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RENEWING THE PARTNERSHIP: ONE YEAR LATER**Matthew Bunn**

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ABSTRACT

In August 2000, the authors published a comprehensive report assessing the U.S.-Russian Material Protection, Control and Accounting program and making recommendations for accelerating and strengthening the effort. The report emphasized the security importance of the MPC&A program and critically examined the program's status and policies in several major areas: budgets, schedules, and plans; technical and policy approaches; program management and partnership with Russia; and access. In this paper, the authors update and review their previous assessment in light of the MPC&A progress and challenges of the past year, and make recommendations intended to strengthen and accelerate the effort and increase the chances that MPC&A improvements will be sustained over time.

INTRODUCTION

The U.S.-Russian Material Protection, Control and Accounting (MPC&A) program – a central element of the global effort to ensure that potential bomb material does not fall into hostile hands – remains crucial to U.S. national security and plays a fundamental role in stemming the spread of nuclear weapons. In the year since the authors' comprehensive assessment of the program was published [1], the program has made significant progress despite an often difficult operating environment, and moved in a number of the directions recommended in our report. Much more remains to be done, however – and whether the Bush administration will exercise the sustained high-level leadership necessary to accomplish the program's objectives rapidly and effectively remains very much in doubt.

THE MPC&A PROGRAM IN THE LAST YEAR

The past year has been one of both progress and challenges for the MPC&A program. Notable progress has included: continued successes in implementing security and accounting upgrades at a large number of facilities; dramatic expansion of the effort to improve security and accounting for nuclear warheads themselves in the Navy program (publicly acknowledged for the first time in early 2001); development of a new strategic plan, and an approach to regularly updating the plan; continued progress in the pilot-scale material consolidation and conversion effort; reintegration of a small number of senior laboratory experts into policy roles in the program; and a new access agreement that should allow major work to get underway at the most sensitive remaining facilities. These successes were reflected in the continued support for the program in Russia; in the relatively high marks the program received in a recent General Accounting Office review [2]; and in the strong support the program has received in the Bush administration's reviews of nonproliferation programs and in the budget process on Capitol Hill.

These successes came despite a very challenging operating environment. With the last year consumed with a U.S. Presidential campaign and the initial getting-organized phases of a new administration, there has been virtually no high-level leadership on these issues from the U.S. side. Despite President Bush's strong statements of support for such efforts on the campaign trail, and the ringing recommendation for increased funding and an accelerated pace from the bipartisan Baker-Cutler panel [3], the Bush administration started its term by proposing to cut the program's budget by \$40 million compared to the fiscal year 2001 level (and nearly \$100 million compared to what had been envisioned for FY2002 in the Clinton administration). The administration then effectively paralyzed further policy-making for six months with a prolonged review of Russian threat-reduction programs, only now coming to its conclusion.

On the Russian side, while there was support in principle for the MPC&A program and its objectives, the security services intensified their crackdown on access to sensitive facilities and cooperation on sensitive topics. At least prior to the recent Bush-Putin summit, which appears to have generated some positive momentum, U.S.-Russian strategic and political relations for most of the year have been sour, with disagreements over U.S. proposals for missile defenses and NATO expansion, Russian nuclear cooperation with Iran and India, and espionage allegations. While the MPC&A program has managed to escape undue damage from these negative political trends, they inevitably affect it. (The Iranian issue has been a particular problem, as the State Department has blocked a variety of efforts it perceives as "new starts" in an effort to pressure Russia's Ministry of Atomic Energy (MINATOM) to cut off sensitive technology cooperation with Iran.)

At the same time, however, conditions for securing nuclear material in Russia have noticeably improved. With the Russian federal budget now in surplus (due to increased oil prices, the devaluation of the ruble, the return of modest economic growth, and improved tax collection), salaries for nuclear workers have increased and are being paid on time. No longer are nuclear guards leaving their posts to forage for food; nor is the electricity to power alarm systems going down because facilities have been unable to pay their electricity bills. The desperation that created particularly urgent threats of theft has noticeably subsided. And President Putin's efforts to impose increased central control have included beefed-up security at a number of nuclear facilities. But with many facilities still lacking the modern technologies required to deal with the full panoply of insider and outsider threats, the risk of theft of potential bomb material remains unacceptably high.

RENEWING THE PARTNERSHIP: ONE YEAR LATER

Our August 2000 report made recommendations in several major areas of the MPC&A program. Below, we review the situation in each of these areas and recommend steps that should be taken now to strengthen the effort.

An Accelerated Strategic Plan, With More Resources

The August 2000 report noted that the projected completion of the initial security upgrades and material consolidations had been delayed by many years compared to initial estimates, with some projections at that time predicting that another 20 years would be required before even the initial security upgrades were completed. We judged such a schedule to be unacceptable: either the MPC&A program is addressing an urgent threat to international security, in which case it is crucial that its objectives be accomplished as rapidly as possible, or it is not, in which case it is not clear why the U.S. government should be providing such substantial funding for it. We recommended that "DOE should develop, in partnership with Russian experts, an accelerated strategic plan designed to reduce the proliferation threats posed by insecure material in the former Soviet Union as rapidly as

possible,” and that the President should make agreement with Russia on such a plan a “top priority.”

Since then, program staff have prepared an accelerated strategic plan which calls for completing initial upgrades and consolidations within roughly 10 years, with continued sustainability work through 2020. Implementing this plan would require increased funding levels and increased allocations of capable personnel. A mechanism has also been established to re-baseline the strategic plan every three years.

This represents significant progress, but we believe additional efforts are needed to further accelerate the effort, so that the initial upgrades and consolidations could be accomplished in the next 5-7 years. This will require detailed examination of each of the constraints on accelerating progress – e.g., budgets, personnel, Russian cooperation, bureaucratic entanglements – and mechanisms for overcoming them. The administration needs to reverse its effort to cut the program’s budget, and work with Congress both to restore FY2002 funding to the levels needed to seize current opportunities (such as the chance to launch new work at sensitive facilities afforded by the new access agreement, discussed below), and to increase future funding.

Moreover, ultimately the strategic plan for the effort must be a joint U.S.-Russian plan. Without Russian buy-in and support, a substantial acceleration of the effort would not be possible. Hence, the new strategic plan should serve as the basis for discussions with Russian experts to develop a truly joint plan for the effort – including divvying up which activities would be undertaken with U.S. resources, and which with the limited resources the Russian government itself is now devoting to MPC&A upgrades.

Consolidation and Conversion

The August 2000 report complimented the program’s initial efforts to focus on material consolidation and conversion, but recommended a much more aggressive effort in this area. This would include offering broad, targeted packages of incentives to convince site managers to consolidate or give up their plutonium and HEU.

In the year since then, there has been significant progress in implementing the initial pilot-scale Material Consolidation and Conversion (MCC) effort. Ton-quantities of HEU have been blended down in this effort, MINATOM has established a working group to prepare a consolidation master plan, and MINATOM is expected to receive authority to coordinate consolidation at non-MINATOM facilities as well. But no buildings or facilities have had all of their fissile material removed in the MCC effort, and progress toward getting MINATOM to finish the master plan, or even commit to cleaning all the HEU or plutonium out of *any* particular facility has been slow. MINATOM has said that since consolidation is not covered in the MPC&A agreement, a new government-to-government agreement is needed to move forward with accelerated consolidation – but the U.S. State Department has blocked negotiation of such an agreement, along with other “new starts” with MINATOM, until the Iran issue is resolved. Even if such an agreement could be reached, a broader approach is required to providing incentives for the massive consolidation that is clearly needed (both within large weapons facilities with dozens of buildings with HEU or plutonium, and removing material from small, isolated facilities that cannot afford to secure it for the long haul).

To get the process moving at the large defense facilities, it would be worthwhile to sponsor a workshop at one of these facilities that would bring senior management and security officials from the various large facilities together with U.S. counterparts who could discuss the U.S. consolidation experience, the substantial expense of continuing to guard fissile materials, and the huge amounts of money that can be saved through consolidation (the United States, for example, expects to begin saving \$300 million per year in security and safety costs when the last plutonium is removed from Rocky Flats). Ultimately, the topic of how many buildings at which facilities should continue to have HEU or plutonium in the future is a fundamental element of the broader task of developing a vision for the future of Russia’s nuclear complex, both military and civilian (a task in which the Nuclear Cities Initiative also has a vital role to play). Increased emphasis should be placed on working with MINATOM to develop a common vision of where the two side’s nuclear complexes are heading over the next 10-20 years – a common vision that would help guide a broad variety of programs, not just MPC&A.

Balanced MPC&A Upgrades

In our August 2000 report, we recommended that MPC&A upgrades be balanced among the physical protection, material control, and material accounting elements, and noted that much less progress had been made in material accounting up to that point.

Since then, there has been some modest progress on material accounting. Development of the national-level Federal Information System is proceeding, albeit slowly; initially, it is expected to include reports from 23 sites. To confirm that the Federal Information System is working, the program has developed a "vertical slice" approach that would involve checks of facility records for samples of the data.

Nevertheless, progress in the challenging task of actually carrying out measured physical inventories at the many sites in Russia and establishing effective material accounting programs has been limited. A major recommendation of our August 2000 report was to implement an accelerated accounting initiative that would involve identification, tagging and sealing of every item or container with weapons-useable fissile materials – after which the laborious task of measuring each item could be pursued at a slower pace. Experts from the Brookhaven National Laboratory and the Kurchatov Institute have jointly made a similar proposal (that would also reduce the measurement burden, at least initially, by measuring only a sample of the containers in any particular stratum of material).[4] Launching such an initiative on a nationwide scale would require high-level political leadership, which has so far been lacking. The Russian side, however, seems aware of the need: in September 2000, for example, the Russian Cabinet met to discuss the inadequacies of nuclear material accounting in Russia – and while it was agreed that some \$70 million was needed to establish a national inventory system, only \$2.3 million was made available for the task.[5] This awareness would appear to provide the basis for joint cooperation on an accelerated accounting initiative.

Because the chemical processing required to prepare pure plutonium or HEU from unirradiated low-weight-percentage mixtures is not among the more difficult parts of making a nuclear weapon, another key recommendation in our report was to revise the program guidelines "to ensure that theft of enough material for a bomb in the form of low-weight percentage material is not significantly easier than theft of enough pure material for a bomb." As the plutonium disposition program moves toward possible large-scale deployment of MOX fuels in Russia, we believe this recommendation remains urgent – but little movement in this direction appears to have been made so far.

Finally, we believe there remains a need to support mechanisms for the exchange of information, ideas, and lessons learned between different Russian sites, between different U.S. site teams, between bureaucratically separate parts of the MPC&A program (such as the Navy program, the MINATOM military complex program, and the civilian program), and between the MPC&A program and other programs. Too often, lessons have to be re-learned again and again by different teams at different sites, or opportunities for synergy between MPC&A and other programs (such as the Nuclear Cities Initiative or the HEU purchase agreement) are going unnoticed.

Sustainable Security – Including Regulation

Our August 2000 report focused in detail on a broad range of recommendations intended to increase the prospect that security and accounting improvements achieved in the MPC&A program would be sustained for the long haul – without which the program cannot truly be counted as a success.

In the year since then, the program's sustainability efforts have continued to make progress. The effort includes training programs designed to increase the pool of knowledgeable specialists available to implement effective MPC&A; efforts to expand the supplier base for effective MPC&A equipment in Russia; nascent efforts to include training in the crucial nonproliferation importance of MPC&A as well as technical training; programs to ensure that spare parts and reliable warranty support are available to maintain MPC&A systems once installed; and efforts to help facilities develop appropriate procedures for day-to-day operations of MPC&A systems. The MPC&A program is also increasingly incorporating sustainability into the initial design of MPC&A upgrades, favoring "inherently sustainable" upgrades – the classic example being the one-ton blocks loaded on top of the plutonium at Mayak. Efforts also have been made to develop an overall sustainability strategy.

In essence, these efforts have focused primarily on the *resources* of trained personnel and effective equipment that could be applied to sustaining effective MPC&A in Russia if the relevant decision-makers had the incentives to do so. This is absolutely necessary, but is not likely to be sufficient. As our August 2000 report described, a broad range of actions are needed to ensure that Russian entities have both *incentives* to sustain effective MPC&A programs and the appropriate *organizations* needed to do so.

The incentives issue is particularly critical. As long as the typical manager of a Russian nuclear facility faces dire budget constraints, in a situation where every ruble spent on safeguards and security is a ruble *not* spent on activities that might generate revenue, and there is no serious threat of consequences –

fines, license suspension, or loss of revenue – from not having adequate MPC&A, that manager will have every incentive to cut spending on his facility's safeguards and security, and we cannot expect to have sustainable MPC&A in Russia.

The U.S. government can help change the incentive structure in several ways:

- Giving the Russian government incentives to enforce effective MPC&A by putting the issue at the top of the cooperative security agenda, as a fundamental nonproliferation responsibility of the Russian state – an item to be raised on every occasion, at every level, until it is effectively addressed. In particular, the United States should seek a high-level commitment from the Russian government to put its own resources into sustaining effective MPC&A systems once they are installed. The United States should also work with other countries to convince them to take a similar approach.
- Giving Russian facilities incentives by giving preference to facilities with good MPC&A in all U.S. government contracts (not just those for the MPC&A program) – ultimately making clear that effective MPC&A is a fundamental “price of admission” for competing for lucrative business with the United States, just as refraining from sensitive technology transfers to potential proliferators is.
- Giving Russian facilities further incentives by writing requirements for operating and maintaining MPC&A systems into MPC&A contracts, with contract rewards and penalties for good or bad performance in sustaining effective MPC&A.
- Giving advocates of particular new programs incentives by making clear that the United States will not support any new large-scale bulk-processing or long-distance transport of fissile material that does not have highly effective MPC&A – and putting high priority on putting in place effective MPC&A for programs that already exist, such as the blend-down of highly enriched uranium for the HEU Purchase Agreement.

Ultimately, however, the Russian government has to be the source of the main incentives for Russian facilities. If MPC&A is to be sustained, there must be an agreed set of requirements for effective MPC&A, and a realistic prospect of negative consequences if the requirements are not met. This is what makes effective regulation such an essential element of the long-term success of the MPC&A program, as difficult as it is to achieve.

The effort to strengthen Russian MPC&A regulation continues to make progress, though slowly. The Russian nuclear regulatory agency, GOSATOMNADZOR (GAN) has spent much of the last year fighting off an attempt by MINATOM to eliminate much of its power. Nevertheless, work with GAN on MPC&A regulation has been reinvigorated. Considerable progress has been made in drafting implementation regulations to enable effective implementation of the overall physical protection and material control and accounting directives.

Considerably more can and should be done, however. Whatever the outcome of the GAN-MINATOM battle, MINATOM will need stronger internal regulatory capacities, and the MPC&A program should place more emphasis on working with MINATOM's internal regulators. Just as important, the program should immediately begin a comprehensive cooperative effort to strengthen the Ministry of Defense group charged with regulating MPC&A for all Ministry of Defense and MINATOM military-related activities. Finally, the involvement of NRC experts – who have the most experience in the United States in actual implementation of independent MPC&A regulation – should be strengthened.

Performance Testing

In our August 2000 report, we pointed out that many MPC&A systems that looked great on paper looked terrible when confronted with a knowledgeable adversary exploiting their weaknesses – and that therefore establishing a credible and continuing program to test the performance of MPC&A systems in defeating insider and outsider threats is crucial to achieving the goal of effective and sustainable security. We explored the performance testing issue in detail, and pointed out that Russian security concerns had so far made it impossible for U.S. experts to help carry out realistic performance tests at most facilities in Russia.

Since then, there has been some progress on performance testing. Site teams have been emphasizing the importance of performance testing in working with Russian sites. The MPC&A program has increased the emphasis on performance testing in its training for GAN inspectors. A training course covering elements of performance testing is under development for the Russian Methodological and Training Center (RMTC) at Obninsk.

These have been relatively low-level efforts to date, however, and few specific results have been achieved. There is not yet any large-scale performance-

testing program in Russia, or any plan or regulatory requirement for one. Moreover, trained teams are not yet in place to carry out performance tests comparable to those conducted at U.S. facilities. We believe it would make sense, as recommended in our August 2000 report, for the program to capitalize the initial establishment of one or more Russian groups in the business of conducting performance tests on a contract basis. Such groups could partner with a counterpart company in the United States that would provide methodology, training, and guidance. The Russian and U.S. testers might train together, jointly conducting tests at civilian, NRC-regulated facilities in the United States and at less-sensitive facilities in Russia. MPC&A contracts could then finance testing by the Russian team at Russian facilities with U.S.-sponsored MPC&A upgrades where testing by U.S. personnel was not possible (with appropriate arrangements – such as the “trusted agent” concept used by the U.S. Department of Defense – to ensure that the tests were in fact carried out as agreed).

Non-Russian Facilities -- in the Former Soviet Union, and Beyond

In our August 2000 report, we pointed out that, while MPC&A upgrades for the non-Russian former Soviet facilities with plutonium or HEU had been completed, there were doubts as to whether high levels of security could really be maintained at these sites without substantial assistance, and that therefore (a) a concerted effort should be made to simply remove the weapons-usable material from nearly all of these sites, providing targeted packages of incentives as described above; and (b) those sites that remain should be incorporated in an ongoing sustainability program comparable to that planned for Russian facilities. We continue to believe such steps are needed.

Management and Partnership

Our August 2000 report made a number of recommendations for strengthening the management of the MPC&A program, and especially for rebuilding the spirit of partnership with Russian experts that, in our view, is the key foundation for the program's past and future success.

There has been significant progress in these areas during the last year. What had been a frightening rate of loss of top technical talent participating in the program has slowed, as has the rate of turnover among team leaders for individual sites (a factor that had provoked particular Russian annoyance in the past, as each site was constantly having to accommodate itself to new team leaders with new approaches). Program managers have brought a small number of senior technical experts from the national laboratories to DOE headquarters to provide a continuing lab voice in key aspects of the program. Additional federal employees have been hired as well.

At the same time, we believe there is a continuing need to reduce the level of internal and external secrecy and compartmentalization of information – so that each part of the MPC&A program can benefit from the lessons learned in the other parts, the program as a whole can be more fully integrated with related U.S. government programs, and the program can benefit to a greater degree from the perspectives of independent experts. Mechanisms need to be established for regular sharing of information between site teams (and between Russian sites themselves), and between program elements. We continue to believe that a program of this magnitude and importance would benefit from establishing a standing advisory group of knowledgeable independent experts.

With respect to partnership with Russian experts, there has also been progress in the last year. Most importantly, a new agreement has been reached on the access issue, as described below. The joint standing committee established in the MPC&A government-to-government agreement has met several times to work through outstanding issues and problems. Nevertheless, the issue of partnership remains serious: too often, Russian experts at individual sites still feel that their views are being ignored, and see the MPC&A approaches being adopted as having been dictated to them by American experts, rather than feeling the sense of ownership that is likely to be essential for their maintenance over the long haul.

We recommend that (a) the program adopt as a fundamental principle that every objective will be achieved in partnership with Russia, with programs designed to serve both U.S. and Russian interests, and Russian experts integrated into all phases of program design and integration; (b) that the program work with Russia to develop the new strategic plan into a joint strategic plan reflecting both U.S. and Russian input, and divvying up which tasks will be done with U.S. resources and with Russian resources; (c) that the guidelines be revised with Russian participation, to incorporate Russian understandings of what needs to be done; and (d) that new efforts be made to establish Russian teams that can play a key role in designing and carrying out upgrades at a range of sites, as Kurchatov Institute experts have done in the Navy program.

Access

Our August 2000 report sharply criticized the September 1999 decision to cut off further contracts at several key sites over the access issue – particularly given that the United States had already signed an agreement with Russia specifying that it would *not* demand physical presence of U.S. personnel at the most sensitive sites where MPC&A upgrades were taking place.

Since then, the program has succeeded in reaching a new agreement on access. While the terms of the access agreement have not been made public, program managers believe it represents a substantial breakthrough that will allow MPC&A upgrade work to go forward at all of MINATOM's sensitive facilities, even the serial production plants. If implementation of this accord proceeds smoothly, this could go a long way toward repairing some of the grievous damage to the trust and partnership so essential to the MPC&A program's success that was caused by the September 1999 decision. In addition, the program continues to have considerable success in implementing access approaches that are effective without being unduly intrusive in the Navy program, which now includes upgrades for facilities holding intact nuclear warheads.

Sustained High-Level Leadership

Ensuring that the essential ingredients of nuclear weapons do not fall into hostile hands is a vital U.S. (and Russian) national security objective. The MPC&A program is at the front line of the global struggle to stop the spread of nuclear weapons. As such, it demands sustained high-level support and attention, to overcome the obstacles to accelerated progress as they arise.

Unfortunately, in the last year, such high-level leadership has been almost wholly lacking. Political attention in the last half of 2000 was consumed by the election campaign, while the new administration's attention in the first half of 2001 has been consumed in getting its people and program in place (a process that still has a long way to go). In September 2000, when Russian President Putin emphasized the importance of controlling HEU and plutonium in proposing a new approach to nuclear energy at the United Nations millennium summit, there was no effort to seize on that to gain Russian agreement to expanded efforts to control HEU and plutonium. When Putin fired Minister of Atomic Energy Evgeniy Adamov, who many U.S. officials had come to see as public enemy number one because of his oversight of sensitive nuclear cooperation with Iran and India, and replaced him with Alexander Rumiantsev, there was no early meeting with Rumiantsev to explore an expanded nuclear security cooperation agenda. Gen. John Gordon, head of the National Nuclear Security Administration, has focused his principal attention on reviving the U.S. weapons complex. The Bush White House team not only allowed the program's fiscal 2002 budget to be slashed in the first budget round – over stringent protests from their own DOE team – but then denied a request from DOE that the DOE nonproliferation programs' budgets be fixed in mid-year, when billions of dollars were added to the Pentagon's 2002 budget request. After years of criticizing the Clinton administration (correctly) for insufficient high-level leadership on this critical national security threat, the Republicans have so far been providing substantially less. As a result, a variety of problems that required high-level intervention to resolve have simply languished unaddressed.

There is still hope, however. The Bush administration's review of cooperative threat reduction programs with Russia appears to have acknowledged the critical national security importance of the MPC&A program, and the recent Bush-Putin summit appears to have created some positive momentum for cooperation to address the proliferation threat. A sea-change in the level of sustained, high-level attention to this effort is urgently needed – but if such a change is made, along with the other steps to strengthen the MPC&A program described above and in our 2000 report, there are substantial prospects for a reinvigorated partnership to address this threat to U.S., Russian, and world security.

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