shut down and 447 are currently in operation. In accordance with the IAEA standards and principles, decommissioning may only be considered finished when the NPP site is fit for other uses. Ukraine has no experience in decommissioning facilities where there is nuclear and radiation technology involved. Chornobyl NPP is even a bigger challenge as the first nuclear power plant with multiple units that has ever been decommissioned.

Chornobyl NPP to turn into ... a "brown spot"

What is the outlook for the site that has not only seen a terrible accident wracking a nuclear reactor but was also producing electricity for over 23 years?

Ecological benefits are attractive to justify turning it into a "green lawn". This would imply complete removal of nuclear equipment and other contaminated items to recover the site to its initial condition prior to NPP construction. However, no government would strive for that due to the enormous resources required. The "green lawn" option would even be less grounded for Chornobyl conditions after the accident of 1986. Instead, going for a "brown spot" appears an adequate course of action to pursue for the notorious NPP. Radioactive material spread over the site would then need to be removed down to an acceptable level. The end state for Chornobyl to reach in decommissioning would be dismantling of equipment that is no longer required and decontamination of engineering structures down to a level of limited regulatory control.

The Concept of Chornobyl NPP Decommissioning describes long-term storage of reactors (for 80 – 100 years), primary circuit (30 – 50 years), and some equipment among the building structures, as well as gradual dismantling of other equipment with early removal of fuel channels from the reactors, as the most optimum strategy.

Chornobyl NPP is located within the 10-km radius of the exclusion zone, which is an area largely contaminated with long-lived radionuclides. Therefore, complete dismantling of the building structures available here in great numbers does not seem justified. This task should be addressed as part of a rehabilitation effort for the exclusion zone.

Impact of emergencies

One peculiarity of Chornobyl NPP is that the coming dismantling operations will be somewhat influenced by the consequences of emergencies. For instance, in 1982, a reactor fuel channel was damaged at unit 1. Fuel fragments found their way into the reactor cavity and graphite pile blocks. This resulted in additional measures being taken for reactor decommissioning at Chornobyl unit 1. Even more problems are associated with the 1986 accident. Despite decontamination efforts, there are still quite a few core fragments of the unit 4 reactor (50 to 100 kg by estimate) under a layer of concrete within the Chornobyl NPP territory. These should be considered while determining staff control exposure levels, and may cause earthwork problems.

Another event raised serious public concerns and boosted adoption of a moratorium on further nuclear power development in Ukraine.

On 11 October 1991, a fire broke out in the unit 2 turbine hall. As a result, the turbine hall roofing and turbine equipment were partially damaged. Even though there was no damage to the reactor or excessive levels of radioactivity released against valid standards, the damaged turbine equipment has never been completely recovered.

Decommissioning infrastructure behind schedule

Decommissioning nuclear power units includes several phases, especially deactivation. At this stage, nuclear fuel should be fully unloaded from the reactors of the three units and from the reactor cooling ponds and transferred to a new spent nuclear fuel storage facility. However, the storage project was stopped back in April 2003 because of design and construction deficiencies.

Currently, this is the most critical issue that interferes with Chornobyl decommissioning progress, which is also related to nuclear and radiation safety. Removal of nuclear fuel from the three power units is delayed for at least 3 to 4 years now. Ukraine's budget has to spend an annual extra of 30 to 40 million dollars in salaries to the personnel, for maintaining equipment and ensuring nuclear and radiation safety. It is only recently that agreement has been reached to carry on construction of the storage.

There are problems with a solid radwaste processing complex and a liquid radwaste treatment plant. Construction of the two is well behind schedule, which urges the Ministry of Fuel and Energy of Ukraine to enforce stricter requirements to the contractors.

First steps and first lessons

The scope and unique nature of the tasks faced by Chornobyl NPP today are equal to none in the world's perspective. Professional staff who operated the plant for many years have to turn into decommissioning experts.

People at Chornobyl are doing their best to bring in more money. Relying merely on the state budget would be counterproductive. The plant is set to dismantle, decontaminate and sell the equipment, as there are clients. For example, after a small fire at one of the Rivne NPP units last winter, spare parts for equipment repairs came from Chornobyl.

First hundreds, out of hundreds of thousands, of tons of equipment were disassembled at turbine generator No. 1 as early as late last summer. Similar action is taking place at the nitrogen and oxygen plant where production of special waste storage casks will be launched at a later stage. Dismantling operations are on-going in the turbine hall.

While the issue was made up:

The President of Ukraine in his Decree has subordinated the SSE 'Chornobyl NPP' to the Ministry of Ukraine of Emergencies and Affairs of Population Protection from the Consequences of the Chornobyl Catastrophe.

There were some changes among top-management of the plant. On 12 August 2005 Mr. Ihor Gramotkin was appointed as the ChNPP Director.

▲ *Ihor Gramotkin, ChNPP Director*

SHELTER STABILIZATION –

▲ *Stabilisation activities at the Shelter are in full swing. The main task is to perform them safely*

The history of overcoming the Chornobyl disaster began on 30 November 1986. On that day, construction of the Shelter - a complex and unique structure also known worldwide as 'Chornobyl sarcophagus', - was over. It buried remnants of the destroyed Chornobyl unit 4 and shielded the outside world from high-level radiation sources as well as becoming a symbolic memorial to heroism and dedicated toil of hundreds of thousands of people who took part in its construction.

At the same time, the Shelter represents an imminent threat to the world, a complex problem that requires urgent solutions. In fact, a large bulk of nuclear material and high-level waste confined within the sarcophagus is separated by structures that are not sufficiently reliable or stable

Elimination of hazards caused by unstable structures is recognized as one of the major tasks of the Shelter Implementation Plan (SIP) aimed at transforming the Shelter into an ecologically safe system.

Preparation for stabilisation activities started in the early days of the project back in 1998. At first, the structures' status was thoroughly monitored for many years, with additional studies performed where necessary. Based on that, in 2000, programmatic decisions were made to determine the scope of stabilisation required and to facilitate this, construction of supporting facilities began at the ChNPP site. This was in response to complex and huge tasks set when facing inadequate construction capacity, utilities and roads, as well as lack of personnel change which could ensure adherence to applicable sanitary, hygienic and radiation safety standards.

Initially, stabilisation considered securing 15 critical areas within the Shelter. However, some activities were cancelled following a detailed design and expert assessment. The decision was made against a thorough dose-cost-benefit analysis, which showed that said activities might result in excessive exposure to personnel as compared to the expected benefits. These were the facts used to estimate the stabilisation term as 10 – 15 years.

Consequently, nine priority areas were identified for stabilisation inside the Shelter. Accomplishing the work planned is not an easy task whatsoever. Difficult radiation situation (up to 6 roentgen per hour), plenty of debris inside and limited predictability of further developments all require special control of the stabilisation effort. A Ukrainian-Russian consortium with a telling name, Stabilisation, will be the contractor. The four consortium members are Russian Atomstroyexport and Ukrainian Pivdenteploenergomontazh, Atomenergobudproekt and Rivne NPP Construction Department. Just after the contract was signed on 9 July 2004, the consortium started preparatory work at the ChNPP site, covering

ACTION STARTED

development of an action plan and a quality plan, medical examination and training of personnel, establishment of a construction support site, etc.

On 30 November 2004, marking the 18th anniversary of completion of the sarcophagus, the contractors set to work in close proximity to the Shelter. In fact, this day became a starting point in the difficult work to stabilise the structures. The work will begin from the most labour-consuming and largest area, which is the so-called 'buttress wall' in the western part of the Shelter. This structure does worry the experts because of a 0.5 m (!) tilt observed here for the wrecked unit 4 wall towards metal boards covering it from outside. Extensive displacement and numerous cracks ranging from 50 mm up to 20 cm are also a matter of concern. Concreting is currently underway to form a monolithic plate 0.6 m thick near the buttress wall. The plate will provide a base for the installation of metal supports to prop up the Shelter's western wall. Timely accomplishment of this stabilisation task will have an impact on the progress and succession of further construction activities and on the completion date of the entire stabilisation effort.

Other stabilisation activities are set at a reduced scale. However, they will be performed under more difficult radiation conditions. Therefore, the main issue faced by the ChNPP and the Stabilisation consortium is to minimise exposure to personnel. This will be achieved by careful planning of all operations. Approximately 20 options would be devised for each type of activity. Those performed under hazardous conditions are subject to regulatory approval.

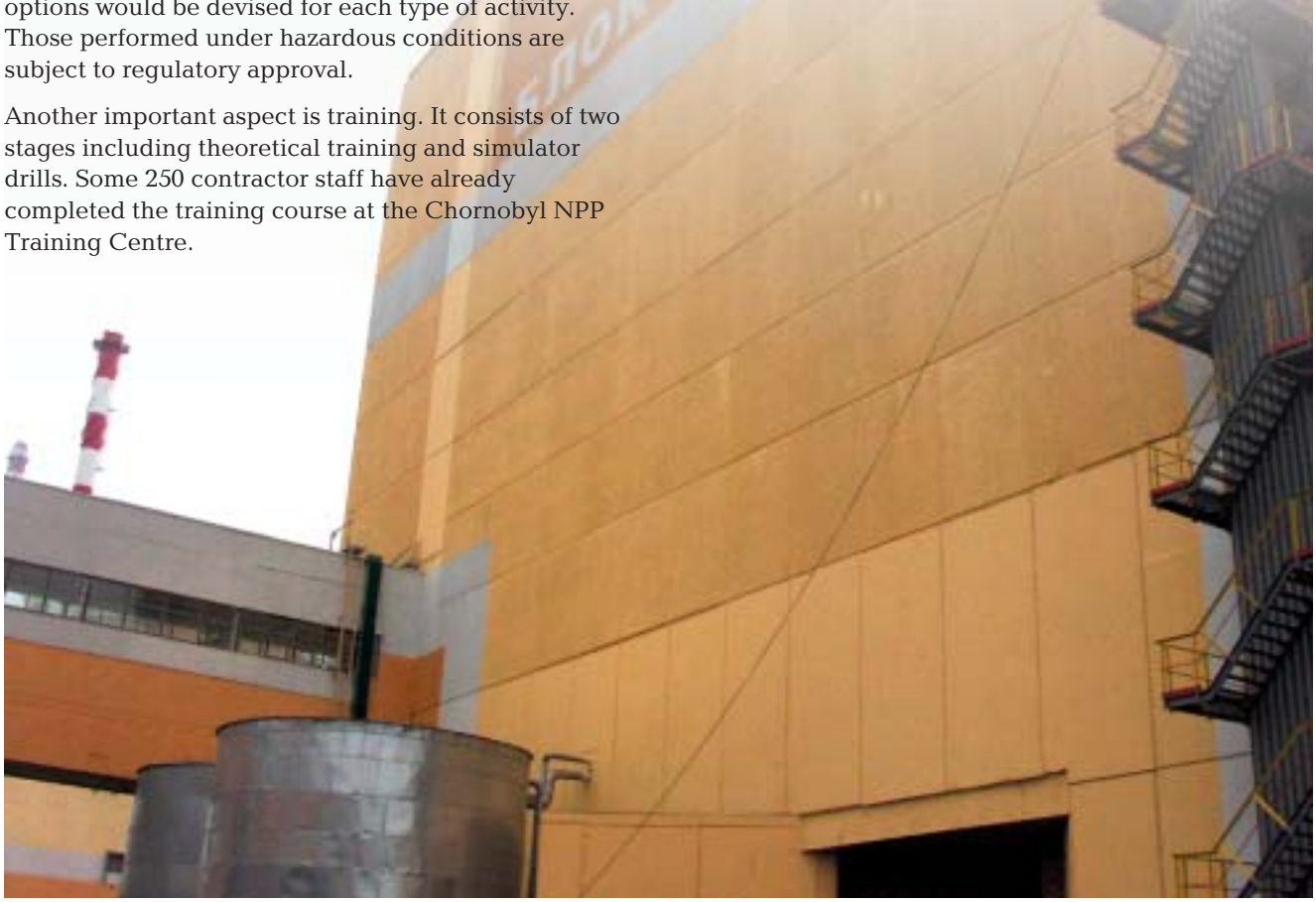
Another important aspect is training. It consists of two stages including theoretical training and simulator drills. Some 250 contractor staff have already completed the training course at the Chornobyl NPP Training Centre.

Provision is made that working areas at the Shelter have proper shielding from radiation. Personnel will be adequately equipped to secure individual protection. With the objective to minimise time of personnel exposure to hazardous conditions, assembly and consolidation of structural members will be performed in a relatively clean area of the construction support site.

According to Victor Khavrus, Stabilisation Programme Manager, SIP Project Management Unit, human resource requirements are estimated at approximately 5,000 workers for the duration of stabilisation activities. This number refers to an annual individual dose of 20 mSv. Single individual doses will be specified by the contractor's management. Given the complexity and limited predictability of developments during the stabilisation activities, the contractor is allowed to deviate from the design-basis solutions in case new circumstances or conditions are revealed, and to propose more economical and efficient methods for work organisation and performance.

Today, the Shelter's western zone; supports of the largest beam known as 'Mammoth', onto which boards of the southern zone roofing rest; and frame of the deaerator stack supporting a considerable portion of debris and having an approximate tilt of 1.5 m are being stabilized.

Completion of the entire effort to strengthen the Shelter structures is scheduled for November 2006.



DATABASE ON CHORNOBYL AFTERMATH IS READY

▲ *The database on Chornobyl has been presented to the International Community.*
Jacques Repussard, IRSN Director, France,
(on the left side of the picture)
and Lothar Hahn, GRS General Director, Gemany

The Chornobyl catastrophe was left in the previous century, though its destructive force will for a long time impact millions of affected people in Ukraine, Belarus, and Russia. Problems caused by destroyed unit 4, radioactively contaminated lands and the health of thousands of people: addressing and mitigating these factors has grown into an international effort.

Bare figures:

- Chornobyl explosion is equivalent to 500 bombs dropped on Hiroshima

- Over 3 million Ukrainians were affected by the Chornobyl catastrophe, almost half of them are children

- Over 600 thousand people took part in eliminating consequences of the Chornobyl accident

- The Chornobyl Exclusion Zone covers 2600 square kilometres

- 6 billion USD were spent to build the Shelter.

The international effort aimed at studying and overcoming the aftermath of the nuclear accident that happened in 1986 begets tangible results. And the French and German Initiative for Chornobyl (FGI) to develop a database on the Chornobyl catastrophe's consequences is one of the examples of this scientific collaboration.

FGI History

FGI was an answer of the French and German governments to the Ukrainian appeal for joining international effort in studying the problems caused by nuclear and radiation accidents.

At the IAEA conference in April 1986, the Ministers of Natural Environment of France and Germany announced their initiative to start scientific collaboration with the CIS countries mostly affected by the Chornobyl accident. The FGI objective was formulated as creation of reliable and objective information database on radiation, ecological, and medical consequences of Chornobyl.

Institut de Radioprotection et de Surete Nucleaire (IRSN, France), Gesellschaft fur Anlagen-und Reaktorsicherheit (GRS, Germany) mbH, and Chornobyl Centre for Nuclear Safety, Radioactive Waste and Radioecology (Ukraine) became the FGI co-ordinators.

The initiative has started after 10 years have passed since the tragic date of Chornobyl. And though the consequences of Chornobyl have been studied during the whole period, the results could not be called satisfactory: often those were presented by incomplete, inconsistent, or even conflicting data. Development of a common reliable database covering all aspects of Chornobyl became a necessity.

Outcome

Scientists from France, Germany, Ukraine, Belarus, and Russia representing over 30 scientific and research organisations have been working to develop the database.

Their long-term assiduous labour resulted in a bulk of information systematised in three lines:

- Sarcophagus safety

- Readioecological consequences of the Chornobyl accident

- Health consequences of the Chornobyl accident.

Data on engineering structures, the Shelter systems and equipment, radiation situation in the Shelter premises, fuel-containing materials and radioactive waste inside the Shelter, environmental impact of the Chornobyl sarcophagus were collected and included into the database within the framework of the first project, Sarcophagus safety. This information will help while planning and implementing further activities regarding transformation of the Shelter into an ecologically safe system.

The data on radioecological consequences of the Chornobyl accident will assist in planning future radioecology research, developing strategies to manage radwaste, and countermeasures to be performed during radiation accidents. This database includes information about a general ecological layout of radioactively contaminated areas, contamination of soil with Cs-137. Information about the facilities for radwaste temporary localisation and radionuclides migration was gathered; results of analysing the activities aimed at natural and agricultural areas recovery were

presented under the second project.

The information included into the section 'Health consequences of the Chornobyl accident' will be of essential assistance while developing a series of health programs. The scientists presented the data on oncology diseases in those affected by the accident, infantile morbidity, radiation effects for pregnant women. A strategy of further biomedical research may be developed based on the data obtained.

An international scientific workshop was held to dedicate the successful completion of the initiative and present its results. Over 200 scientists from 12 countries took part in the workshop, as well as representatives from the IAEA, European Commission, and European Bank of Reconstruction and Development.

The honorary guests were presented with information about the prepared database and pointed to the necessity for its further development.

Philippe de Suremain, Ambassador of France to Ukraine

"The objective of this accomplishment was to collect and confirm incomplete data and valuable knowledge regarding the Chornobyl issues in order to create a reliable database that would be useful for all of us: researches, official authorities, and public. Today this great effort is over. The scientific community may be proud of such an outcome."

Dietmar Studemann, Ambassador of Germany to Ukraine

"The initiative brought important results. It provided an opportunity for people to feel safe. We have realized that consequences of the catastrophe and relevant problems should be addressed with the lapse of time..."

Tomohiro Taniguchi, Deputy Director General, IAEA

"Although the French-German Initiative is now coming to its end, I believe it is important that the scientific work continues and the created data and knowledge base shall be updated and used for further basic research on the long-term effects of ionising radiation..."

Yevgen Garin, Coordinating Director, Chornobyl Centre

"The French and German Initiative is a unique example of an outcome that can be produced by the international community to the benefit of the mankind in case there is a common goal. I do hope that this example will be followed by other countries."

THE BEST INTERNET PROJECT – 2005

The Chornobyl Center site *www.chornobyl.net* has won the World's contest "World's best e-contents — 2005" (World Summit Award the world's best e-contents (WSA) in nomination "Electronic Science".

The contest has been held in Ukraine under the initiative of Ukrainian Internet Association and European Academy of Digital Media from June 9 till July 15 2005. Grand award presentations to the winners took place in Information Agency UNIAN on June 19.

WSA (World Summit Award the world's best e-contents) — is a global contest for selecting and promoting the World's best e-contents projects. The contest sees as its goal the overcoming of digital divide and enlargement of people access to high-quality Internet resources.

Information about WSA

The contest is held under the patronage of 8 world's presidents in the framework of the UN World Summit on the Information Society (WSIS, Tunis 2005). The contest was established in 2003.The project network includes 120 organizations that are involved in multimedia production development on national and international levels. All project arrangements are held on the basis of fruitful collaboration between national and international organizations, governments, and nonprofit public organizations and private companies.

▲ *Yevgen Garin (to the left), Co-ordinating Director of the Chornobyl Centre, at the ceremony of presenting a diploma to the winner of a national phase in the competition for the best Internet Projects. Kyiv, UNIAN News Agency*

"World's best e-contents — 2005"

In 2005 the project involves 168 countries of the world. Putting its focus on cultural identity and national diversity, the WSA looks for multimedia projects that provide effective and creative approaches to quality contents internet filling. Thus, the educational, scientific and cultural heritage of the people of the world that gradually transforms into digital format and becomes world-accessible.

COMMUNITY IS WORKING

▲ *Training for NGOs' leaders at the Resource Centre. Experienced trainers teach how to solve a problem*

Probably, a few people in Slavutych still do not know about the Community Development Centre. During the two years while this large-scale social project supported by British sponsors, the Department of Trade and Industry (DTI), is being implemented, many Slavutych residents have used the services proposed by the Credit Union, telephoned to the hot telephone line for public initiatives, participated in telephone polls regarding social services, looked through 'Public Messenger' and reference booklet 'Slavutych is Our House'.

We interviewed Victor Odynytsia, Head of the Community Development Centre, with the objective to make certain that his social programme is helping Slavutych people in addressing their social issues.

Victor, 'Partner' credit union started its operation in April 2004. What main benefits have there been for the Slavutych people ?

A year has passed since the credit union was opened. And today we can say that this is one of the successful projects being performed under the support of the UK Department of Trade and Industry (DTI). The DTI funds were received to achieve two major goals: ensure organisational activities to create the credit union and form the first credit fund of approximately UAH 200,000.

Initially, the credit union included 73 members. Now their number has increased sevenfold and amounts to over 500 individuals. To date, 'Partner' has provided credits in the amount exceeding UAH 1.5 million (approx. USD 300,000). Some of the credits were issued to develop private businesses, promote small and medium enterprises, which contributed to the matter of new jobs creation. The credits help people to pay for education, medical aid, renovation of their dwellings; got to a vacation; purchase appliances. Six months was required for the credit union to become self-sustainable. Now it has costs for development and even managed to be a sponsor of 'Slavutych Golden Autumn' — international festival of children arts, television, and mass media — and give presents to the young reporters, who won. We plan that the credit union will provide costs to support social projects and programmes of the non-governmental organisations.

Why do people borrow money particularly from your credit union?

You can get a credit from our union in 30 minutes, minimum credit amount is UAH 500. If you borrow a small amount of money, it is possible to provide a bail instead of leaving a deposit. Now a crediting term is one year, but we hope that the pay-back terms and a number of credits will increase as the union develops. Deposit rates represent another advantage. Due to a rapid turnover they are the highest in Slavutych and amount to 24% annually.

Six months ago another useful initiative was added to Slavutych public treasury. The Resource Centre for NGOs support welcomed its clients in Slavutych. What are the first accomplishments?

Slavutych residents were always active in addressing all issues related to development of their town and raising their standard of living. The town public organisations are a driving force for Slavutych community development. Today about 100 NGOs are registered in Slavutych, 10-15 of them are actively operating. The Resource Centre was established for them to act and develop with confidence in the future.

First and foremost, the Centre provides informational support to public organisations. The Centre's staff, as well as experts and representatives of donors assist in organising efficient interface with grant-providing institutions. We understand that it is important for an NGO to find a source of finance. Therefore, timely and relevant information about grants is an essential assistance and a stimulus for further activities.

Organisation of training for NGOs' leaders is an important component of the Resource Centre's activities. The training programme covers management of public institutions, financial management, methods of promotion. The public initiators learn not only to generate ideas, but also to plan their actions as far as their implementation is concerned and to master mechanisms of interaction with public and local authorities. We managed to involve well-known American granting organisations (UCAN Fund and Counterpart Creative Centre) into the training process.

Moreover, all representatives of NGOs may use services of a special library, communication services, publishing and printing facilities and internet access.

Recently the session of Slavutych City Council approved the programme of social orders in Slavutych. What is the programme about?

Adoption of this programme is a great achievement for Slavutych public organisations. Social order is a prioritisation of social problems that may be addressed by the community and deputies of the City Council due to a maximum involvement of NGOs. Contribution of an NGO into implementing a project should amount up to 25%. It may be not only money, but a labour input also. The costs are also allocated by the local authorities; financial assistance may be obtained from sponsors, in the form of grants. We have to demonstrate to Slavutych people that this system can work successfully. Today, in such highly developed countries as, for example, Germany, France, USA NGOs get up to 25% of the state budgets for addressing social problems .

We started working on the programme from polling Slavutych residents with the objective to determine major social problems. Then a competition for the best social project was announced among public organisations. The two social projects were announced as the winners: prevention of alcoholism, drug addiction, and AIDS and the initiative for Slavutych recreation zone improvement. Today the projects are being successfully implemented.

Is there any other news about the Community Development Centre you would like to share with our readers?

The Community Development Centre is actively working. For instance, for our readers to get their bearings on the local social services market, we have issued 'Consumer's ABC' which was widely disributed in Slavutych.

Recently, the Centre initiated a competition for the best social services provider. The winners award ceremony was held in the presence of the Slavutych people.

Today, the hot telephone line for public initiatives continues its work. Our staff review all the propositions, submit them to corresponding organisations, and trace their progression.

I am also pleased to tell you that we have produced a training video film describing our experience and interface of authorities, business, and community.

And the last question which worries many people, who are involved in social projects. How can the efficiency of a social project be evaluated?

The main purpose of any social project is to change public opinion, willingness of a community to take an initiative and undertake responsibility for addressing your own social problems. Today, we witness an increase in a number of social initiatives put forward by the Slavutych community who won grants for social projects. And this implies creation of new jobs as well as appropriate investments into Slavutych development.

▼ ***Victor Odynytsia and Juriy Akymenko, Community Development Centre, know how to make a regular issue of 'Public Messenger' attractive and interesting***

NEW DEPARTMENT TO HELP BUSINESS

Establishing the Department of Regional Development (DRR) under the Business Development Agency is an innovative step in expanding opportunities to attract new business ideas and investments to Slavutych.

In April 2004, three social projects aimed at increasing investment attractiveness of Slavutych were launched within the framework of the Memorandum signed by the Executive Committee of Slavutych City Council and the UK Department of Trade and Industry. One of the projects envisaged the DRR establishment. A major task of the Department is to ensure social an economic promotion of Slavutych and attract investment to the town.

The Department's staff was picked out thoroughly and during a long period of time. Seven of the most prospective individuals were chosen out of 31. The selected staff received several psychological training courses in order to study principles of team-working, methods of positive image creation, peculiarities of business communication. Future managers have got to know basics of marketing and strategic planning; financial and legal principles of entrepreneurship; how to develop business plans, conduct meetings, carry on negotiations, and make presentations. Moreover, they mastered some software necessary for their work. As a result, the Department is staffed by a closely-knit professional team that has the knowledge and skills required to attract investments and provide services to Slavutych entrepreneurs and investors.

Today, the DRR experts render consulting services to Slavutych entrepreneurs. Their efforts have already resulted in 12 new jobs, and a further 78 will be created during the next three years.

Informational needs of potential partners and investors were not overlooked. Now they can get relevant and complete information about potential of the Slavutych region right from their desk. They just have to visit the Slavutych regional web-site at: *www.investing.org.ua*.

The web-site is available in three languages (Ukrainian, Russian, and English). Its visitors may use "on-line office" services and generate web-pages for their institutions, obtain information about employment opportunities, and view history of business news. An on-line consulting and distribution system is available for registered users, as well as forum, system of polls and sociological surveys. Opportunities to interchange information with the related web-sites of other regions, Ukrainian and world entrepreneurs' networks; get access to such helpful links as key web-sites of leasing and investment companies, donor and bank institutions, business development associations and other institutions are among the advantages of the Slavutych regional web-site.

So, what does the DRR propose to Slavutych enterprises and potential investors?

- Analysis of investment efficiency and economic activity of an enterprise

- Customs and broker services

- Preparation of tender documents

- Development of web-pages and their inclusion to the Slavutych regional web-site

- Provision of information from potential investors' databases

- Developing and publishing printed versions of informational materials and presentations

- Training programs, workshops, etc.

It was the positive help of the Slavutych City Executive Committee, Slavutych Employment Centre, Social and Psychological Centre, NGOs 'Community Development Centre' and 'Small Business Laboratory', Slavutych Entrepreneurship Development Fund, Chornobyl Centre, and other Slavutych organisations and enterprises that ensured quick and efficient implementation of this social project.

No pain, no gain — this is well-understood by all involved in business development and promotion in Slavutych. That's why, a network of institutions working towards economic prosperity of Slavutych is moving towards its common goal congruently and purposefully.

PUBLIC ORGANISATIONS

Let us introduce the Slavutych Women's Centre

▲ *Women know how to help Slavutych in addressing social problems and closely work with local authorities*

'Each person in the world has the right to be happy!'. This motto describes the idea of the Slavutych Women Centre.

The women's union incorporated the most active Slavutych public organisations including the town's women associations and relief fund for disabled children.

Active women of Slavutych established the Centre in order to involve women into public activities, raise their position in the family and in the society, help to defend their rights, and fully implement their potential in all aspects of public life.

Today, none of Slavutych public organisations is possible without women's active involvement. Slavutych action to support a healthy way of life; development of a recreation area around the town; various holidays, festivals, craft competitions, debating societies are worth mentioning here. The women selflessly solve social problems of Slavutych residents and participate in the activities of Slavutych public council.

On 13-14 October 2005, the first practical conference 'Role and Position of a Woman in Small and Mono-profile Towns' will take place in Slavutych. The Centre will actively support the event.

The Slavutych Women's Centre is always open to everyone comers regardless of their political and religious views, nationality, age, and personal interests.

Having applied to the Centre, women may get a consultation from a qualified psychologist or lawyer, take part in various workshops or receive training, for instance, 'Family Law', 'Sexual Equality', 'Children usually mirror a family situation', etc.

The leaders of the Centre established a special group to support the women who suffered from family violence.

Liudmyla Vol'ska, the Centre's Head, appeals to all women not to stay alone with their problems, but to come to the Centre for help.

Here is the address of the Slavutych Women Centre you may turn to:

**15 Kyivskyy Block,
Slavutych, Kyiv region,
Ukraine, 07100**

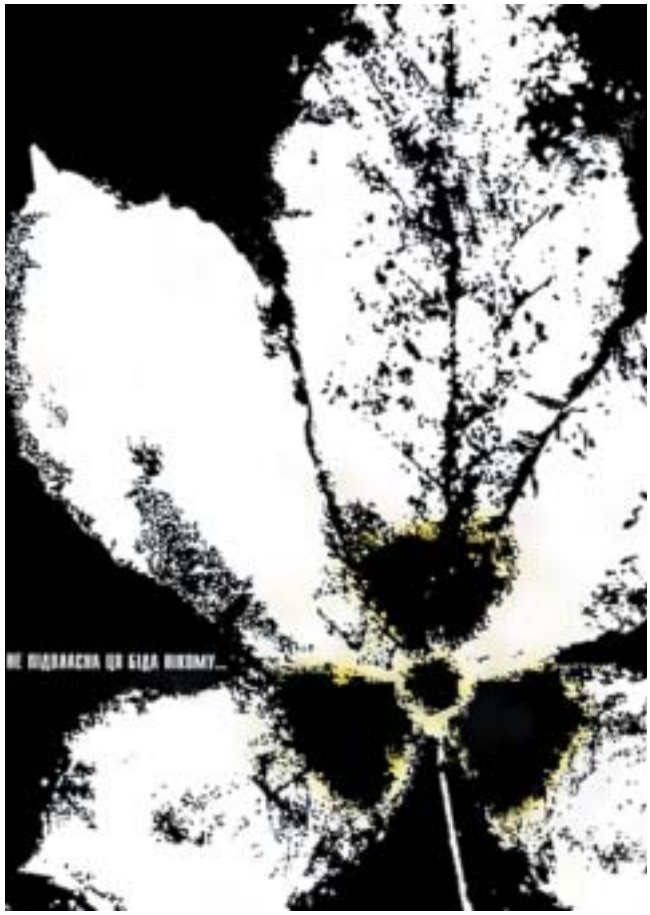
**Tel./fax +38 (04479) 3 00 38; 2 05 13
E-mail: helwell@slavutich.kiev.ua**

▼ *Liudmyla Vol'ska (to the right), Head of the Slavutych Women Centre, is discussing details of the next training*

Unit Four. What are you thinking of when you hear these words? More than likely, the well-known picture of the sarcophagus over the damaged Unit Four at the Chornobyl Nuclear Power Plant.

For some people, the events of April 26, 1986, are already left in the past; for others, they became a personal campaign fuelled by grief. Some have a natural interest in these events, but for other individuals the situation became a stimulus to understand the ecological problems and harmonious interface of man and nature. "In a flash, Chornobyl showed us a very simple truth: there are no iron curtains, no borders for ecological disasters; the world is common, it is vulnerable, and extremely small. This thought determines our wish to harness international experience in creatively understanding ecological problems and share this among as many people as possible," - says Oleg Veklenko, head of the ecological poster and graphics exhibition bearing a symbolic name - 'Unit Four'. Professor Veklenko was involved in eliminating the consequences of the Chornobyl accident in May-June 1986. He is now representing the Kharkiv Institute of Arts and Industry.

The first international exhibition, 'Unit Four', was held in 1991 to commemorate the fifth anniversary of the Chornobyl catastrophe. This exhibition immediately attracted artists and designers from all over the world. Now this international design exhibition and real festival of ecological art is held every three years.



'UNIT FOUR' TRIENNALE

A unique collection has been assembled in Kharkiv. No other city in Ukraine and in the whole world can boast such treasures. In accordance with the rules, artists do not get back the exhibited works, they leave them to a fund of 'Unit Four' gallery. Today, over 4,000 graphic drawings and posters presented by 600 authors from 50 countries are held by the museum!

Showy, striking, and infinitely varying, the works interact with each individual spectator but also appeal to a crowd. Style and themes of the masterpieces presented by the graphics and design masters from European and American countries, Asia and Australia are different, but their craving for evoking understanding of the very essence of ecological problems and their importance for the modern world, where Chornobyl has become a continuation of Hiroshima, is common.

'No borders for ecological disasters; the world is common, it is vulnerable, and extremely small.'– the organisers of the 'Unit four' exhibition think so

On pictures – posters from 'Unit four' TRIENNALE

"The world of intellectual values is always open to the mind and heart of everyone", say the exhibition hosts. "Possibly, the exhibited works can be symbolised by a straw, at which the drowning can clutch in the hope of saving, not just themselves, but others struggling in the sea of confusion. Human aspiration is a powerful tool and this exhibition focuses the mind to believe in the positive energy of mankind."

Discussions about the exhibited works can go on endlessly but as far as this exhibition is concerned, the saying 'a picture is worth a thousand words' speaks for itself. The show impels the viewer not just to remember the Chornobyl tragedy, but also to understand the repercussions of our actions and to act responsibly, for the sake of future generations.

UKRAINIAN DIPLOMATS DISCUSS CHORNOBYL ISSUES

▲ *Working scenes of the meeting*

Boris Tarasyuk emphasized that the Ukranian Ministry of Foreign Affairs considers mobilization of international support for solving the problems of Chornobyl to be an important role in its activities. He appealed to the Ukrainian diplomats to support the development of international collaboration under the aegis of the ICC. On behalf of the Ukrainian diplomats, the Minister expressed his gratitude to all those people who work at the Chornobyl NPP and in Slavutych for their courage in overcoming the nuclear catastrophe and its consequences.

The working session of the meeting of heads of Ukranian Foreign Diplomatic Institutions dedicated to solving social consequences problems of the Chornobyl catastrophe took place on August 25, 2005 at the International Chornobyl Center (ICC).

Boris Tarasyuk, Minister for Foreign Affairs of Ukraine, David Zhvaniya, Ukrainian Minister for Emergency Situations, the administration of the Chornobyl NPP, Slavutych city and Chornobyl Center participated in the working session.

Ukrainian ambassadors and charges d'affaires posed a number of concrete questions to the Slavutych city administration, Chornobyl Center and Chornobyl NPP regarding the possibility of practical assistance at a diplomatic level and suggesting positive steps for achieving these.

In his welcoming speech to the participants of the session, David Zhvaniya emphasized that the world community supported the Ukrainian government's social program for Chornobyl. The Minister also drew everyone's attention to the necessity of demonstrating to the international society the mutual benefits from the study of the effects of Chornobyl which would impact on the prevention of any future nuclear catastrophes.

Yevgen Garin, Coordinating Director of the Chornobyl Center, drew the delegates attention to the effectiveness of the international projects in the framework of the ICC. The desire of scientists and experts to combine their efforts confirms this fact.

▼ *During the working meeting in the Chornobyl Centre. Boris Tarasyuk, Minister for Foreign Affairs of Ukraine (in the centre);Yevgen Garin, Co-ordinating Director of the Chornobyl Centre (to the right); Elena Ladyzheva, Director for Economy of the Chornobyl Centre (to the left)*

UNUSUAL TRAINING

If you go to a country, even for a while, you'd better try to know and understand it. The best way is to closely communicate with its people, try to understand their everyday life, work, customs and traditions. That was the way that Nicolas Herbst has chosen. He is a young U.S. citizen who currently lives and studies in Ukraine.

Nicolas came to Ukraine together with his family. In autumn 2003, his father, John Herbst, was appointed as the U.S. Ambassador to Ukraine. Nicolas' family tree is closely related to this Slavonic country. His mother's forefathers were born in the ancient Chernihiv land that has a history of several thousand years. All members of Nicolas' family speak good Russian. Nadezhda Herbst, Ambassador's wife and Nick's mother, is a teacher of Russian at a Kyiv school.

▲ *Nicolas at 'Perspectiva', an enterprise in Slavutych*

Insight has already informed its readers that visit to Slavutych was among the first working trips of the newly appointed Ambassador John Herbst. Being home for Chornobyl NPP operators, this town was not chosen at random. The United States of America supports a number of international programmes aimed at alleviation of Chornobyl problems. On 26 April 1996, the USA and Ukraine launched the Chornobyl Centre (CC) with headquarters in Slavutych. CC mission is to study and summarise Chornobyl experience with the objective to prevent similar nuclear catastrophes elsewhere in the world.

During his summer holidays, 15-year old Nicolas came straight to Slavutych in order to study CC's varied activities. The Centre is not only involved in engineering research, but also has a unique opportunity to pursue scientific studies in the Chornobyl exclusion zone. With a strong team of experts, CC is now getting its place in the market of nuclear and radiation safety and radioecology, working in international technical projects.

The young American had on-the-job training in all of the Centre's units. And not just because of good luck, rather, 'learning through involvement' was Nick's practical motto.

Nick says on the first day, during a two-hour trip to Slavutych, he was a little bit worried, being not quite sure what to expect: "But everything went OK including a welcome meeting with the Co-ordinating Director Mr. Garin and an exciting introductory tour around the Centre with some detail of its history, staff and technical capacity."

At the Nuclear Calculations Department, Nicolas was told about CC's works in the area of nuclear and radiation safety and looked into nuclear databases used for specific calculations. Besides, he practised making graphical drawings for an integrated database of the Chornobyl Unit 4 Shelter.

Working at the Projects Administration Department became a real challenge for Nicolas, requiring an attentive and serious approach at all stages of project implementation. Insight into a package of documents under an on-going co-ordination project on developing a fibre optic communication link prompted Nicolas to engage himself in developing a business plan. Sports being among his life priorities, Nick proposed to develop one for establishment of a baseball team in the town. "It was very interesting to do this," admitted Nicolas.

Presenting his training results, Nick elaborates on his marketing experience gained: "I was involved in a marketing study to gather information on international technical programmes. Then came development of layout and design of an CC advertising booklet and I got to know how a mini publishing house operates." Nick performed his part quickly and successfully, as he used his knowledge and experience.

Nick has very pleasant recollections of the days he spent at the International Radioecology Laboratory (IRL): "I saw some unique equipment, modern laboratories, a vivarium for experimental animals and more. We also occupied ourselves with a radiological survey of a plot in a pine forest." On top of that, he assisted specialists in developing a map of Slavutych contamination,

including soil sampling and measuring their radioactivity as well as mastering the use of radiochemical analysis of standard samples for strontium-90. The IRL part was so interesting for the young trainee that he wished to continue his work during his next visit to Slavutych.

Nicolas' training programme was not limited to the CC tenure. He also met the Mayor of Slavutych, observed the Slavutych City Executive Council at work, absorbed the history of the town and was shown many interesting photos. It is largely about them when Nick says: "The town nurtures its history and the present..." He felt even stronger that way after visiting the Digital Community Centre, a modern IT training facility for pupils, students and adults including many Chornobyl NPP employees.

Nick can't help sharing his impressions:

"I learned about the benefits of the Special Economic Zone Slavutych. We saw what it offers at some enterprises. At Perspektiva, I tried to make a folder myself; at Gobelen, carpets and gobelins are made; Strum excels in printing art; and at Termit, I finally got to know how foam plastic is made."

"I visited the Business Development Agency that offers comprehensive business services to Slavutych entrepreneurs and investors."

At the Slavutych Social and Psychological Centre, Nick met his peers, youth of the town's public organisations. And it was really not enough just to discuss the Centre's story or even to undergo an interesting test to characterize Nick's personality. "We fought for asking one another about our studies, hobbies, life positions and plans for future," recalls Nick.

Nick also says the time spent in Slavutych, and at CC in particular, was not wasted. He learned so many interesting things, developed useful skills and new knowledge about the life and work of the people who try their best to overcome the difficult aftermath of the Chornobyl accident during many years already.

▲ *Work in the Radioecology Laboratory of the Chornobyl Centre*

Everyone who worked with Nick during his training has warm memories of this boy, serious and firm of purpose. They trust Nick will be a great success in his life, as he has the most important qualities, especially a desire to learn new things, diligence and insistence on his way to achieve a set goal.

Chornobyl Center in Slavutych

7 SCIENTIFIC AND PRACTICAL CONFERENCE OF THE INTERNATIONAL CHORNOBYL CENTER AND SSE 'CHORNOBYL NPP'
7 МІЖНАРОДНА НАУКОВО-ПРАКТИЧНА КОНФЕРЕНЦІЯ МІЖНАРОДНОГО ЧОРНОБИЛЬСЬКОГО ЦЕНТРУ ТА ДСП "ЧОРНОБИЛЬСЬКА АЕС"

ЯДЕРНІ ОБ'ЄКТИ: НАДІЙНІСТЬ ТА БЕЗПЕКА

NUCLEAR FACILITIES: RELIABILITY AND SAFETY

СЛАВУТИЧ, УКРАЇНА
20-23 ВЕРЕСНЯ
2005
SEPTEMBER 20-23
SLAVUTYCH, UKRAINE

Nuclear Safety for World

ЧАЕС
www.chnpp.gov.ua

WITH SUPPORT OF
U.S. DEPARTMENT
OF ENERGY AND
U.K. DEPARTMENT
OF TRADE AND INDUSTRY

За підтримки
Департаменту
енергетики США та
Департаменту торгівлі
та промисловості
Великої Британії

CHORNOBYL Center
www.chornobyl.net