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Dear Readers,

The *Security and Non-Proliferation* Journal's Editorial Team hope that you have noticed positive changes in our periodical: the journal's format has doubled in size compared to initial issues; there appears on its pages an ever growing number of publications by contributors of prominence in Ukraine including security and non-proliferation experts, high-ranking officials, and scientists; new columns initiated, subject matter expanded. In particular, the previous issue published materials of such topical nature as *Civil Control over "Enforcement" Structures in Ukraine, Ammunition and Conventional Weapon Disposition Challenges*. I.e. we keep expanding, striving towards having a high-performance team by combining efforts of both professional journalists/editors and experts on the subject matter with experience of contributing to other specialized periodicals. The team remains consistent with that policy in this journal issue as well.

Thus, we are pleased to present a new theme dedicated to urgent international security problems, specifically the inseparable link of this concept to other fundamental factors of state and society existence. Prominent Ukrainian political scientist O. Dergachov opens a series of publications on this subject with his present article. In addition, with coverage of the Australia Group that Ukraine is planning to join this year, the journal launches a series of publications on existing international export control regimes.

Although our periodical is not in a position to promptly respond to recent security and non-proliferation events, we care to place at least brief information on extraordinary events that have taken place since the previous issue. The recent months have been very eventful and included the following: statement by the North Korean leadership on its withdrawal from the sextalateral negotiations and availability of nuclear weapons in the country, dramatic development of the situation with Iran's nuclear program, UN Secretary General Kofi Annan's suggestion regarding required support to nuclear non-proliferation during United Nations reform and the new UN report *On Poverty, Security and Human Rights*, in which Annan urges to vest the IAEA with strengthened verification authority in counteracting the nuclear weapon proliferation threat, international nuclear (physical) security conference in London – all that information is made available to the reader on the pages of this *Security and Non-Proliferation* issue.

In addition, we would like to express our interest in reliable feedback with our readership, so we reiterate our welcome for anyone who might have any wishes, comments or suggestions on the content, subject matter or format of the journal to send them to the editorial team and authors by any means convenient.



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SECURITY AS A FACTOR OF SOCIAL DEVELOPMENT

Security is above all a complex and dynamic social phenomenon. The notion of security and its requirements are largely subjective and relative. They depend on the human community's specific status, level of development and civilization, and, in turn, are indicative of them. Social progress both intensifies and complicates security requirements, and by itself predominantly means intensification standards and diversification of security aspects.

Security has no absolute and immutable criteria, nor is it standard for actors differing in their characteristics and interests, which warrants its inner conflicts. Being only natural is not only the pursuit of maximum security, but also the permanent clarification of its content. A conflict of interests over security problems takes place not only in the domestic policy, but also at the international arena. In the former, security issues are focused on the "human vs. state" and "society vs. state" relationships and are determined by the general level of democracy. That being so, these relationships largely determine the type and specific content of national interests and national security strategy. Security is not a fixed status; similarly, the security policy must not and cannot be oriented at maintaining the status-quo. One requirement to an efficient security policy is its constant monitoring, responsiveness to changes, ideally – foreseeing, forecasting and resulting precautions and prevention of challenges, risks and threats.

Security, progress, democracy

Each state and each society has specific generic security problems related to their own features. The content and nature of threats and risks directly depend on the degree of development and civilization of this society and its international relations. The level of national security is ultimately determined by the society's ability to adequately assess it and counteract threats thereto in an optimum way. Overestimating danger is no less a serious mistake than underestimating or misunderstanding it. Deliberate misleading the society or constructing non-existent threats can develop a dangerous crisis.

The most complex problem national security faces is the need to overcome inner conflicts in its underlying provisions. From this perspective, the security of a specific state naturally ensues from its self-sufficiency, integrity, absence of principle-conflicting threats for individuals, society, and authorities. Meanwhile, it is characteristic of poorly-established, transitional societies to vary in perceiving threats by different social groups and political forces with overwhelming preeminence of internal threats over external ones. Internal threats feature an inner conflict – the threat to the state as such, that to the society or specific communities or individuals can never be entirely identical in nature and, understandably, is perceived differently. The actors listed above often compete with one another when defining conceptual security cornerstones and policy priorities. Threats of internal origin naturally dominate in transitional countries, including



Ukraine. To reliably neutralize them is only possible in a developed, law-rule democracy.

While scholars are now attesting to the diversification of international threats, one should bear in mind that their "new" dimensions such as the economic and social ones have practically always existed on a national basis. Threat can be posed by any problem, when worsening or going out of control. It is essential to break down threats into those of external origin (and thereby subject to international regulation), and those predominantly caused by internal circumstances. A separate group of threats relates to the probability of external forces taking advantage of certain domestic weaknesses: active separatist movements, anti-patriotic opposition, ill-controlled large-scale social processes. In the absence of such a factor, insecurity exists in the form of risks that international means can only neutralize. Their elimination depends on efficiency of the related domestic policy.

Internal insecurities are harder to overcome since they involve a more rigorous limitation on acceptable means to overcome them, primarily of forceful ones. Ultimately, internal threats in many cases can only be disposed of through self-transformation, which needs to be proven necessary in domestic political struggle. Wide international recognition and practical adoption of democracy norms substantially alter internal aspects of national security and make them somewhat uniform. Political pluralism, the rule of law, civil control over enforcement agencies have become its mandatory conditions. Meanwhile, the establishment of the above-said norms in certain states has a direct impact on their partnership potential and international interface features.

It is obvious that a global security model may not be based on estimated global spread of liberal-democratic values and norms. Quite powerful actors, which will be building their foreign policy strategy on qualitatively different conceptual cornerstones, will remain and play a key role. A global security system cannot be homogeneous. It must focus on common survival and stability issues, which contain essential elements of ideological and political pluralism and, therefore, elements of peaceful cohabitation and regulated competition.

Democracy is not a necessary feature of the state as a party to international relations, nor of parties to security cooperation and security agreements. Nor does it become such as a result of further dissemination of democratic principles as a basis for relations worldwide. We currently have numerous examples of authoritarian international actors that enjoy sustained interest and respect from others based not only on their resources available, but primarily due to domestic stability, manageability, and predictability. The reference here is made to something bigger than willingness of leading democratic countries to cooperate with such partners based on partial tactical commonness of interests or transient geopolitical schemes. Such schemes work for a long time and should be considered as a large-scale and serious objective reality. The divide, beyond which cooperation for security becomes impossible, separates from the international community but a few pariah states, although even that is almost always both possible and desirable to mitigate.

But it is not only about the spread of occurrences when resolution of cooperation and security issues is not democracy-based. Such a situation is inherent in a large



number of strategic global relations, which takes it out of the exception category and makes consider it "another" regularity. In any event two out of the three nuclear weapons states – Russia and China are mighty actors playing a leading role in the global security system and profess special socio-political values. Stability reached in their relations with the West is based on purely pragmatic calculations of the balance of interests.

The need for stability and security objectively is strictly universal while the need in democracy is a relatively universal. While the former is virtually independent of the historical context, the latter may be as of today a reality or an orientation for only a part, however big, of countries. Democracy is one of the national development components most difficult to attain. It currently exists as a universal value, far from being a universally recognized urgent need. Democracy is a security cornerstone only in the Euro-Atlantic sub-region. There is little margin for further expansion of its coverage at this point.

Meanwhile, the significance of democracy in building up stability and deepening international cooperation, especially in Europe, is growing notably. As we recall today the classic phrase "one lawful democracy will never be at war with another lawful democracy", we can state that such countries are already demonstrating much better patterns of constructive relations. The qualitatively new level of relationships they have achieved allows for reaching beyond business relations and for supplementing official contacts made by state agencies with sustained dialogue between national elites and civil society agencies. It makes up for dissemination and, accordingly, profession of common values and standards, dissolution or at least minimization of barriers between the countries – from customs ones to psychological ones.

Availability of internal democratic consensus unifies approaches to solving principal international policy issues, transforming into a factor deepening integration processes. Effective democracy norms are converted into the mandatory requirement of recognition of and confidence in partners. This, in turn, lays the foundations for stable relations and development of cooperation in the most sensitive areas, security being one of them.

In Ukraine the notion of security as perceived by the standards of a democratic society is but under development. If we consider the experience of our western neighbors, countries of the Central Eastern Europe, the key thing in this process no doubt is the consensus reached (among all key political elite groups and in the society overall) in understanding the content of national security and its implementation strategy. In fact, modern high security standards cannot be assured without indirect, but extremely important routine work done by the civil society. It is the only possibility to win a high level of confidence in the state as a partner and to provide guarantees of required quality of authority.

A developed political culture, well-established civil society institutes can be more efficient than state authorities in preventing such threats and destabilizing factors as ethno-national conflicts, extremist manifestations, information wars, manipulation of mass conscience. International experience of recent decades has demonstrated a significant, even the leading role of the civil society in the evolution of approaches and improvement of regulatory mechanisms for security and



stability. To achieve security and stability based on democracy is a classic, ideal option. In many instances, however, more complex logic is involved when international security and stability become democracy development factors. Similarly, Ukraine that should focus today on implementing in-depth democratic and market reforms, is in need not just of international stability or standard security guarantees, but also of its own geopolitical orientation being a certainty, a closer partnership with developed democracies, European and Euro-Atlantic agencies.

Insecurity of the struggle for security

Unrelenting social focus on security issues, expanded format of their discussion, and excitability of the public in facing threats, coupled with high confidentiality of the state policy in this area understandably generate new conflicts and new problems even in developed democracies. Authoritarian regimes are picking up pace in justifying hard-line domestic policy action by security needs. In addition, one is led to admit that heightened human civilization's sensitivity to large-scale manifestations of asocial behavior has become a natural consequence of the scientific-technical and social progress. Security is not a universal value. It becomes a priority for actors, which have made certain progress and have been included in the system of social relations. However, there exist, constantly reproduce themselves and evolve as a specific society component (national and international), actors forced to embark on different behavior were being directly interested in creating and sustaining insecurity.

The above-said circumstances were vividly manifested following the terrorist attack on the United States on September 11, 2001. The boost in international terrorism has changed not only the agenda of inter-state relations, but also the nature of relations between the power and the society. It has proved to be a real democracy test both in the specific state format and at the international arena. Washington has ventured to large-scale warfare for the sake of elimination of the threat to peace, developing plans to democratize certain regions for the sake of stability. In parallel, the potential of security services is being built up, civilian privacy controls are being tightened, the visa regime is being complicated. To a lesser degree, similar measures have been taken in European countries. Russia is openly taking advantage of the situation to legitimize its Chechnya policy. New questions have been raised to mass media with regard to the antiterrorist struggle coverage.

Responses to terrorism are becoming far more complex and controversial than terrorism proper. In particular, two threats are being actualized related to deliberate substitution of the goals of overcoming terrorism with antiterrorist mottos under which different, purely pragmatic objectives are being met. Normally, the processes develop in parallel. The most potent states mean to weaken their competitors and take certain regions and world economy segments under their control. Non-democratic regimes are using the threat of terrorism to justify their brutal rivalry with the opposition and, ultimately, their procrastination with political reform. Besides, a growing enthusiasm is now almost commonly observed of enforcement agencies and special services, which have been experiencing over the recent years a deficit in merit recognition, and sometimes even a deficit in funding.

Terrorism obviously threatens not only citizens' lives and security. The main insecurity lies in a potential for lowering democratic standards for human



community organization both on a national and international basis. The need in a more detailed and tighter control warrants limitations on civil and personal freedoms. If the doubts in the efficiency of democratic institutes and mechanisms are not lifted, democratic values as such may be jeopardized. Democracy is not a direct target for terrorism. But the latter can be interpreted as a result of its weaknesses and imperfections, if not its progeny. Therefore, while democracy is boosting, the rule of democratic institutions being consolidated, intensified uncertainty is being observed of an ever-growing number of countries and regions as to its universal nature and sufficiency as a basis for solving acute socio-economic and political problems.

International terrorism has acquired features of a manifestation of globalization. It has a powerful basis— seamy and half-seamy business, is taking full advantage of the global infrastructure, has become a link in the criminality system. It is a natural social phenomenon that develops in parallel to the society. Therefore, terrorism is an internal enemy that can not be fenced off. Its commercialization and concurrent transformation into a political tool is quite obvious. It is implanted in inter-state conflicts, liberation movements, special security force operations by certain countries, has become part of business projects. Fighting “pure” terrorism would be ludicrous. The society has to discover and build up to potential for suppressing all of its manifestations and recurrences. Whether effective democracy can prove a true precaution against terrorism and whether it will remain a true law-based democracy at that— the questions can only be answered by political practices of developed and transitional societies.

An apparent change of priorities has taken place in the eternal antagonism “freedom versus security” in favor of the latter. But security swapped for freedom can transform into insecurity. The system of authority organization, the system of state in general regardless of its ideological and socio-political content, calls for certain organizational provisions including those being a prerogative of enforcement agencies and special services. The latter ones are required elements of the power itself, being diversely responsible for its efficiency and thereby catering to the society’s interests. Virtually not a single important decision can be worked out without their involvement. The need in confidentiality of at least part of enforcement structure activities, let alone those pursued by secret services, is indisputable for democratic states. Meanwhile, histories of dozens of countries are indicative of how enforcement agencies have turned from a social protection tool to a source of threat. The need in keeping the balance between efficiency and controllability of enforcement agencies is one of the most complex and at the same time the least normatively and institutionally handled problems of state management and of functioning of national political systems in general. Moreover, it is absolutely evident today that, overall, democracy institutes of modern experience are not oriented at solving that problem in an optimum way. The principles of separation of powers, the rule of law, and transparency are not sufficient in this case, and besides, they have limited applicability. The distinction of legitimate professional activity as opposed to illegitimate can be accentuated clearly enough neither from the methodology, nor from the legal perspective – it will always depend on individual understanding, interpretation and contest of arguments, i.e. on the level of civilization the society has attained.

Efficient civil control over state enforcement agencies has been recognized as a key feature of a lawful democracy. It played an important role in deepening and developing integration, and serves today as a criterion to consider in approving decisions on expanding the European and Euro-Atlantic structures eastward, as well as in assessing partnership potential of the new independent states. The development of democratic institutes is now becoming a mandatory condition for full participation of the state not only in maintaining international peace, but also in cooperation in general. In fact, it is its duty to the world community. Authorities uncontrolled on a national basis are generally ill-trusted in the civilized world.

Efficient international cooperation is in an ever-growing need of establishment of common socio-political values, a maximum convergence of approaches to development and security problems. It calls for strengthening official international arrangements by natural agreement between national elites, development of interaction at the level of civil institutions. It is what can provide the basis for successful anti-terrorist coalition efforts which should not be limited to the use of force only. Effectiveness of anti-terrorist struggle and transformation of the environment that breeds it can be achieved not through limitations, but through strengthened democracy, improved performance of its institutes in the national format, and, finally, further expansion of its domain.



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PROTOCOL ADDITIONAL AND EXPORT CONTROL OVER THE GOODS OF NUCLEAR CONCERN

Determination of the fact that Iraq is implementing its secret nuclear program has made obvious that efficiency of the traditional guarantees is limited. For the sake of elimination of this defect and for improvement of the safeguards system International Atomic Energy Agency has worked out so-called "Program 93+2". Additional measures to improve the safeguards efficiency are foreseen by the Additional Protocol (AP), which typical form was approved by the Administrative Council in 1997. AP is reviewed as a mean of IAEA provision of confidence in accuracy and comprehensiveness of the declarations of the Member States regarding the nuclear materials.

Additional measures contemplate:

- Measures involving access to the nuclear materials and nuclear facilities;
- Measures involving administrative issues;
- Informational measures.

Additional Protocol broadens the rights of the Agency regarding access to the locations, specified by the State as well as gives additional opportunities for sampling at the locations unspecified by the State.

Administrative measures foresee simplification of inspectors assignment procedure, multi entry visas procedure, as well as access of Agency inspectors to the modern telecommunication means (for example, satellite communication systems).

Informational measures lie in the implementation of the requirements by the State regarding declaration on all without exemption aspects of nuclear fuel cycle and scientific research efforts on this issue, as well as on the rest of locations of nuclear material storage in view of utilization not involved in nuclear sphere, description of each building on the *sites of nuclear facilities*, and production and export of sensitive technologies from the point of view of the nuclear nonproliferation.

Articles 2a (vi) and 2a (ix) of Model Additional Protocol are directly related to the export-import operations.

According to the Article 2a (vi), the State undertakes an obligation to provide the Agency with an information concerning possession, export and import of source material, which has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched, for non-nuclear utilization. This information supplements IAEA/INFCIRC/153¹ Article 34, which demands application of safeguards to the source material, which is exported to a State does not possess a nuclear weapon, aiming utilization in the nuclear sphere or is imported with the same purpose.



According to the Article 2a (ix), a State undertakes obligations to inform the Agency on each case of export of equipment and non-nuclear materials, listed in the List to the Additional Protocol. This Annex in its present condition is based on the general use list of the NSG document (INFCIRC/254/Part.1²) and defines seven main categories of equipment and non-nuclear materials:

- reactors and its equipment;
- non-nuclear materials for reactors;
- treatment equipment of irradiated fuel elements and equipment specially designed or prepared for that;
- units for production of fuel elements;
- units for uranium isotope separation and equipment, except analytical instrumentation, specially designed or prepared for that;
- units for heavy water, deuterium and deuterium links production and equipment specially designed or prepared for that;
- установки для конверсії урану і устаткування, спеціально призначене або підготовлене для цього.
- equipment for conversion of uranium and equipment specially designed or prepared for that.

According to the Article 2a (ix) (a) on exports must be declared quarterly. For implementation of the Article 2a(ix)(b) information on imports must be submitted upon Agency's request.

Additional Protocols must be concluded by all the States irrespective of possession of nuclear weapon, even if they are not one of the Parties of the NPT. By the way, regarding three de facto nuclear states, which did not join NPT (Israel, India, Pakistan), it is required only to declare their exports involving goods, which fall under safeguards in these countries, and only some of nuclear facilities felt under safeguards of IAEA and subject to Agency's inspections.

One of the most important provisions of Model Additional Protocol, which must be accepted by said states, is the demand to report on the exports listed in the MAP. Such information allows Agency to receive information on collaboration, related to the nuclear efforts of these states with non-nuclear states-Parties of the NPT, especially, concerning the nuclear use goods. Facts of secret nuclear supplies network that recently became known, and involving Pakistani scientist A.K. Khan, had more stressed on importance of such information.

Generally, important element to secure transparency and to allow IAEA to receive full picture of nuclear program in one or another state and, finally, to be the basis for verification of reliability of the declared nuclear programs, is the information which been sent to the Agency according to the Article 2a (vi) and 2a (ix) together with another information, which comes as a result of implementation of safeguard agreements and additional protocols to these agreements.

As a conclusion must be admitted that regardless the attention of international community paid to the exports control in the nuclear sphere, must be aware that IAEA Safeguards do not foresee implementation of export control, - responsibility for active export control carry state bodies of each single state.

AUSTRALIA GROUP

During a nuclear export control seminar on 7 December 2004, the First Deputy Chairman of the State Export Control Committee of Ukraine O. Hryshutkin informed about Ukraine's plans to accede to the so-called Australia Group already in 2005, thereby completing the process of our country's accession to all existing multilateral export control regimes. The Security and Non-proliferation Journal's Editorial Team are certain that such an event will mark a milestone reached in the implementation of planned integration of our country with European and international institutions, and accordingly, we decided to publish a series of articles dedicated to multilateral export control regimes, kicking it off specifically with an Australia Group coverage.

1. Background

In early 1980s there emerged evidence that a number of countries, including Iraq, were fabricating chemical weapons (CW), using supplies as part of international trade in chemicals and associated equipment. This hazardous tendency resulted in a massive use of chemical weapons in the course of the Iran/Iraq war in violation of the Geneva Protocol³. Facts of CW use during that war were detected and documented by a special mission sent to Iran by the U.N. General Secretary.

Responding to that mission's findings, governments of several countries made a decision in April 1984 to take action related to licensing of export of a whole range of chemicals used in the production of CW. It was done to enable responding to facts of unambiguous violation of the Geneva Protocol through the use of CW against Iran during the Iran/Iraq war as well as to the clear evidence that Iraq had acquired multiple materials for its CW production program at the international market of chemicals.

Under those circumstances, the concerned countries became aware of the urgent need to solve the CW proliferation problem and make sure that those countries' industries are not purposefully or inadvertently involved in assisting other countries in acquiring and using that type of weapons of mass destruction (WMD) in breach of their international commitments. Similarly, a need arose in 1990 to take action in response to the growing threat of biological weapons (BW) proliferation.

The measures taken by the governments of the countries concerned about those problems were not commensurate either by approaches taken or their scope of applicability. Information had also spread on attempts to avoid the implementation of those measures, which, altogether, urged Australia in April 1985 to propose to the countries that had established licensing of expert operations to conduct meetings to study the agreement status of measures taken on a national basis and to improve cooperation mechanisms with respect to this problem. Accordingly, the first meeting of what eventually came to be entitled the Australia Group took place in Brussels in June 1985. All countries participating in that meeting agreed that it would be beneficial to continue this process, and from then on representatives of

³ In the aftermath of World War I in which chemical weapons had been used and consequences of such use had become apparent, a multilateral treaty was developed and executed in 1925 in Geneva, which eventually came to be internationally referred to as the Geneva Protocol and remains valid to date.



the countries that formed the Australia Group have met on an annual basis, normally in Paris⁴.

2. Australia Group Membership

Countries applying for accession to the Australia Group may acquire Group membership only on the Group membership's consensus. Candidate countries are expected to have in place a traditional and effective legal system for export control, provisions on catch-all⁵ control in particular, and demonstrate willingness to abide by all multilateral agreements barring CBW production activities.

While the Australia Group initially listed 15 countries, its current membership includes 38 countries and the European commission:

- | | |
|------------------------|-----------------------|
| 1. Argentina | 20.Sweden |
| 2. European Commission | 21.Canada |
| 3. Republic of Korea | 22.Hungary |
| 4. Romania | 23.Netherlands |
| 5. Australia | 24.Switzerland |
| 6. Finland | 25.Republic of Cyprus |
| 7. Latvia | 26.Iceland |
| 8. Slovak Republic | 27.New Zealand |
| 9. Austria | 28.Republic of Turkey |
| 10.France | 29.Czech Republic |
| 11.Lithuania | 30.Ireland |
| 12.Slovenia | 31.Norway |
| 13.Belgium | 32.United Kingdom |
| 14.Germany | 33.Denmark |
| 15.Luxembourg | 34.Italy |
| 16.Spain | 35.Poland |
| 17.Bulgaria | 36.United States |
| 18.Greece | 37.Estonia |
| 19.Malta | 38.Japan |
| | 39.Portugal |

3. Australia Group consultations

The Australia Group is an example of informal arrangements between countries. Its members make no legal commitments – the effectiveness of their cooperation depends solely on their commitments not to proliferate chemical and biological weapons (CBW), along with effectiveness of measures taken on a national basis to prevent the CBW proliferation. Australia Group meetings are convened to study the proliferation challenge in order to make the measures being already implemented by member countries more effective, including through exchanges of necessary information, coordination of action, and wherever necessary, by reviewing the applicability of additional measures on a national basis.

As for the nature of export licensing measures taken by member countries, the following considerations govern their implementation:

⁴ The 2005 annual meeting will be held in Australia to commemorate the 20th anniversary of Australia Group and the role it plays in international efforts in chemical and biological weapons non-proliferation.

⁵ Per that provision, export control procedures may be applied to goods that have previously been exempt from control by other legislative and regulatory acts, but able to be used in the production of weapons of mass destruction in a newly discovered way.



- **the measures should be effective in impeding the production of chemical and biological weapons;**
- **they should be reasonably easy and economical to implement, and should be practical;**
- **they should not impede the normal trade of materials and equipment used for legitimate purposes.**

Licensing is a requirement to the export of certain goods, which does not necessarily mean a straightforward ban on regular trade in those goods. In practice, the above measures represent activities to assure monitoring of compliance with the export control licensing arrangements: export is banned on the only condition that there is particular concern about potential diversion for CBW purposes.

Measures agreed at Australia Group meetings are implemented on a national basis although all Group members are unanimous in believing the subject effort to be far more effective if taken by all potential exporters of chemicals, biological agents and equipment as well as by countries of possible transshipment.

In addition, export licensing measures serve to demonstrate the member countries' resolve in ruling out not only direct, but also inadvertent involvement in CBW proliferation, and to express their opposition to the use of these weapons. The countries' governments must be confident that commercial firms and research institutes are not inadvertently supplying chemicals, chemical equipment, biological agents or biological equipment for use in the manufacture of CBW.

The member countries have recognized from the outset that export licensing measures are not a substitute for the strict and universal observance of the 1925 Geneva Protocol and the 1972 Biological and Toxin Weapons Convention (BWC) and the early implementation of and universal adherence to the Chemical Weapons Convention (CWC), which entered into force on 29 April 1997. All Australia Group members without exception were the first ones to ratify CWC.

4. Underlying Principles of Export Licensing

For the Australia Group Members Countries

Each Australia Group member applies export licensing procedures for certain chemicals, biological agents, chemical and biological facilities and dual-use equipment to make sure that export of relevant goods from those countries does not contribute to the proliferation of CBW.

There can be no uniform arrangement for all national export control systems. Nevertheless, there exist common features characteristic of effective export control systems. Such systems feature effective mechanisms for making and implementation of political decisions, availability of a clearly defined legal basis, reliable lists of controlled goods, catch-all control and a mechanism to ensure compliance of the export with decisions made.

The Australia Group activities entitle the member countries to participate in the permanent political forum to provide consultations on national export control legislation, harmonization and observance of national laws, as well as to reach agreement on legal coercive action to be imposed by certain countries. Export control legislation of each country represents the national perspective on what is legal versus illegal trade while exporting controlled goods. National legislation sets limits within which each government may interfere in exporters' activities and establishes exporters' rights and obligations.



Implementation mechanisms for expert control decisions vary from country to country, but a typical requirement to ensuring the mechanism effectiveness remains a high level of cooperation and coordination activities by governmental licensing bodies and agencies responsible for state border control. National police agencies, special services and intelligence bodies may get involved in the implementation of decisions made in this area.

The list of goods controlled by Australia Group members on a national basis is developed during consultations and currently includes the following:

- 54 chemicals being precursors to chemical weapons;
- Dual-use engineering equipment (for example, corrosion-resistant reactor vessels);
- 111 pathogens and toxins affecting humans, cattle and/or vegetable food;
- Dual-use engineering equipment (such as sealed storage devices and fermentors).

5. Permits and Licenses

Export control and monitoring of Australia Group listed goods implies creating a system for issuing licenses and permits. Permits and licenses provide licensing and legal enforcement bodies with the information necessary to make it clear whether a certain export operation is legal, while clearly identifying characteristics of goods and technologies that may be exported.

As part of a viable export control regime, the permit/license system provides for accurate, concerted and timely assessment of goods and technologies as well as reviewing applications for their transfer from the exporting country. The key objective of the licensing process is to protect domestic security, political and economic interests of the country at the international arena without an unnecessary burden on legal for the economic activities. And therefore, the exporting country is to make efforts to minimize the length of time required for analysis of declared export operations, taking into account all political factors and national legislative requirements in the area of export control. When detected, each occurrence of an illegal activity should ensue an appropriate investigation and legal action (administrative or criminal responsibility for violations of export control law), which is a prerequisite to preventing gaps in the national export control system.

The Australia Group policy consists in export control measures being taken in accordance with the national regulatory framework of each specific country. As was unambiguously stated in the Australia Group guidelines, it is the country's government that is expected to define limits within which simplified licensing procedures can be applied while transferring goods to countries of positive feedback regarding their nonproliferation activities. Therefore, a universal list of license and permit types is impossible in principle. Some governments would issue a permit covering a single licensed export operation, while the rest of countries would authorize both one-time and multiple operations. Furthermore, the quantity of supplied goods is sometimes limited with respect to supplies to certain recipients, etc.

Some types of export permits may be issued depending on the sensitivity of goods and technologies as well as the degree of risk associated with the recipient. Specifically, such are one-time export operation permits valid for one operation only and permits for multiple export operations authorizing the performance of operations in advance of the fact of supplying the specified quantity of goods and within a conditional timeframe. Multiple permits empower exporters to supply certain goods and technologies to recipients eligible in terms of nonproliferation

without the need to submit a special permit application for each specific operation. This helps minimize the administrative burden on the exporters while controlling transshipment of goods and technologies.

6. Assessment of Australia Group Measures

The effectiveness of Australia Group consultations and licensing steps is impossible to assess with absolute accuracy, yet there is no doubt that they have substantially increased the costs to be incurred in acquiring offensive CW, blocking certain supply sources and routes for their proliferators. In several cases those measures have created barriers for countries that have acquired or attempted to acquire CW, forcing them to seek alternative means with essentially lower performance. Elsewhere, they have been able to escalate the weapons acquisition costs to a point that disinterested their acquisition. It can be hoped that similar results have been achieved through the Australia Group's efforts in preventing biological weapons proliferation.

More confident conclusions can be made regarding the Australia Group's success in raising the level of member countries' awareness of the risks of inadvertent participation in CBW proliferation and assistance in reducing that threat. For the majority of member countries, after the 1991 Persian Gulf War in particular, effective licensing measures have been an important indicator for the public of a specific country's industry non-participation in the proliferation of chemical and biological weapons worldwide.

The member countries' governments have reached a conclusion that the Group does provide a viable mechanism for taking practical action to prevent the proliferation of CBW. They are aware, however, that export licensing measures for chemicals, biological agents, and equipment all by themselves cannot create a reliable barrier to the proliferation of CBW in a long-range perspective.

7. Relationship with the Countries Outside of Australia Group

The member countries are cognizant that, to be truly effective, export licensing measures for chemical and biological weapons precursors and equipment and technology for production of such weapons, need support from the maximum possible number of supplying countries or transit countries. Since 1986, separate Australia Group member countries have held special bilateral consultations with countries which are not members of the Group, but are affected by this problem, in order to encourage the latter to establish national export licensing regimes similar to those upheld by Australia Group member countries. As a result, there is an ever growing number of countries which, though remaining outside of the Group, still have made a decision to implement measures as appropriate on a national basis.

In 1992 the Group members decided to expand assistance programs with a view to involve a wider range of countries in cooperation in this area. Australia, chairing the Group, annually provides brief information on the Group's activities to almost 60 countries. It is done to raise awareness and improve understanding of the Group's activities by other countries and affirm the necessity of export licensing. At the 1999 Group meeting the attendees supported the idea of a sustained dialogue with countries not party to the Group and encouraging those countries to implement measures preventing assistance to CBW proliferators. In this regard, the participants agreed to pursue an assistance program that will keep the Group's non-participants informed along with maintenance of the Group's website and/or conduct of regional seminars to discuss export licensing practices.



8. Relationship with the Chemical Weapons Convention

Members of the Australia Group strongly supported the development of the Chemical Weapons Convention (CWC)⁶. They became original signatories to the Convention when it opened for signature in Paris in January 1993 and were the first States Parties to the Convention. The members are now playing an active and constructive role in the Organisation for the Prohibition of Chemical Weapons (OPCW) headquartered in The Hague.

The CWC contains a number of provisions in relation to the transfer of hazardous chemicals. Article I of the CWC requires States Parties to refrain from actions that may facilitate the acquisition of chemical weapons by other countries. Article VI requires States Parties to ensure that the transfer of toxic chemicals and does not take place for purposes prohibited by the Convention, while Parts VI, VII and VIII of the Annex on Implementation and Verification impose specific restrictions on the trade in chemicals listed in the Schedules to the Convention. To make those measures a success, efficient state export licensing mechanisms need to be created.

Article XI. 2 (e) of the CWC requires that States Parties review national regulatory norms of chemicals trade for conformity to the goals and objectives of the Convention. The Australia Group members agreed that the Australia Group should strive to harmonize national export licensing measures to assure non-proliferation of CBW-related material. They all are conscious that the Group's activities need to fully address the Convention's entry into force and implementation results.

9. Relationship with the Biological Weapons Convention

All of the member countries of the Australia Group are States Parties to the Biological and Toxin Weapons Convention (BWC), which has been in force since 1975. The members have also been active in efforts to strengthen the BWC regime. Article III of the BWC obliges States Parties to prevent the transfer of materials which might assist the manufacture, or any means of acquiring, biological weapons.

Members of the Australia Group will encourage all countries to take the necessary steps to ensure that they and their industries are not contributing to the spread of biological and chemical weapons. Export licensing measures demonstrate the determination of the world community to rule out any involvement in the proliferation of these weapons in violation of international law. The Australia Group members call upon other countries to adopt similar export licensing measures with respect to relevant materials, to support a global ban on those types of WMD referred to in the Chemical Weapons Convention and Biological Weapons Convention.

Prepared for publication by S. Kondratov

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3. The Australia Group. Enforcement Officers Manual.

⁶ Full title: *Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons, and on their Destruction.*



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OVERVIEW OF RADIOLOGICAL ACCIDENTS INVOLVING ORPHAN RADIOACTIVE SOURCES OF IONIZING RADIATION WORLDWIDE

In Ukraine sources of ionizing radiation are widely used in different industries, agriculture, science, medicine. Their number is estimated to be several tens of thousands. A source of ionizing radiation is a physical object containing a radioactive substance or a technical device that generates or is able under certain conditions to generate ionizing radiation (NRBU-97). This article only discusses closed radionuclide sources of ionizing radiation, i.e. those containing radioactive substance and shaped so as to prevent release of the radioactive substance into the environment (for instance, the radioactive substance can be contained in a double or triple capsule)⁷. In order to assure occupational, public and environmental radiation protection, the state should have a system of appropriate measures primarily to provide state regulation of radiation safety (regulatory control) in handling radioactive sources. The use of radiation technologies is unfortunately linked with the risk of radiation accidents. Radiation accidents are always caused by an insufficient level of safety and security of sources of ionizing radiation. The human factor has been identified to play a prominent role in it. An accident can happen as a result of misused software for patient exposure dose calculation in cancer treatment, unauthorized entry of operating personnel into the irradiating chamber during food sterilization and many other fatal errors or failures that can even be fatal to patients or personnel. With an objective to prevent such cases, norms and rules of radiation safety in radioactive source security have been created and enforced. Occupational security culture also plays a significant role in it.

Amongst closed sources, the greatest potential radiation hazard in terms of accidents is represented by orphan sources.

Orphan radioactive sources are sources that are not appropriately attended to, in other words, sources that are not under regulatory control despite the fact that they bear hazards warranting such control.

Why does it happen that hazardous sources end up beyond regulatory control? There can be following options to answer that question: they may have been:

- never controlled;
- left unattended;
- lost;
- unreturned;
- stolen;
- transferred without appropriate authorization.

⁷ This limitation can be easily explained: generating devices pose virtually no threat when shut down while it is low activity radioactive substances, i.e. with reduced threat, that are primarily used in an open form.

Orphan sources being in illicit trafficking may end up at the hands of terrorist groups intent on creating a "dirty bomb".

According to the Code of Conduct on the Safety and Security of Radioactive Sources (Ukraine recognized it by making an appropriate statement to the IAEA), each state should keep industrial workers, medical personnel, public, and governmental authorities informed on hazards associated with orphan sources.

The subject overview covers radiological accidents involving orphan sources of ionizing radiation. Such sources and related accidents are presently the biggest concern of the world community. Our overview does not claim to be comprehensive, but it covers the most outcry cases with consequences made widely known. Those accidents attracted attention worldwide in terms of taking measures to make future recurrences of such cases impossible

Orphan sources of greatest hazard

According to modern international classification by the damage a specific source can cause a human being, all radionuclide (radioactive) sources are broken down into five categories in the order of descending hazard. The first three categories refer to hazardous sources, i.e. sources whose impact, without appropriate regulatory control, may cause severe determined effects. Category 1 sources may cause death if there is a contact with an unshielded source over several minutes to one hour, category 2 sources – in case of contact from a few hours to a few days, category 3 sources (under a special contingency) may cause death if the contact lasts for a few weeks. Most characteristic applications of category 1-3 radioactive sources are thermo-electric generators, irradiators and teletherapy (category 1), industrial radiography and brachithery with high and medium dose rates (category 2) process by radioisotope devices with high activity sources, and well logging (category 3).

Overview of radiological accidents involving orphan radioactive category 1 sources for gamma-therapy units

Radiological accident in Mexico (Juarez), 1983

This accident is one of the first two have been thoroughly analyzed and described. Here's the history. In 1977 a hospital in Mexico (Juarez) bought from a U.S. hospital a gamma-therapy facility with a source containing the radionuclide cobalt-60 and having the activity of 37 GBq (1 Ci). The source had been imported without observing the radioactive material import rules; accordingly, the radiation safety regulatory agency had been totally unaware of the source. The Juarez hospital, however, lacked funds to commission the facility immediately, so the source was handed to an unspecialized company without clear explanations of its hazards. Time passing, the hospital personnel aware of the hazard associated with the source terminated with the hospital. Junior personnel being aware of the value of the source rather than the associated hazard, in 1983 sold the source-containing facility as a piece of scrap metal. During its transport the containment integrity was damaged and part of the radioactive material was spilled on the road. The source was molten. The metal contaminated with cobalt-60 was used, in particular, to make furniture. The accident was detected when the furniture truck had triggered



the radiation hazard alarm when entering the famous U.S. nuclear laboratory in Los Alamos.

This accident has almost the entire "classic" set of features showing how a source becomes orphan to eventually grow into a source of radiological accident:

- *Issued permit for export from the U.S. without appropriate verification of the Mexico user's ability to handle the source in a safe way⁸;*
- *Illegitimate handling, i.e. storage without appropriate regulatory permits;*
- *The source owner's (the hospital's) difficult financial situation;*
- *Long-term storage at ten on specialized entity with no information available on the source- associated hazard;*
- *Replacement of key personnel,*
- *Lack of in-house source accountancy (the personnel had kept no records on the source to transmit them to the ones who replaced them);*
- *Lack of radiation-monitoring of scrap metal (both of incoming at the scrap metal collection company and of outgoing at the metallurgical company);*
- *No radiation safety training provided to specialists dealing with scrap metal.*

The accident resulted in the exposure of 75 individuals to radiation doses of 0.25 to 7.0 Gy. 814 buildings containing contaminated metal in their structures were dismantled, a number of factories were decontaminated. The total amount of radioactive waste amounted to 16 thousand m³ of soil and 4.5 thousand tonnes of metal.

Radiological accident in Brazil (Goiania), 1987

This accident is one of the most tragic accidents associated with orphan sources. In 1987, a company specializing in radiotherapy was suddenly dissolved. No one assumed the responsibility for the ultimate destiny of a teletherapy unit with a source containing the radionuclide Cesium-137 with activity of 50 TBq (1350 Ci). Note that staying near such an unshielded category 1 source for a few minutes to hours is lethal. The teletherapy unit was left orphan in a partially demolished building of the former hospital. 2 years passed, and some local residents removed the shielding head of the teletherapy unit and sold it to a junk yard. In the process of removal the source was damaged. The radioactive substance of the source was of unfortunate physical and chemical form – that of pressed cesium chloride, i.e. the radioactive material readily soluble or dispersible. Within two weeks to follow the radioactivity spread to several parts of the town. Contaminated humans and objects scattered throughout the country. The accident was detected by physicians due to increased cases of health concerns.

The cause of this radiological accident is almost identical as that of the Mexico (Juarez) accident. But the consequences proved more severe because of the high activity of the source, physical and chemical properties of its radioactive substance.

⁸*At that point, U.S. legislation had no set limits on radioactive material export. Presently, the Code of Conduct on the Safety and Security of Radioactive Sources provides for limitation (in fact, prohibition) of export-import of radioactive category 1-2 sources to:*

- *Countries lacking the appropriate technical and administrative capability, resources and regulatory structure needed to ensure that the source will be managed in a manner consistent with the provisions of this Code; or*
- *Countries where the recipient is not authorized to receive and possess the source under its national law.*

It can admitted that it was exactly that accident that caused a worldwide wave of conscious replacement of gamma-therapy cesium-137 sources with cobalt-60 sources, which, unlike the cesium ones, contain the radioactive substance in a form that practically rules out solution and dispersion of radioactive material. Unfortunately, that wave bypassed the CIS countries.

This accident was characterized not only by severe economic and social consequences, it caused millions of people to experience a mass psychological stress and brought expert attention to the fact that psychological factor needs to be taken into account while estimating risks. However, specialists have yet to start considering that factor in a proper fashion.

As a result of the Goiania accident, 249 persons were externally contaminated, 129 persons were internally contaminated, 21 persons were exposed to over 1 Gy and were hospitalized, 4 of them died. Hard decontamination work lasted 6 months, 3.5 tonnes of radioactive waste was removed.

Radiological accident in Turkey (Istanbul), 1998

It all began in 1993 with the intent of the licensee (person with an appropriate license to use the source) to return three spent sources⁹ to their supplier in the U.S. The sources had been properly packaged, but not immediately shipped and had been stored in Ankara until 1998. Two packages had been sent to an Istanbul storehouse equipped for radioactive material storage. Eventually, the storehouse had been replenished with "more important" goods, and the spent radioactive source packages were pushed into a neighboring room. 9 months later when the room had been handed over to new owners, the latter, being totally unaware of the hazardous content of the packages, sold the containers as scrap metal. Despite the container bearing distinguished with a radiation hazard mark (a trefoil known worldwide after the Chernobyl accident), the family of scrap metal mongers broke the container open and were irradiated by the unshielded Cobalt-60 source with the activity of 3.3 TBq (89 Ci).

This accident was also detected by physicians who suspected their patients' ailments to be due to acute radiation syndrome.

10 persons were exposed to a 1 to 3.1 Gy dose and were diagnosed with acute radiation syndrome. Fortunately, nobody died. But the accident was not liquidated, since the second container containing a radioactive source with the radionuclide Cobalt-60 with the activity of 23.5 TBq (636 Ci) as of 1999, failed to be found. The search continues.

Radiological accident in Thailand (Samut Prakarn), 2000

The radiological accident began with illegal (without an appropriate license) ownership and storage by a Bangkok company of radioactive sources at a shelter where security (guarding) of the sources had not been provided. In 2000, outsiders penetrated it and partially dismantled the unit containing a cobalt-60 source with the activity of 15.7 TBq (424 Ci). Again, a radiological hazard sign and precautions (in a foreign language) had not helped identify the hazard. Attempts to dismantle the head were continued at home and at a vehicle junk yard. During the cutting the source dropped and went unnoticed.

⁹ I.e. sources that could not be used anymore for medical treatment due to reduced activity resulting from radioactive decay.

This accident was also detected by physicians who warned the authorities. The source was found and taken back under control. 10 persons were exposed to high radiation doses, three of them died.

Overview of radiological accidents involving orphan category 1 sources – thermoelectric generators

Radiological accident in Georgia (Inguri River Valley), 2001

In 2001, three wood-cutters found two ceramic objects irradiating heat. They could not know those to be sources of ionizing radiation being part of thermoelectric generators and containing beta-radiating strontium-90 (+yttrium-90) radionuclide with the activity of 30 thousand Ci. Similar generators are predominantly used by military units as reliable power sources. They used to be of a particularly wide use in the Soviet Union¹⁰. Fortunately, one of the wood-cutters was tugging the source behind himself on a rope, and the distance saved him from radiological burns and serious illness. The other two fell seriously ill and were forced to undergo lengthy medical treatment. The control over the sources was restored in 2002 only, with IAEA assistance.

This radiological accident demonstrates a special situation generating orphan sources of ionizing radiation– instability in the state due to critical political and economic changes, military conflicts, and natural disasters.

Overview of radiological accidents involving orphan category 1 sources as components of irradiating units

Radiological accident in Estonia (Tammik), 1994

This accident commenced on 21 October 1994, when three brothers penetrated a radioactive waste storage and stole a container with a radioactive source (cesium-137 with the activity of 2 TBq (54 Ci). The source had been previously removed from scrap metal and submitted to be stored at the above-said storage. Eventual research demonstrated that the source could have been most likely used in irradiating units (for example, for the purpose of sterilization). But Estonia has never had such units. The accident killed one of the brothers and caused radiological injuries of 5 persons. Despite the fact that the storage workers had noticed traces of unauthorized penetration as well as a dose rate reduction, they did not report the possible accident to the regulatory authority. The radiological accident was detected by physicians due to the nature of injuries of a 13-year boy. Control over the source was restored. In early 1995, another container with a source of the same type (cesium-137 with the activity of 1.6 TBq) was found. The detection of those orphan sources launched a campaign for large-scale Estonian territory monitoring, but no more sources have been detected.

Overview of radiological accidents involving orphan category 2 sources for gamma-radiography (gamma-defectoscopy)

Radiological accident in Morocco, 1984

¹⁰ Security and Non-proliferation Journal has already informed about the serious problems Russia has with those generators. – 2004. - Issue4. -p.24).

A source of ionizing radiation with the radionuclide iridium-192 with the activity of 1.1 TBq (30 Ci) got detached from the device. Appropriate monitoring of disconnections missing, the source dropped out of the ampoule line. An outsider picked up an "interesting" object and brought it home. The orphan source was out of control from March to April. Eight people died.

Specific hazard of orphan source generation during gamma-defectoscopy results from defectoscopy monitoring being not stationary only, but also done at temporary sites. In addition, during a defectoscopy manipulation, the source moves through a special ampoule line far beyond the protective container, can get detached and never return to the container. In that way an orphan defectoscopy source can end up in places accessible for the public and cause severe consequences.

"Classic" features of radiological accidents involving defectoscopy sources are:

- lack of in-house source accountancy;
- failure to meet source security (physical protection) rules;
- failure to meet the requirement of immediate reporting source disappearance to the regulatory agency;
- lack of source status (return to protected status) monitoring, disregarding signals of relevant instrumentation;
- insufficient radiation safety training and lack of safety culture of defectoscopists;
- lack or inefficiency of emergency plans in case of source loss.

Radiological accident in Peru (Yananga), 1999

This case was a repetition of the Morocco scenario. The accident was detected when a defectoscopic shot turned out to be spoiled. It should be noted that the defectoscopist had repeatedly left the device with the source totally unattended. When the source had been found missing, they began checking everyone who might have happened to be there. They found out that a welder had picked up the source and brought home. He eventually had his leg amputated. The welder's wife had a minor injury.

Radiological accident in Egypt (near Cairo), 2000

Again, a defectoscopy source with the radionuclide iridium-192 with the activity of 3 TBq (81 Ci) had been abandoned. In this case, the source was picked up and brought home by a farmer. In May he and his son went to see a doctor for skin injuries. The physician tried to treat their injuries as an infection. In June, the farmer and his son died. On suspicion of a virus infection, blood samples were taken of the ill family members. The samples invoked suspicions of a radiological injury. The source was found, control over it restored.

Four company employees who used the source to monitor pipeline welds and had not reported the source as missing were found guilty of abandoning the source. The men were sentenced for involuntary manslaughter.

Radiological accident involving orphan category 3 source being a component of a radioisotope process monitoring device

Radiological accident in Ukraine (Kramatorsk), 1980-1989

This tragic and unique event happened in our country¹¹. The exact address of the location where the accident developed: the town of Kramatorsk, Gvardeytsiv Kantemirovtsiv Street, Building 7, Apartment 85. This is exactly the place where, in a concrete panel of an apartment building between apartments 85 and 52, there happened to be a capsule with a cesium-137 source, with the surface gamma-radiation exposure dose rate of 1800 R/year. Sources of that type were normally used as components of radioisotope process monitoring devices. Specialists admit that the source might have dropped out of the device (most likely from the level meter) and penetrated raw material later used to manufacture the panel. Ill-fated as it was, a children's bed stood right below that wall. Over years, two families that successively inhabited the apartment were literally dying out. In the first family mother and two children died of leukemia, in the second family the senior son died in 1987 and the junior one fell seriously ill. Physicians never identified the cause of their patients' illnesses. The accident was detected only after the residents had requested that the level of radiation be measured in the apartment by a health physicist. The accident was liquidated: a portion of the wall was transported to the NASU Institute for Nuclear Research where the source capsule was removed from the wall fragment in "hot chambers" and later disposed of in compliance with the radiation safety norms and rules.

It should be noted that source accountancy and control measures have by now been significantly strengthened in Ukraine. In addition, there is effective radiation monitoring of both raw material used in housing estate construction and of buildings to be commissioned.

Radiological accident involving orphan category 3 military sources

Radiological accident in Georgia (Lilo), 1997

The history of this event began in 1992 when the Soviet Army left Georgia. The Georgian Army took over the training camp in Lilo. In 1997, 11 soldiers reported radiation burns. Radiation monitoring detected the following orphan sources: 12 sources with cesium-37 with the activity of a few MBq to 164 GBq (4.4 Ci), one cobalt source (Cobalt-60) and 200 minor sources with radium-226. The soldiers are still under treatment.

Preventive measures for accidents involving orphan sources of ionizing radiation

The key measures to prevent radioactive sources from falling under the orphan category, i.e. accident prevention measures are as follows:

- **strengthening accountancy and control over source location and relocation (in particular, creation of a state register of radioactive sources);**
- **strengthening security measures (physical protection) of radioactive sources, including protection of confidential information on the source;**

¹¹ *The accident happened back in the Soviet Union times, so detailed descriptions and analysis of this accident are missing in specialized open press. I will be grateful if readers provide references to information sources or send any additional information to the Journal's editorial team.*

- **strengthening export and import controls over radioactive category 1-2 sources;**
- **preventing generation of orphan sources by assuring regulatory control, especially of spent source management;**
- **implementing a national strategy for searching and restoring control over orphan sources.**

The measures listed require significant resources including financial ones, nevertheless, all of them are being implemented in Ukraine in one way or another. It gives us the right to believe that we are constantly making progress in reducing the risks of severe radiological accidents involving orphan sources of ionizing radiation.

Overview prepared based on IAEA material. Information of the radiological accident in Ukraine (Kramatorsk) was provided by Mr. V. Shevel, a representative of the Institute for Nuclear Research under the National Academy of Sciences of Ukraine who was directly involved in the liquidation of the accident.



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SECURITY AND SPENT NUCLEAR FUEL MANAGEMENT

Electricity production in the power grid of Ukraine in 2004 amounted to 181,310.6 million kWt/hr. Of the total electrical power produced, the percentage of that generated by nuclear power plants (NPPs) was 48,0% (in 2003 – 45,3%), thermoelectric power plants (TPPs) – 40,4% (44,6%), hydroelectric power plants (HPPs) – 6,5% (5,2%), community heat and power utilities and units – 5,1% (4,9%). TPPs reduced the production rate by 8,4 %, while NPPs and HPPs increased it by 6,9 % and 26,9 % respectively.

Discussions repeatedly raised in mass media on the nuclear energy prospects of Ukraine include a counter-argument stating harmful impacts of NPPs on the environment and public. Studies performed in various countries demonstrate that the number of premature deaths, the reduced life expectancy, and loss of faculty per unit of generated electricity in nuclear energy is at least 100 times less than that in other energy industries. Factoring in accidents, even the gravest ones, according to IAEA, does not essentially alter this conclusion. Even the rate of occupational injury due to factors other than radiation is lower at NPPs than that in coal and oil-gas energy industries. Radionuclide releases into the environment under normal operation are substantially lower for NPPs than for those for TPPs, the latter dealing with sizeable releases of CO₂ - a gas intensifying the so-called greenhouse effect, along with releases of sulphuric, phosphoric, and nitric compounds.

There exist two problems with the strongest impact on long-range nuclear energy development prospects: 1) reliability of NPPs in terms of severe accidents with large radioactivity releases; 2) burying or disposal of long-lived radioactive waste.

In the total activity of long-lived radioactive waste being an integral part of the nuclear energy production process, the portion of spent nuclear fuel (SNF) is the largest. Annual unload of SNF worldwide exceeds 9 thousand tonnes. Before 2004, 250 thousand tonnes of SNF had been unloaded from all NPPs, of which 90 thousand tonnes had been processed while the rest being stored (1). Per projections (4), by 2010, the total amount of SNF worldwide may reach 340 thousand tonnes (as converted into heavy metals). In Eastern Europe the quantity of such fuel will double over the next 10 years. The radioactivity of a nuclear assembly removed from the reactor core after 3 years of operation amounts to 26 thousand Ci/kg. For WWER-1000 reactors, it will mean an annual buildup of 500 million Ci. The high radioactivity generated by SNF-accumulated plutonium and transuranic elements with a lengthy half-life remains hazardous to humans and the environment for thousands of years.

Once unloaded from the reactor, SNF is placed in a cooling pond. The cooling pond water eliminates excessive SNF heat generated, which gradually abates, and assures personnel protection against radiation impacts of SNF. After 3 years of cooling in the cooling pond, the SNF heat generation level is reduced enough to enable transport of spent nuclear fuel assemblies from NPPs to facilities for further SNF management, with the activity down by 32 times.



Depending on nuclear fuel cycle options, there are two basic approaches to SNF management: processing and burial of high-activity waste (for a closed nuclear fuel cycle) and direct burial of SNF (for an open nuclear fuel cycle). To date, from various perspectives, neither way of SNF management is obviously advantageous, therefore, a number of countries would make a final decision on ways of SNF management after a long-term interim storage and based on new knowledge, technology, and approaches expected to appear eventually. In other words, whether to process SNF for removal of valuable components or to proceed with its ultimate burial as radioactive waste (RAW) not subject to recycling – is a dilemma to deal with right at this point.

SNF: Processing or direct burial?

Each state adopts its own spent nuclear fuel management strategy. The national strategy is driven by the degree of nuclear industry development; political, economic and even geographical factors.

For instance, in the Finland of the 1970s, at the initial stage of the nuclear energy program implementation SNF management policy, due to its small scale, was based on the use of international capacities. About 300 tonnes of SNF from Lovisa NPP was sent to be processed at *Mayak* Combine in the USSR. Following adoption of the Nuclear Energy Act in 1994, the policy was revised in favor of SNF burial at domestic geological repositories. On 14 February 1991, a governmental decision was passed to bury NPP-generated RAW in deep rock repositories at those NPP sites.

In 1995, two operators (TVO and IVO) jointly founded a *Posiva*, Ltd. made responsible for research, development and planning of final SNF burial. Four sites had been considered in the preparatory process, with some research done and the public and local government authorities dealt with. In 1999, *Posiva*, Ltd applied to the government for making a decision in principle to create a repository for ultimate SNF burial at the Olkiluoto site. A governmental decision in principle was made on 21 December 2000, based on review of submittals enclosed with the application, and entered into force following parliamentary approval on 18 May 2001.

In 2004, construction began in the rock of an underground facility as part of the repository. Despite Finland's SNF management policy being based on a single-use technology, experts do not rule out the possibility of other technologies being used if developed in the future. Owing to the long-term cooling of SNF before final burial, such progress is quite possible.

A systemic approach to forming a SNF and RAW management strategy is demonstrated by Sweden. Back in 1976, an analysis was performed at the government's request with its findings providing the basis for the first governmental strategy with respect to this problem. After the Threemile Island NPP accident, the strategy was substantially revised, and its basic provisions codified. According to the updated strategy, SNF is subject to direct burial. Sweden has all infrastructure necessary for SNF management, including a central facility for interim storage; a final burial site research program is underway. According to a research report issued by the company SKB dealing with RAW management, potential sites to accommodate geological repositories may be the sites in Östhammar and Oskarshamn provinces (4). The company plans to apply to Sweden's Nuclear Inspectorate for a license to construct a repository in 2008. Owing to the well-grounded strategy, responsible and qualified industry, and clear definition of competence of various parties to the process, Sweden can now be considered as a state with the most mature fuel cycle completion system worldwide.

A U.S. decision concerning direct burial of NPP SNF was made back in early 1980s. The site selection process for a geological repository in Yucca Mountain (State of Nevada), which lasted almost 20 years, is now complete. The U.S. Department of Energy is expected to apply to the U.S. Nuclear Regulatory Commission for a license to build that repository. The U.S. currently has a effective geological repository for transuranic military waste (State of New Mexico).

Four states with developed nuclear industries (Great Britain, France, Russia, and Japan) consider SNF processing reasonable, since it is a valuable energy raw material. SNF, apart from plutonium and uranium isotopes, contains isotopes used in medicine, science and engineering. In addition, plutonium and uranium removed from SNF are recycleable to produce nuclear fuel (10 to 30 % in fresh nuclear fuel), which is favorable for natural uranium conservation. It is an essential factor that radiochemical processing of SNF helps reduce the volumes of high-activity waste (HAW) to be ultimately buried.

Benefits from processing may include a reduction of mining dose loads, since the use of processed SNF allows to produce less uranium ore. Direct burial of SNF would reduce exposure during fuel processing, but increase the doses exposed to at mines. (2, 3).

As for cost estimates and cost comparison vs. processing with eventual burial of high-activity RAW and direct burial of SNF, a Special Committee under Japan's Atomic Energy Agency disseminated in November 2004 a report that was the first to officially present the results of such a comparison. According to them, SNF burial without processing will cost 1.5-1.8 times less. This proves the NFC options to be cost-efficient and the approaches taken by Finland, Sweden, and the U.S. to have good prospects. However, since no country has ever completed an SNF burial on an industrial scale, in reviewing cost estimates one should factor in the political situation, national decision-making practice, the mastery of technologies, etc.

Status of SNF management in Ukraine

Nuclear power plants with WWER reactors in the former USSR, and in Ukraine in particular, were created based on the concept of SNF storage in near-reactor cooling ponds for about 3 years, whereafter SNF would be transferred to specialized enterprises for interim storage (in pool-type storages) and further processing. Those enterprises are located in the town of Ozersk of Chelyabinsk Oblast (WWER-440 reactor SNF) and the town of Zhelezonogorsk of Krasnoyarsk Territory (WWER-1000 reactor SNF) of the Russian Federation.

Following the breakup of the former USSR and appearance of national legislations in the new independent states, certain inconsistencies arose including those related to radioactive waste management. New economic relations were being formed between enterprises and nuclear industry organizations of Ukraine and Russia. It took a few years to agree and address all legal, economic, and administrative arrangements for SNF to be relocated from Ukraine to Russia. Since SNF was not being transported during that period from Ukrainian NPPs and, accordingly, SNF was being accumulated at NPP units, the near-reactor cooling ponds started to overflow. In a critical situation that ensued, Ukrainian NPP units would have had to be shut down due to physical inability to continue operating.

Ukrainian nuclear industry faced a threat of collapse with all potential consequences for the power industry and the country in general. Later, in 2003, the Law of Ukraine *On Fundamentals of National Security of Ukraine* identified the situation as a threat to Ukraine's national interests and national security.

Nuclear industry managers were challenged to take adequate action to secure continued operation of NPPs.



One should note that such situation is not a novelty in world practice. Thus, multiple deferments of commissioning of a centralized SNF repository for U.S. NPPs, a responsibility of the Department of Energy (DOE), once put operators in need of creating additional capacities for interim SNF storages at NPP sites. In Ukraine, however, the situation was complicated by operator establishment and development processes, creation of nuclear energy use legislation, and economy transformation.

In early 1990s, proposals came from a few European firms with large experience of processing and interim storage of SNF in various countries of the world, for arranging the final stage of the nuclear fuel cycle in Ukraine (NPP spent nuclear fuel management). The then tough economic situation, however, impeded a constructive review of such proposals.

A technical solution to the interim storage problem for a larger amount of SNF, implemented at virtually all NPPs of the world with sizeable operational experience, is to replace SNF storage racks in near-reactor cooling ponds with leak-tighter ones. Such a replacement is significant for safety of the SNF storage system and warrants a mandatory safety justification, in particular: sub-criticality assurance, heat abduction, radiation protection, and mechanical strength.

Based on availability of spent heat-generating assemblies (SHGAs) and empty spaces in near-reactor cooling ponds (which enable unloading SHGAs from the pond where racks are being replaced), SNF leak-tight storage racks were installed almost in all cooling ponds (CPs) within a few years. The first leak-tight storage racks were manufactured by Izhorsk-based plants in Russia, later on – by *Skoda* (Czech Republic), the latter ones featuring better performance.

Installation of SNF leak-tight storage racks is obviously a measure that only temporarily, for a few years, defers resolution of the problem of SNF handling at NPPs. The world practice shows that creation of interim dry SNF storages (SNFSs) is a more comprehensive measure. Interim SNFSs are nuclear facilities (or in certain circumstances part of other nuclear facilities), designed for interim (a few decades long) SNF storage with meeting the appropriate safety requirements. After being stored in an interim SNFS, spent nuclear fuel is expected to be sent for processing or burial.

In Ukraine, attempts have been made to create SNFSs at NPP sites. Yet designing a storage and its equipment, its manufacture, and all the more a large-scale safety analysis for a new facility and making arrangements for licensing documentation to be prepared as required by effective nuclear energy legislation, proved to be a task far less simple than it initially appeared to NPP operators.

It is the Zaporizhzhya NPP only that has managed to build and commission such storage, owing to the resolve and perseverance of the plant's management and experts and with sponsorship and assistance from organizations and specialists involved in the SNFS creation process. That being so, no experience in solving a whole range of problems related to the creation of SNFS had been available in Ukraine. The experience of adapting foreign projects to Ukrainian legislative requirements, performing nuclear facility safety analysis and licensing, interacting with foreign suppliers, improving the project based on advanced technology and materials developed in Ukraine, proved to be essential not only for operators but also for all parties involved in the process of creating Zaporizhzhya NPP SNFS. The storage represents a protected site whose concrete foundation accommodates reinforced concrete storage containers. The containers accommodate multi-seater metal drums with spent HGAs.

Upon completion of all Zaporizhzhya NPP SNFS creation activities initiated 1993, the first SNF storage container was installed in the storage in August 2001. By the beginning of 2005, 22 SNF containers had already been accommodated at the storage site.

Meanwhile, legal developments in the nuclear energy use continued both in Ukraine, and in Russia, which were then facing their own problems, particularly, a concern for representatives of organizations providing storage for SNF WWER-1000 reactors (a significant part of them being located in Ukraine). Upon agreement of appropriate Russian and Ukrainian legislative requirements by the NAEC *Energoatom* operating organization, a contract was concluded to return Ukrainian NPP SNF to Russia for technological storage and processing (the contract makes for radioactive products of SNF processing to be returned to Ukraine). Therefore, NPP SNF shipments to Russia were resumed.

Furthermore, the Russian Federation Government Decree No. 418 *On Regulations for Imports of Irradiated Fuel Assemblies of Nuclear Reactors to the Russian Federation* dated 11.07.03 provides for radioactive waste to remain in the Russian Federation. This opens key opportunities for a total solution of the Ukrainian NPP SNF disposal problem. It appears absolutely logical that the affected parties in Ukraine are considering such a path, making required cost estimates, listing administrative, technical and legal issues to be resolved. In particular, methods for calculation of radioactive isotopes in spent fuel need mutual agreement and associated costs, which cannot be fixed and depend on the situation at the world market and industrial needs.

However, even after technical issues of SNF shipments to Russia have been resolved, the threat persists of monopolizing the SNF management industry on which all nuclear energy of Ukraine depends. Below is an example of why that threat is permanent. Last December, the *Interfax-Ukraine* agency informed, quoting the President of Russia's *TVEL Corporation* Aleksandr Nyago, that the agency might suspend fresh nuclear fuel supplies to Ukrainian NPPs. For some reason, the information came concurrently with the quite controversial elections of the President of Ukraine. Shortly afterwards, namely after some adjustment had been made in the Russian leadership's position concerning the election process in Ukraine, the TVEL Corporation's statement was essentially disavowed.

Creating capacities for SNF interim storage in Ukraine will enable a more flexible and reliable Ukrainian NPP SNF management, while redundancy of SNF storage capacities (in Ukraine and in Russia) signifies a maximum reliability of nuclear-related work.

Based on the above considerations and having completed a number of preparatory activities in last July, the State Enterprise *National Energy-Generating Company Energoatom* (NAEC *Energoatom*) launched a tender for a turnkey project (design, erection and commissioning) of a spent nuclear fuel storage for WWER reactors (SNFS). The purpose of a SNFS is to assure safe reception, handling, transport, and storage of heat-generating assemblies for WWER-1000 and WWER-440 reactors of Ukrainian NPPs. The SNFS capacity should provide for accommodation and storage of WWER SNF generated at Ukrainian NPPs during the industrial operation lifetime. Per the procedure established, the tender shall result in awarding the winner a two-part contract:

- I – requirements as to the tender winner's preparation of required information to the Client and development of an investment feasibility study (IFS) from the winner's contract conclusion to the decision made by Ukrainian authorities on SNFS location and construction;



- II – requirements to SNFS design, construction, and commissioning given a positive decision made by Ukrainian authorities on SNFS location and construction.

Such contract arrangements are a concern to a degree, since the signed turnkey SNFS project contract envisages no NAEC guarantees related to its implementation. This January the tender committee, having studied the bids and considered the factors involving not only participants' bids, but also the development strategy of NAEC Energoatom and Ukrainian nuclear energy industry in general, decided to award the tender to a U.S. corporation *Holtec International*. Unfortunately, one is led to point out that the corporation's lack of a license for nuclear facility design is another factor of concern in terms of observing the effective Ukrainian legislation.

Pursuant to Article 37 of the Law of Ukraine *On the Use of Nuclear Energy*, for nuclear facility location proposals to be reviewed by the Cabinet of Ministers of Ukraine, the applicant shall submit information as appropriate, containing justification of the need to erect such a facility and a minimum three site location options for its accommodation. The documentation package shall necessarily contain a characteristic of the surrounding environment in the area of potential nuclear facility location; human impact assessment an environmental impact assessment for planned nuclear facility construction, commissioning, operation, and decommissioning; design-incorporated measures to prevent and reduce negative environmental impacts.

SE NAEC "Energoatom" shall prepare such information as part of their IFS "WVER SNFS Creation". Based on the tender results the storage type has been selected, with associated necessary data to be used during IFS development. This document will be developed by *Kievenergoproyekt*. IFS shall provide justification of the need and reasonability of SNFS creation, site selection justification, environmental impact assessment, etc.

Accounting for the tendering process uncertainties some of which were noted above, one would hope that the new leaders of the relevant state authorities and new NAEC Energoatom management will incorporate lessons learned and bring the centralized SNFS creation process to incontestable conformity with effective legislative requirements.

One should admit that it is critical to create a SNF storage for ChNPP RBMK reactors as well, since its operation will allow decommissioning of the Chernobyl NPP. Its construction is being unreasonably delayed.

The key SNF management tasks as of today are to implement the objectives already set such as providing interim SNF storage capacities and developing a strategy for the ultimate stage of the nuclear fuel cycle in Ukraine. That said, the SNF and RAW management strategy, along with the nuclear energy development strategy in general, must be constantly improved and updated to incorporate knowledge and experience accumulated, along with the new circumstances as they emerge.

In closing, attention should be brought to yet another aspect of SNF management safety assurance. Ukraine is known to have signed (1997) and ratified (2000) the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (5). To provide for thorough observance of the joint convention, a clear SNF management strategy should be available. The recommendations offered by the group of countries involved in the discussions of Ukraine's national report to the Joint Convention First Meeting of the Contracting Parties (November 2003, Vienna), include a wish to reach an ultimate settlement as regards the final SNF management stage. In May 2006, the Joint Convention

Second Meeting of the Contracting Parties will be held to discuss national reports on the progress made in the spent fuel and radioactive waste management and to follow up on the First Meeting recommendations between the meetings. Unfortunately, most recommendations have not been addressed; preparation of the second national report is yet to begin despite it being due for presentation to the IAEA by the end of 2005. This is bringing up concerns both in terms of the real status of SNF and RAW management in Ukraine, and of fulfillment of Ukraine's international obligations. Replacements in the central executive authority leadership responsible for defining the SNF management strategy brings hope for a quality breakthrough in solving this difficult problem.

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Uncertainty in the Issues of Disposition

Regardless the fact that explosion events in Novobohdanivka and Artemivsk went far out of the boundaries of the problems related to the army issues, situation around armament disposition at the storages and bases of storing, if we speak about its solution in a scale of the state and till now remains "on hold". We would like to remind that in Ukraine, according to the data announced by the militaries in different time, is stored from 1735 till 2448 million tons of different type of the missiles and armament.

The Army has defined its needs: according to the statement of the first deputy Minister of defense of Ukraine Mr. Oleksandr Stetsenko, armament need of the MF of Ukraine makes 600 thousand tons till the end of the year 2010. That means that at least 1,1 million tons must be eliminated. One of the weak places of disposition is that major part of the armament is stored on the open air, and is close to the bases and arsenals, where are strategically important sites are located. And even that is not worst. Ukraine still does not have technology for disposition of the part of nomenclature of explosive heritage. If we took into consideration that average annual disposition index by means of domestic capacities as a rule does not exceed 25 thousand tons.(in 2004 this index did not exceed 10 thousand tons), then even with unarmed eye that can be seen that there is a need to change approaches to the disposition. In fact the State can not deal with the explosive risk problem.

Price paid at Novobohdanivka

That can seem strange, but ministerial castle stimulated solution of disposition problem. Even more, solution on disposition project at Novobohdanivka became one of those accidents, when a new military minister accepted a policy of the predecessor. Today even normal citizen do not believe in that the real reason of the Eugeniy Marchuk's resignation from the position of the Head of military organ were the problems with armament storages keeping. In this case, such formulation of the resignation reasons made Oleksandr Kuzmuk hostage of the situation: he was expected to immediately act to resolve disposition problem. One day after he came to his cabinet at Povitroflotsky prospect a new minister signed an agreement with one of the ukrainian special exporters "Ukroboronservis" (daughter company of "Ukrspetsexport"). In principle, that occurred what was expected for several months: MOD has passed authorities to liquidate consequences of fire on the territory of military storage. Frankly speaking, the MOD had not so much space for maneuver, state funding for disposition could only appear after several months, and demonstration of activity demanded to immediately start works. Finally, only "Ukroboronservis" and "Spivdrujnist" Corporation had a real experience in conduction of disposition works, and concerning demining only "Ukroboronservis" (its experience was performed in Lebanon, fortress in Kerch and several sites in Sevastopil). Taking into account the fact that "Spivdrujnist" was removed from the conduction of works in Novobohdanivka after explosions, and factories, which were participating in disposition on the subcontractor basis, hurried to refuse of organizational tasks, that circle has narrowed up to one structure.

For this reason urgently turnover funds were activated, which is profitable for the special exporter – at least after several months their expenditures will be compensated.



Bureaucracy stands guard of safety

There is no doubt that actors, which entered or just planning to enter a disposition field, are reviewing it as not only state issue, but as well as certain business. So, if the money was invested and it has been working for the government, why do not we get a profit not only for the state but for enterprises too? Although the State till now did not determine unified operator on the disposition market, Novobogdanivka project start has become a transparent hint on determination of such operator, moreover, this project is a development of methodology of disposition of any site. Frankly speaking, work organization made an operator to conduct a whole range of measures, which Ukraine had never met before. First, for preparation of works it is necessary to get a conclusion of general constructor of armament and explosive matters on the state of the armament, which was in the fire zone and way of its disposition. Second, after obtaining such conclusion (expertise) and relevant technology documentation the project institute must work out project and budgetary documentation. Third, after project design a state expertise must be done. Except that, an issue on development of normative base on labor security for those people, who will directly conduct demining works, must resolved in a legal way. And it is sad to acknowledge, but it is very difficult to untie the Gordian knot with the help of only Minister's or President's will decision is impossible – it goes about security of too many people.

As "Ukroboronservis" got such a lemon, it got started to process it to the lemonade. Accept signing a necessary agreements with a subcontractors the operator negotiated with a Swedish company NAMMO concerning involvement of foreign investments into Ukrainian disposition process. "Ukroboronservis" and NAMMO study an opportunity to involve a financial support of International Trust Fund at the range of 54 million Euro for disposition of 300 thousand tons of Ukrainian armament. But with only one natural awareness: if "Ukroboronservis" would be determined by Ukraine as an operator with involvement of foreign investments, then it will agree to prepare a non-cheap business plan and financially will provide auditing. Expenditures are estimated by the experts to be at the level of 400-500 thousand USD. According to the unofficial information, a military organ has written approved a quotation of 300 thousand tons of armament. If it is to be true, then the process of determination of unified operator can be finished in the nearest future. The profit for the foreign investments is obvious: the same NAMMO Company can bring into the Ukrainian market missing technologies of disposition of so-called complicated armaments.

That is why nowadays, the majority of expert are inclining to the idea that there supposed to be unified operator for disposition of armaments and out-of-date arms. And that foresees both responsibility of one structure and provision of guarantees to the foreign companies, which decided to enter Ukrainian market. Several operators are allowed in only one case, if the Government itself or authorized by it structure or military organ will coordinate this process. However, even experience of MOD certifies that it is quite uneasy. Thus, if Eugene Marchuk was highly appreciating an active participation of military organ in the disposition process, his successor Anatoliy Hrytsenko not only considers disposition function as uncharacteristic to the army activity but in general has resigned from position several MOD officials, which were concerned to the decision approving in this sphere. And though the final point in this case of their involvement into the corruptive decisions must be put only by law enforcement organs, the fact of presence of a bureaucrat in this process as an intermediary is a perfect field for

abuse makes a sense. Regarding the involvement into the disposition process of all the potential capacities (and those, which are available in the country, and such, which are effective within the frames of foreign assistance), then according to the specialists estimation, if Ukraine chooses the same way, then it will be capable to multiply disposition capacities by 5-6 times, what makes 100-125 thousand tons per year.

And there is only one, even two "Buts". First, factories and subcontracting-structures can become involved into the works only in terms of presence of real resources represented by the budgetary allocations. As for the opinion of well familiar to the disposition issues people, the allocated, on the paper, 71 million hryven in reality can appear only in the middle of the year, or in August. Second, foreign companies will not start working without guarantees (it can be provided by the Government or authorized operator), business-plan and financial provision of audit.

In addition to that purchasing of armament disposition technologies are requiring funds, which absence still can be felt by the industry. Thus, according to the statements of the representatives of the DC "Ukroboronservis", the company is ready to spend part of defensive funds, received from the arms sale. To the expert's opinion, this time it goes on free credit from the State. As long as its expenditures for arrangement of disposition tasks "Ukroboronservis" is planning to renew at the account of disposition products sale and as well receiving into the property of out-of-date military equipment, which still can be sold to the third countries.(The specialists are stating that nowadays, there are almost 10% of profitable armaments at the MOD arsenals form its general quantity).

A new loop in battle for the disposition cake

The beginning of realization of quite risky project of brining Novobogdanivka back to normal life unexpectedly invigorated disposition market. Accept "Ukroboronservis" and five state companies of the field, which are leading its activities as the subcontractors, there were also almost ten commercial structures fixed entering the market. Among them the most active are: State enterprise of MODU "Ukroboronlizing" and "TASCO" Corporation. The first one differs itself by the high level lobbying at the state structures, the second one – by the proposals regarding the disposition of complicated and hexogen containing armaments. Such technologies can be provided by the German company "Rheinmetal". "TASCO" Corporation also invested its turnover funds into the establishment of industrial capacities for disposition: corporation almost designed facilities for utilization of the wash-out technology at the disposition. "Spivdrujnist" Corporation is planning to return into business as well. Disposition becomes profitable regardless that profitable armaments are coming to an end. If earlier interest was based on the utilization of disposition products, then nowadays it is based upon the increasing of financing. This way, in 2004 there was 20 million hryven allocated for disposition and in 2005 that amount should be increased by three times. Cooperation with foreign investors is considered to be profitable as well. That is to say that comes a dangerous moment when absence of one owner on the disposition field, which can lead not only to the chaos in the disposition itself, but also can frighten investors.

Disposition becomes specially interesting as well in the context of NATO decisions (through NAMSA subdivisions) and Governments of the United States and Great Britain on allocation of certain amounts for conduction of disposition works. Thus, Great Britain stated on the decision to allocate 400 thousand pounds for assistance to Ukraine in elimination of shooting weapons, mobile systems for anti-

aircraft defense and armaments. Norway is ready to contribute 240 thousand Euros. A considerable contribution into the Ukrainian disposition has to make Swedish company NAMMO. USA, which for the implementation of the first phase makes contribution at the amount of 1 million 642 thousand USD, most likely will head the works and cooperate with another potential donor-countries. These funding will come through the international trust funds, in particular, NATO fund, established within the framework "Partnership for peace". That is why commercial attractiveness of all disposition types arranged in the country seems to be logical. Since contrary to the fact that presence of the foreign states on the disposition market will unavoidably bring their subcontractors, still Ukrainian companies have a chance to make profits out of the subcontracts.

At the same time, in the village, which became known for the whole country, the first stage of the projects is implemented. Which, by the way, was estimated by the MOD for the period not less than two years. On December 23 the Shostkinsky DerjNDIKhP was supposed to announce its conclusion. Mr. Viktor Bashinevsky the Director and the General Constructor of the Armament and Explosive Matters at the same time, admitted in the interview to the Defense Express that exactly "Ukroboronservis" may become the main operator of the armament disposition works in Ukraine. Its main advantage, in comparison with the other enterprises, as to the V. Banishevsky's opinion, is the availability of turnover funds, which may give an opportunity to conduct armament disposition before the budgetary funding will come. Disposition works and elimination of dangerous armament, marks out Director General, will not start before spring.

Hence, neither "Ukroboronservis", nor any another operator, nor all of them together will not be capable to "swallow" disposition of 1,735-2,448 million tons of domestic "explosive risk good". According to the words of Mr. Ivan Tsarik, Executive Director of "Ukroboronservis", if the company will become a unified operator of the disposition in the country, then it will increase the quantity of subcontractors. At the same time he does not exclude that "Ukroboronservis" will stand up for necessity of renewal of the activity of "Spivdrujnist" Corporation, for the reason that there is a shortage of companies capable to carry out large-scale disposition works. "All the subcontractors will be provided with the work on the conditions of obtaining of relevant proceeding documents" – promised Mr. I. Tsarik. In parallel with that the experts quite critical evaluate the situation: if there would not be a unified operator – the disposition within the State might not be conducted. Foreign scientific and industrial structures will not enter Ukrainian market without guarantees, still fresh are reminiscences of scandal leaving of this market by the American "Ellaent Techsystems Corp.". At that time the dual rules of the disposition field became an issue of contention, which led to the redistribution of the authorities between the "Spivdrujnist" Corp. and ukrainian-american JV "Ellaent-Kyiv". If the situation would repeat again, Ukraine might not get technologies of the complicated armament elimination and thus unsecured heritage would have to wait for other explosions.

There is another way. Ukrainian disposition capability reaches, under the circumstances of increasing of existing capacities by five times, 100 thousand tons of armament per year. This is an idea of Volodymyr Opashko, Director of Makiyivsky state project institute of the Ministry of industrial policy. O. Stetsenko also stated on the capabilities of increasing of disposition scopes up to 100-150 thousand tons. In order to increase capacities a lot of funds are needed. Moreover, having such capacities established, Ukraine will eliminate its heritage on its own

during not less than two decades. And none can guarantee that each of those 20 years will not become similar to the 2004 – a year of Novobogdanivka. As it usually happens; there is only one step between state interests and banal bargain. Exactly to such result may lead appearance of several “general” operators of disposition: responsibility (on the works, armament account, responsibility on and accountability of financial investments of the foreign states) loses margins. This way, just on MOD the destiny of Ukrainian disposition depends.



KOREAN NUCLEAR SYNDROME

In an official statement of 10 February, for the first time the North Korean leadership admitted to actually possessing nuclear weapons and declared its exit from the sextalateral negotiation process to settle the Korean Peninsula crisis. Specialists from the International Atomic Energy Agency (IAEA) believe KPDR to have obtained 8 to 56 kilograms of weapon-grade plutonium as a result of fuel rod processing. That amount of nuclear material is sufficient for producing 6 – 8 atomic bombs.

(Translated news provided by PIR Center)

Comment. The beginning of 2005 saw another aggravation the situation with Pyongyang's nuclear program.

The statement made by KPDR's Deputy Foreign Minister Kim Kye Gwan in front of a delegation of U.S. congressmen that interpreted KPDR to be a nuclear-weapon state though pursuing solely defensive goals and willing to forego its nuclear arsenal in the future has evoked a new wave of tension in the Far East. KPDR has yet to cross the "red line", i.e. to test a nuclear explosive device. But the overall history of events and lingering out the resolution of the problem raise a serious concern with the world community.

Pyongyang's partial retreat to the former status and agreement in principle to resume negotiations reached at the meeting between KPDR leaders with a high-ranking official of the People's Republic of China speak in favor of the version of a new bargaining attempt aimed at resuming fuel and food supplies to the country currently finding itself in an extremely grave economic situation. The principal goal of that motion appears to consist in forcing the U.S. to enter in a direct contact with KPDR and eventually procuring Washington's non-aggression guarantees, which, combined with economic aid, would assure the ruling regime's survival. The U.S. and other officially recognized nuclear-weapon states interpreted that maneuver of KPDR's exactly as an attempt to streamline the bargaining process and, therefore, contented themselves with appeals to resume negotiations in the sextalateral format. For it is obvious that Pyongyang is making such risky statements, perceiving under the economic crisis and isolation a threat to the very existence of the regime. The zest of it, however, is whether the hard line taken by the U.S. and some other states will push KPDR's leadership to a reckless step -- a nuclear test, which may deal a fatal blow to the nuclear-weapon non-proliferation regime.

The latest events related to KPDR's nuclear program have once more highlighted the troubled status of the overall non-proliferation regime and the palpability of threats its very existence is exposed to. Not only has the crisis demonstrated regime shortcomings, of which the principal one is the potential for successful implementation of bypassing nuclear military programs by an NPT-member state, but also attested to the palpable threat of such a state's legal exit from the Treaty. The situational paradox about KPDR's nuclear program is that attempted compromises with potential proliferators by granting them economic aid and political concessions merely result in a saving of time, but by no means alter the proliferator's motivation.

Koleidoscope

Madrid, 8 – 11 March 2005

International Summit on Democracy, Terrorism and Security

The keynote address to the Closing Plenary of the International Summit on Democracy, Terrorism and Security in commemoration of the anniversary of the terrorist attacks in Madrid was made by the United Nations Secretary-General Kofi Annan.



In that address Kofi Annan maintained that he had been invited to speak because terrorism is a **threat to all states and to all peoples**, which can strike anytime and anywhere.

Terrorism is a direct attack on the core values the United Nations stands for, namely: the rule of law; the protection of civilians; mutual respect between people of different faiths and cultures; and peaceful resolution of conflict. "So, believes the Secretary-General, **of course**, the United Nations must be at the forefront in fighting against it, and first of all in proclaiming, loud and clear, that terrorism can never be accepted or justified, in any cause whatsoever". By the same token, - emphasizes Annan, - the United Nations must continue to insist that, in the fight against terrorism, the core values mentioned above cannot be compromised. Therefore, **human rights and the rule of law must always be respected**. Terrorism is in itself a direct attack on human rights and the rule of law. If we sacrifice them, we are handing a victory to the terrorists.

Kofi Annan went on to say that "since terrorism is clearly one of the major threats that we face in this century", the problem received close attention in the report, "A More Secure World — Our Shared Responsibility", produced by the High-level Panel set up by the Secretary-General to study global threats and recommend changes in the international system.

The Panel had asked the Secretary-General to promote a principled, comprehensive strategy the key elements of which were identified by Kofi Annan as "five D's": first, to dissuade disaffected groups from choosing terrorism as a tactic to achieve their goals; second, to deny terrorists the means to carry out their attacks; third, to deter states from supporting terrorists; fourth, to develop state capacity to prevent terrorism; and fifth, to defend human rights in the struggle against terrorism.

Kofi Annan stated that the United Nations had already, for many years, been playing a crucial role in all these areas, and has achieved important successes. But there is a need to do more and do better.

Specifying the key strategy elements, the Secretary-General said: "Groups use terrorist tactics because they think those tactics are effective, and that people, or at

least those in whose name they claim to act, will approve. Such beliefs are the true "root cause" of terrorism. The UN's job is to unequivocally show the fallacy of such an approach. It should be clearly stated, by all possible moral and political authorities, that **terrorism is unacceptable under any circumstances, and in any culture.**

The United Nations and its Specialised Agencies played a central role in negotiating and adopting twelve international anti-terrorism treaties. Now the time has come to complete a comprehensive convention outlawing terrorism in all its forms. The legal basis for anti-terrorist effort calls for a definition of terrorism which would make it clear that any action constitutes terrorism if it is intended to cause death or serious bodily harm to civilians or non-combatants.

Not only political leaders, but **civil society and religious leaders** should clearly denounce terrorist tactics as criminal and inexcusable. "Finally, we must pay more attention to the victims of terrorism, and make sure their voices can be heard".

Kofi Annan informed that last October the Security Council, in its Resolution 1566, suggested an international fund to compensate victims and their families, to be financed in part from assets seized from terrorist organizations, their members and sponsors.

While discussing the second strategy element – **denying terrorists the means to carry out their attacks** -- the UN Secretary-General explained that it meant making it difficult for terrorists to travel, to receive financial support, or to acquire nuclear or radiological material.

In that area the United Nations has already made important steps. The UN Convention on the Suppression of Financing of Terrorism has been in force for three years. The Security Council has long since imposed travel and financial sanctions against members of Al Qaida and associated entities. But more must be done to ensure that those sanctions are fully enforced.

Effective action is also needed against **money-laundering**. Here the United Nations could adopt and promote the eight Special Recommendations on Terrorist Financing produced by the Financial Action Task Force of the Organization for Economic Cooperation and Development (OECD).

Among the most vital tasks the Secretary-General listed efforts to deny terrorists access to nuclear materials. In his opinion, nuclear terrorism is still often treated as science fiction. "But unfortunately we live in a world of excess hazardous materials and abundant technological know-how, in which some terrorists clearly state their intention to inflict catastrophic casualties. Were such an attack to occur, it would not only cause widespread death and destruction, but would stagger the world economy and thrust tens of millions of people into dire poverty. Given what we know of the relationship between poverty and infant mortality, any nuclear terrorist attack would have a second death toll throughout the developing world.

That such an attack has not yet happened is no excuse for complacency. Rather, it gives us a last chance to take effective preventive action".

International community efforts in that area must be consolidating, securing, and when possible eliminating potentially hazardous materials, and implementing effective export controls. Both the G8 and the UN Security Council have taken important steps to do this, and to plug gaps in the non-proliferation regime". Kofi Annan spoke further to urge the Member States of the United Nations to complete and adopt, without delay, the international convention on nuclear terrorism and applauded the efforts of the Proliferation Security Initiative to fill gaps in the international security system.



Concerning the third element of the UN Secretary-General-proposed strategy (**detering states from supporting terrorist groups**), the address alleged that in the past the United Nations had not shrunk from confronting states that harbour and assist terrorists, and the Security Council had repeatedly applied sanctions to such states. Indeed, it is largely thanks to such sanctions that several states which used to sponsor terrorists no longer do so. And that firm line must be maintained. All states must be aware that, if they give any kind of support to terrorists, the Council will not hesitate to use coercive measures against them.

Discussing the fourth strategy element – **developing state capacity to prevent terrorism** – the Secretary-General noted that “terrorists exploit weak states as havens where they can hide from arrest, and train or recruit personnel. Making all states more capable and responsible must therefore be the cornerstone of our global counter-terrorism effort. This means promoting good governance and above all the rule of law, with professional police and security forces who respect human rights.

The United Nations has already done a lot in this area. The Security Council, in its resolution 1373, required every state to take important steps in preventing terrorism. The Counterterrorism Committee follows how well states are implementing that resolution”.

In that part of his address, the Secretary-General also dwelt on the UN activities in developing states’ capabilities to counter the **threat of biological terrorism and promote strengthening of public health** as a critical factor of effective defense against biological terrorism.

The last, but far from least strategy element as was referred to by Kofi Annan was **defending human rights**. He advised that “international human rights experts, including those of the UN system, were unanimous in finding that many measures which States were adopting to counter terrorism infringed on human rights and fundamental freedoms. Compromising human rights cannot serve the struggle against terrorism. On the contrary, it facilitates achievement of the terrorist’s objective – by ceding to him the moral high ground, and provoking tension, hatred and mistrust of government among precisely those parts of the population where he is most likely to find recruits.”

Summarizing, Kofi Annan emphasized the importance of the summit in which all Europe and all civilized world affirmed their solidarity with the families and friends of the victims; with almost a thousand innocent people who had been injured by the explosions; and with the Spanish people, who have suffered so much from terrorism over the past 30 years, but have remained true to their democratic convictions. Kofi Annan promised: “We will remember the victims of 11 September 2001, and those of other terrorist attacks in Dar-es-Salam, Nairobi, Tel Aviv, Bali, Istanbul, Riyadh, Casablanca, Baghdad, Bombay, Beslan – indeed, all victims of terrorism everywhere, no matter what their nationality, race or creed”.

New York, 20 March 2005

Report of the UN Secretary-General:

In Larger Freedom:

Towards Development, Security and Human Rights For All

In his report the UN Secretary-General Kofi Annan called on leaders to make efforts to reach a new global agreement for the resolution of the problem of development, security and human rights, and reform of the United Nations Organization. The recommendations offered in the report form the basis for decision-making at the forthcoming summit of world leaders to be held in September 2005 when the UN's 60th anniversary will be celebrated.

In the Report Section III entitled "Freedom from Fear", the Secretary-General expresses his concern that "on the security side, despite a heightened sense of threat among many we lack even a basic consensus and implementation, where it occurs, is all too often contested".

The Secretary-General fully seconds the common notion of collective security. "The threats to peace and security in the twenty-first century include not just international war and conflict but civil violence, organized crime, terrorism and weapons of mass destruction. They also include poverty, deadly infectious disease and environmental degradation..."

A key to success in the world community's struggle against the terror threat is believed by the Secretary-General to be the transformation of "the United Nations into the effective instrument for preventing conflict that it was always meant to be by acting on several key policy and institutional priorities", in particular:

- **Preventing catastrophic terrorism:** states must strictly follow the comprehensive anti-terrorist strategy based on five pillars: aiming at dissuading people from resorting to terrorism or supporting it; denying terrorists access to funds and materials; deterring States from sponsoring terrorism; developing State capacity to defeat terrorism; and defending human rights. States must conclude a comprehensive convention on anti-terrorist struggle based on a transparent and agreed-to definition. The international Convention for the Suppression of Acts of Nuclear Terrorism must be finalized without delay.
- **Nuclear, chemical and biological weapons:** Progress in both disarmament and non-proliferation is essential. As for disarmament, nuclear-weapon States must further reduce their arsenals of non-strategic nuclear weapons and pursue arms control agreements that entail not just dismantlement but irreversibility. They should reaffirm their commitment to negative security assurances and uphold the moratorium on nuclear test explosions. As far as non-proliferation is concerned, the verification authority of the International Atomic Energy Agency (IAEA) must be strengthened through universal adoption of the Model Additional Protocol, while states are expected to finalize, sign and implement the fissile material cut-off treaty.

In his report Mr. Annan emphasized that violence against civilians would never be supported. "It is time to set aside debates on so-called "State terrorism". The use of force by states is already thoroughly regulated under international law. And the right to resist occupation must be understood in its true meaning. It cannot include the right to deliberately kill or maim civilians". Thus the Secretary-General reiterated his endorsement of "...the High-level Panel's call for a definition of terrorism, which would make it clear that, in addition to actions already proscribed by existing conventions, any action constitutes terrorism if it is



intended to cause death or serious bodily harm to civilians or non-combatants with the purpose of intimidating a population or compelling a Government or an international organization to do or abstain from doing any act..."

London, 16 – 18 March 2005

International IAEA Conference on Nuclear Security Global Directions for the Future

The conference hosted by the Government of the United Kingdom was convened in cooperation with the European Commission, the European Police Office (Europol), the International Criminal Police Organization (Interpol), the Organization for Security and Cooperation in Europe and the World Customs Organization. On the first day, achievements and shortcomings of national and international efforts to strengthen nuclear (physical) security were discussed. On day two, the conference participants considered how the international nuclear (physical) security regime was adapting to the new measures in that area and the IAEA's role in those activities. The focus of the final day was upon additional measures to be taken internationally to uphold common "security culture" as a counteraction to the threat of nuclear terror.

The international community must promote a stronger nonproliferation culture to improve the security of nuclear and radioactive materials worldwide, – such a conclusion was reached by the participants of the International Conference on Nuclear Security in London on 16 – 18 March 2005, sponsored by the International Atomic Energy Agency (IAEA). "Why haven't we yet achieved the "gold standard" of security for nuclear materials, around the globe?", asked Laura Holgate, Vice President for Russia/New Independent States Programs under the Nuclear Threat Initiative. "My only answer is that we haven't yet made it a priority. It's not a matter of technology—it's a matter of human judgment".

Indeed, world leaders refer to the nuclear terror possibility as threat number one, Ms. Holgate, however, alleged that "we can pick out many other priorities that are competing against this supposedly "top" priority—and winning". She offered an example that "security officials in both US and Russia are being permitted to sacrifice progress on bilateral nuclear security cooperation based on Cold-War era worries about theft of bomb designs—when we can each blow up the world several times over".

"Lawyers in the US and Russia have been permitted to sacrifice progress on nuclear security cooperation over disagreements about who would pay damages in far-fetched scenarios of saboteurs secretly embedded in the Western companies who are providing assistance to Russia's nuclear industry. Diplomats around the world are being permitted to fight the application of binding international standards for nuclear security in a misguided attempt to preserve sovereignty and national pride", stated Ms. Holgate in her speech. She offered the following example of the low security culture in nuclear energy: "In Russia nuclear facility guards shut down alarm systems to avoid the annoyance of frequent false alarms and to leave their posts in order to forage for food". "Too few people involved in nuclear security have truly internalized the threats we face today, and they are therefore not setting proper priorities", – emphasized Ms. Holgate.



"Every [security] system is inadequate if there is no security culture shared by the whole staff," said Eric Plaisant, a commissioner at the French Economy, Finance and Industry Ministry. "Security has to be a concern for everyone and not just for some specialists," said the high-ranking official.

In her speech L. Holgate mentioned improvements occurring in Russia, which has the largest stores of unsecured nuclear materials. She noted the presence of nuclear security culture coordinators at some facilities whose activities are supported by U.S. aid. However, Russian security culture is a particular concern, with officials stressing the importance of improving security hardware and focusing less on factors such as "reliable funding streams, commitment to following procedures, and a management culture that recognizes the centrality of the nuclear security mission".

Referring to the report released by the University of Georgia's Center for International Trade and Security in December 2004, Ms. Holgate noted that Russia is "far from the only nation" that needs improvements to its security culture.

Andrei Malyshev, who heads Russia's Federal Environmental, Industrial and Nuclear Supervision Service, Rostekhnadzor, disagreed with Holgate's characterization of Russian security culture. "In the last few years we have substantially increased the level of physical protection. "serious infringements" of security requirements at nuclear facilities detected by the Russian nuclear energy regulators dropped from 655 in 1999 to 175 in 2003." Although according to Russian news service Interfax, Malyshev said, quoting that same 2003 statistic last year, "The physical protection of nuclear facilities in Russia cannot be recognized as being satisfactory."

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