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UK Presents Paper on Chemical Weapons Convention Challenge Inspections to the Conference on Disarmament

On July 11, the UK presented a paper to the Conference on Disarmament in Geneva entitled Verification of the Chemical Weapons Convention: challenge inspections of Government facilities: Analysis of results. The paper was presented just one day before Britain's Minister of State for Foreign and Commonwealth Affairs, the Rt Hon William Waldegrave MP, said in a statement to the CD that "challenge inspection is the key to effective verification (of a Chemical Weapons Convention)."

The UK's Practice Challenge Inspections (PCI) programme "addressed a range of sites representative of fundamental United Kingdom national security activities and equipment in order to assess the impact, procedures, and conduct of challenge inspection at different types of facilities".

The six PCIs carried out by the UK team were as follows.

1. Army Conventional Ammunition Storage, October 1988.
2. Navy Conventional Ammunition Storage, March 1989.
3. RAF Operational Base Storing Nuclear Weapons, September 1989.
4. Nuclear Weapons research and development/ component manufacture, February 1990.
5. Conventional Ammunition Proof and Experimental Range facilities, March 1990.
6. Sensitive Communications Centre, April 1990.

In addition the UK PCI Team made visits to a number of other facilities to talk through the implications of challenge inspection. These included a command and control facility, research and development facilities, a nuclear missile processing facility, and civil nuclear processing and research facilities.

The report pinpointed four particular aspects of security which would have to be considered under a verification regime: physical security with regard to gaining intelligence advantages; presence and location of sensitive stores (which a host might not wish or be required to reveal to a visiting inspector); stockholding, throughput and capacity; and access to weapons design information. To cope with these concerns, PCIs were conducted "under varying degrees of managed access", defined in the report as "routine" managed access for use at most sites and "exceptional" measures for particularly sensitive sites.

Routine measures included removal of charts and plans, locking away of papers, logging off from computers and locking away of sensitive equipment. Shrouding of certain objects rather than of whole rooms or buildings was found

to be invaluable in making the "stay-out" zone as small as possible. Other routine techniques could include the use of X-ray equipment or neutron activation to establish whether ammunition has a solid or liquid fill, or the use of gamma ray spectrometry to establish the presence of nuclear materials. The use of sampling techniques was also found to be valuable in verifying compliance both in general and in the absence of complete access.

Where exceptional measures were considered necessary in sensitive sites with acute concerns over physical security, the study "identified a number of measures to alleviate these concerns, albeit at some operational and/or financial cost. These include shrouding of defensive positions, alarms, sensors etc and deliberately changing normal security practices. To prevent compromise of classified information about stockholdings, throughput and capacity - a particular concern at nuclear weapons facilities - the UK developed a system whereby only a percentage of buildings within a site or part of a site, and/or a given percentage of rooms within a building and/or items within a room were available for inspection at the Inspection Team's choice."

The report outlines a number of methods of arriving at satisfactory random selected access and concluded that "the UK experience has been that Random Selective Access as part of an overall managed access scheme is a major contribution to meeting security concerns while at the same time giving an inspection team sufficient access at their choice to enable them to conclude with a high degree of confidence that the location or item subject to managed access was unrelated to chemical weapons."

On the question of notice of inspection the report found that "It is clear that even in as short a period as 48 hours considerable quantities of ammunition could be shipped out of a storage facility...On the other hand the challenged state will require a minimum period of time, which from our experience we estimate could be up to 48 hours, to prepare to receive the Inspection Team..." To overcome this problem the report makes two suggestions; either that an advance party arrives within an agreed number of hours of a challenge being issued to seal the facility and monitor movements in and out, or to allow the whole Inspection Team to arrive earlier than 48 hours after the challenge, keeping out of certain buildings until preparations are complete but being allowed to seal buildings until entry is allowed, to prevent movements in and out.

The study favours clear definition of a challenged facility to avoid controversy, using geographic co-ordinates, facility names and local maps. The onus would rest with the challenging state.

On size and composition of the inspection team the report suggests that it "needs to be tailored to the size and type of facility under challenge. Our experience has shown that a minimum of four inspectors is necessary at even the smallest sites...The UK believes that the Inspection Team should be accompanied by sufficient support staff to seal the site, monitor movements in and out on a 24 hour basis, assist in the collection and monitoring and

analysis of samples both on and off site and provide general administrative services..."

The report approves of sealing all points of access to a challenged site except for the main gate. Seals should be used that could be broken in an emergency but which can be examined easily for tampering. At sites not secured by fencing, movements in and out could still be monitored and areas of particular suspicion could be sealed.

The report suggests that reception plans should be prepared by all facilities likely to be subject to inspections to avoid last minute problems if an inspection is called. Also the report found that an introductory briefing on the work and layout of a facility can be of great benefit to the Inspection Team. It continues "our experience has shown that an initial tour of the challenged facility after the introductory briefing is essential to the inspection team...in formulating their...inspection plan."

The UK study suggested that in some cases inspection plans might be offered by hosts and accepted by Inspection Teams while in others this offer might be refused as it might be felt that "an important element of the deterrent effect of the challenge inspection regime arises from the uncertainty for the challenged state as to what the inspectors will choose to examine, and in how much detail." The report also suggests that transport and communication facilities should be provided by the challenged facility.

The UK PCIs laid considerable importance on the use of sampling techniques. In the case of ammunition the UK found that the use of cutting charges followed by vapour and wipe samples is the "most advantageous method of verifying munition contents". The report continues "In order to save time on the inspection the pre-labelling of sample containers and the use of pre-printed sample log sheets is essential". The report also suggests that seals that would indicate tampering will be essential for samples not accompanied by inspectors. In one two-day practice inspection, 66 samples were taken (duplicates were given to representatives of the challenged facility for verification purposes). It was suggested that while some samples would take several days to analyse, some should be analysed overnight for immediate use by the inspectors.

It was suggested that, for CWC verification, an agreed list of equipment should be made available by the Technical Secretariat and that the challenged state must have the right to inspect any equipment on arrival of the team at the point of entry to the site. There should also be clear rules covering the use of photography. The UK found that polaroid photos (one for the inspectors and one for the hosts) should be used initially, followed by a subsequent 35mm photo. It should also be understood that inspectors comply with existing safety procedures at a challenged site. The role of an Observer from the challenged state needs to be clarified, says the report.

The UK's work on PCIs led the report to the following conclusions:

i. The extent and thoroughness of Inspection Team activities at even the largest UK sites, coupled with the degree of access even the most sensitive facilities have been able to provide, suggests that challenge inspection should be a powerful means of both assuring compliance and deterring contravention or circumvention of the Convention.

ii. There are no UK sites so sensitive from a national security viewpoint that we could not allow some form of access within the site, appropriately managed, to an international inspection teams under the provisions on challenge inspection of a Chemical Weapons Convention.

There is a wide variety of managed access techniques available to minimise the compromise of sensitive and classified information unrelated to CW even at the most sensitive sites.

iii. It is clear that detailed national guidance will be required for all sites on the reception of a challenge inspection. At sensitive sites inspections could only be accepted under strictly managed access, which might have to include extensive shrouding, the locking away of sensitive equipment and components and the removal of sensitive notices and displays. At most sites an inspection would be most effectively managed by closing down all non-essential normal activity to facilitate management of the inspection. This has inevitable resource implications both financial and manpower which cannot be quantified at this stage but which at certain sites are likely to be substantial.

iv. Even after all the managed access techniques described in this paper have been applied, physical access to a sensitive site will inevitably mean that the inspectors will discover some information unrelated to CW which the host country might prefer to shield. The extent and importance of this will vary from site to site. These factors need however to be reviewed in the context of the overall gains to a state's national security from more effective assurance of compliance with the CW Convention following from such access.

v. The United Kingdom has concluded that at a wide range of sites comprehensive access can readily be given to an inspection team. Even at sites of importance to national security managed access techniques could allow sufficient access to enable the inspectors to fulfil their task effectively. Within a small number of especially sensitive sites the techniques of managed access would need to be more rigorously employed, including the possible need to deny access to a very limited number of highly sensitive buildings. We cannot of course predict on the basis of this programme of practice challenge inspections at Government controlled facilities that managed access will enable inspectors to fulfil their task in all conceivable cases. But on the basis of our experience our conclusion is that difficulties need arise very rarely, if at all, if the host state uses the full range of managed access techniques."

Prior to the UK paper, on the 12 June the GDR submitted 3 working papers to the CD on challenge inspections for a CWC. The papers, entitled: "Report on a Trial Challenge Inspection in a Chemical Industry Plant" (CD/996), "Inspection Methodology for Challenge Inspections in Industrial Chemical Plants" (CD/997) and "Application of Trace Analysis to Exploit Memory Effects in Challenge Inspections" (CD/998), will be summarized in the next issue of *Trust and Verify*.

Johnston Island Programme

The verification and testing programme of the Johnston Atoll Chemical Agents Disposal System in the Pacific was halted for a week in mid-July. The US plant, the first designated chemical weapons destruction plant, began a 16 month verification programme only a few weeks earlier. The programme was reported to have been halted when monitoring devices detected chemicals after they had supposedly been destroyed, although a spokesperson later said that the delay was caused by minor engineering and procedural problems.

Meanwhile in Germany the 102,000 artillery shells packed with 435 tons of Sarin and VX nerve agents began their long journey from the US base near Clausen to Johnston Atoll on 26 July. They are not expected to reach their final destination until the end of September.

The journey entails the shells, packed in heavily armoured containers, being transported 25 miles by road to Miesau where they will then travel 300 miles by rail to the port of Nordenham, near Bremen. The rest of the journey will be by sea but the exact route has not been disclosed.

Recent reports from the Pacific say that these Chemical Weapons from Germany will not be demilitarized until four years after their arrival at Johnston Island. At a US Embassy briefing in Wellington on 12 July, senior US Army Officers said that the burn-off of European weapons would not commence until the initial programme of 70 weeks operational verification testing and a further 133 weeks burning of CW materials already on the island had been completed. Burning of the European stocks is projected to need 29 weeks.

After shipment to Johnston Island, the European Theatre Weapons will be placed under control of the US Army Chemical Activity Western Command (USACAW) which has jurisdiction over CW activities in Korea. Analysts in the Pacific are concerned that, for the next four years, the European CW on Johnston Island will in effect be merely redeployed in a "fully serviceable combat-ready condition" to the Pacific whilst awaiting destruction. They are concerned at contingency plans for use of Chemical Weapons in the Pacific Area and refer, in particular, to two studies: a) "Chemical Retaliation Requirements Study" commissioned by the Plans and Policy Directorate of the Headquarters US Commander-in-Chief, 1982, and b) "Chemical Warfare Analysis", Defense Nuclear Agency under the Pacific Command Study Program, 1988.

Opposition to chemical weapon activities on Johnston Island has been expressed by several regional governments and the issue will be high on the agenda at the South Pacific Forum's Heads of Government meeting in Vanuatu on the 1-2 August.

(*"Transportation of European-based Chemical Weapons to Johnston Island" Briefing Papers, 18/7/90 and 27/7/90, Dr Peter Wills, Peace Studies Centre, University of Auckland*).

Laser Verification Programme

The United States Defense Advanced Research Projects Agency (DARPA) has awarded a contract worth \$2 million over 12 months to a consortium of national laboratories to investigate and demonstrate technologies for use in the verification of future treaties restricting the use of ground-based laser systems as anti-satellite weapons. The laboratories involved are Los Alamos National Laboratory, Sandia National Laboratory, Lawrence Livermore National Laboratory and Argonne National Laboratory.

One means of verifying such a treaty is by monitoring the "brightness" of designated lasers using cooperative measurements of laser radiation scattered as the laser beam propagates into the atmosphere. The laboratories will research into the most effective means of doing this.

The contract also requires investigation into the proposed system's vulnerability to false alarms from phenomena such as search lights or sun glints.

The prevailing view in the Department of Defense in recent years has been that lasers cannot be verified, that it would be possible for a country trying to hide its laser technology to turn down the power on its equipment. However, as David Dorn, acting leader of the treaty verification programme at Lawrence Livermore, said, and as John Pike of the Federation of American Scientists has been saying for years, a treaty verification scheme could eliminate this possibility by demanding full power demonstrations during development of ground based laser systems.

NATO CFE Verification Staff

A permanent support staff at NATO HQ in Brussels, together with a high-level committee of representatives from NATO's 16 nations is to verify compliance with a Conventional Forces in Europe (CFE) treaty, reports *Defense News* (9/7/90). The two groups will help coordinate and review information gathered under the treaty's verification arrangements but will not have the power to decide officially whether a violation has occurred. This responsibility will lie with the states party to the treaty who will undertake the physical verification procedures. Brussels' role was decided at the recent NATO Foreign Ministers' meeting at Turnberry, Scotland on June 7-8. The NATO support staff is likely to comprise 3-5 people responsible for the daily management of data collected by individual countries. A NATO official suggested that the support staff might be given the right to recommend that an inspection takes place. Inspections will normally be called by individual countries under the terms of the treaty.

CD Nuclear Test Ban Committee

The three groupings at the Conference on Disarmament (CD) in Geneva ("Western", "Socialist" and "G-21") have agreed to the re-establishment of an ad hoc committee to work towards a nuclear test ban. The committee was formally established on July 17 at the CD's plenary session. The committee's mandate will be based on a Czechoslovak proposal from 1988. The acceptance of the Czechoslovak draft mandate, opposed until now by the US and some Group-21 members, is seen to be related to the forthcoming review conference of the Nuclear Non-Proliferation Treaty and the forthcoming amendment conference of the Partial Test Ban Treaty. Experts believe that China will participate in the committee but that France will not.

The mandate covers "substantive work on specific and interrelated test ban issues, including structure and scope as well as verification and compliance." The committee will also "examine the institutional and administrative arrangements necessary for establishing, testing and operating an international seismic monitoring network as part of an effective verification system of a nuclear test ban treaty."

In The News

Paris Verification Unit

An air base has been reopened near Paris, France, to accommodate the French verification team for the CFE Treaty. The base will also serve as a processing centre for data gathered from the Helios military observation satellite (a French project in cooperation with Italy and Spain) and the four AWACS aircraft due to be acquired from the USA, reports *Jane's Defence Weekly*, (21/7/90).

French Nuclear Explosion

France carried out a nuclear test at Moruroa Atoll in the Pacific on 7/7/90. It was the fourth French test this year and the second within a few days. For the first time since 1975 the French government announced that it had carried out a test. President Mitterrand has said that future tests will also be made public.

Soviet Union Denies Removal Of Nuclear Weapons from Baltic

Soviet Foreign Ministry spokesperson Gennady Gerasimov denied reports at the end of June that Soviet nuclear weapons had been removed from the Baltic republics. US officials believe removals from both the Baltic and Southern states began in January after fighting broke out in Baku, Azerbaijan, where nuclear warheads are thought to be stored.

Submarine Tunnels on START Agenda

The *Washington Times* (25/6/90) reports that the Bush administration has pressed the USSR to destroy a network of coastal underwater tunnels used to hide ballistic missile submarines. The US would like this to happen before a START treaty is signed but officials may be prepared to drop the demand if it looks likely to prevent the signing of a treaty this year. The USSR wish to continue to use the tunnels for repairs and reloading.

Trust But Verify

The following item appeared in *Aviation Week and Space Technology* on June 18 1990. "Shopping around for a Soviet SS-20, now banned by the...INF treaty, proved to be no small feat for the Smithsonian Institution. A demilitarised SS-20 goes on display at the National Air and Space Museum this week alongside a neutralised US Pershing 2 in an exhibit entitled "Trust but Verify". (When the missile swop was suggested)...ex-Cold Warriors on both sides were slow to react. The US Army even demanded precise latitude and longitude of the museum to aid US and Soviet inspectors in verifying that the missiles were "static".

"North Korean Ballistic Missile

US intelligence has photographed the first ballistic missile built by North Korea, reports the *Washington Times* (4/6/90). The missile is an improved version of the Soviet Scud-B surface-to-surface missile and has a range of 500km.

Novaya Zemlya Open To Visitors

The Soviet Union's Arctic nuclear testing site at Novaya Zemlya has been visited for the first time in its existence by "representatives of the Soviet legislature, members of the USSR government and officials from some ministries and government departments" reports I. Yermakov of Novosti Press Agency. A report in the *Rabochaya Tribune* (6/6/90) described the radioactivity readings taken during the inspection as follows. "Fluctuations of the gamma-

background were between 8 and 15 microroentgen an hour, not higher than its level in Moscow.

Europe - Japan Space Co-operation

Space News (9-15/7/90) reports that the 13 nation European Space Agency (ESA) has reached agreement with the Japanese National Space Development Agency (NASDA) for wide ranging co-operation in the sharing of information from remote-sensing satellites along with information on space plane design. Both agencies are developing space planes due to be ready before the end of the century. The two agencies will also continue existing arrangements under which ESA assists NASDA officials in purchasing space-related electronic components from Europe.

Clark Negative On European Satellite

Britain's Minister for Defence Procurement, Alan Clark, told Britain's Parliamentary Space Committee on June 20 that Britain's long standing co-operation with the United States would remain a priority above co-operation with other European countries in the development of a European-controlled observation satellite. The Western European Union has been considering such co-operation in order to decrease reliance on information provided by the United States and avoid unnecessary duplication of research and development by European neighbours. The 13-nation European Space Agency has indicated that it might be willing to co-ordinate such a project.

TTBT/PNET Get Senate Hearing

The two agreements on nuclear testing first signed in the 1970s but never ratified, the Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty, finally went before the Senate on July 17. The treaties had been kept away from the ratification process until this year because of concerns over verification procedures, although both have been observed by both the United States and the Soviet Union. These verification issues were cleared up at the Bush-Gorbachev Summit in May/June this year.

VERTIC News

VERTIC Director Dr Patricia Lewis was the subject of a lengthy interview in *Jane's Defence Weekly* (23/6/90). The article covered the opportunities offered to industry by verification in the coming years. Dr Lewis pointed out that in her view, the verification market will be an uncertain one and that companies should not gamble on big returns. "If you aren't already involved (in verification-related technology) there is not much hope for big money," said Dr Lewis.

What is VERTIC?

VERTIC is an independent organisation aiming to research and provide information on the role of verification technology and methods in present and future arms control agreements. VERTIC co-ordinates six working groups comprising 21 UK consultants and 11 overseas advisors. VERTIC is the major source of information on verification for scientists, policy makers and the press. VERTIC is funded primarily by grants from foundations and trusts and its independence is monitored by an Oversight and Advisory Committee.

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