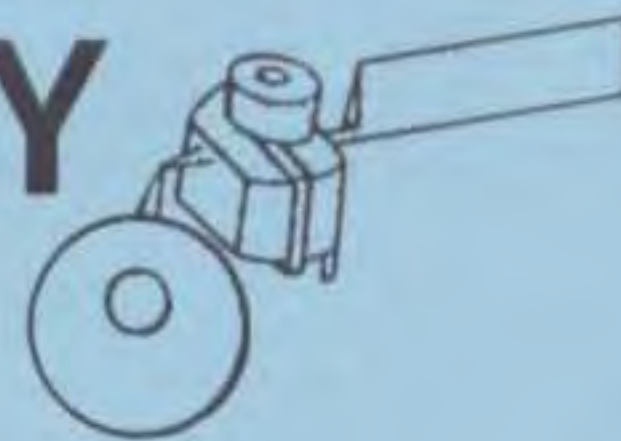




TRUST AND VERIFY



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CFE Talks Resume - Progress On Aircraft, Troops and Verification.

The Vienna negotiations on conventional force reductions in Europe (CFE) resumed on 7th September. A fortnight later the Soviet Union told US officials about a forthcoming new proposal regarding limits on combat aircraft, up to now a major stumbling block to a treaty.

The new position is much closer to the NATO stance but still falls short of NATO demands to include all air-to-air fighters. The Soviet Union will now accept limits on certain air-to-air fighters, whereas its earlier view was that a CFE Treaty should only cover ground attack planes. However the new proposal would still leave out about 1800 fighters which the Soviets claim are used to defend its territory against attack by US strategic bombers and cruise missiles. The question of aircraft verification is likely to be at the heart of the current round of negotiations.

A new proposal has also been presented by NATO. The proposal, presented on 21st September, set out stability and verification measures. It was presented only after disputes involving Greece, France and Italy had been resolved, or at least put off for the time being. In particular there was concern among NATO allies that US proposals for on-site inspections might go too far.

Furthermore, several countries are pressing for a provision preventing the USSR from circumventing a treaty by building up forces East of the Urals, outside the Treaty Limited Zone. The US's concern is that the USSR might respond by demanding a similar provision regarding US naval forces in the Mediterranean. US Secretary of State James Baker reportedly told British Foreign Secretary John Major that he would accept the provision only if it clearly excluded US naval forces.

Despite these concerns, NATO officials are pleased that issues such as defining numbers and definitions of tanks, artillery and armoured troop carriers have been agreed amongst NATO allies, although there is still debate about aircraft and armed helicopters.

The full NATO package, along with an short evaluation by VERTIC director Dr. Patricia Lewis is reproduced in a pull-out section in this issue of "Trust and Verify."

Chemical Weapons Ban In Sight?

President Bush's headline-making proposal at the UN on the 25th September to move towards a superpower ban on chemical weapons as a first step towards a global ban has met with mixed reactions.

Bush's proposal followed hot on the heels of the meeting between US Secretary of State James Baker

and his Soviet opposite number Eduard Shevardnadze at Wyoming on 22nd/23rd September. The two men reached an "agreement in principle" as it has been called, covering questions of data exchange and challenge on-site inspections of chemical weapons sites, previously the two major obstacles to an agreement.

In a two-phase plan, the agreement makes provision for data exchange and for short notice inspections of weapons, stockpiles and factories and therefore the compilation of a complete inventory of existing stocks. It is seen as a "precursor agreement" to a full treaty between the superpowers, dealing with a trial run of the inspection procedures necessary to verify any subsequent agreement. Many regard it as an important precedent since challenge inspections of chemical facilities are widely considered to be the only effective way of verifying a ban on chemical weapons.

During the Reagan administration, American policy stated that there should be no progress on a ban until it was global and that verification of such a ban must be foolproof. President Bush, on the other hand has decided that verification would only have to detect "militarily significant quantities" of poisonous agents. He still has not given any indication as to a detailed solution of the verification problems but said in his UN address:

"We know that monitoring a total ban on chemical weapons will be a challenge. But the knowledge we have gained from our recent arms control experience, and our accelerating research in this area, makes me believe we can achieve the level of verification that gives us confidence to go forward with the ban."

The Bush plan envisages two stages in the progress towards a worldwide ban. First, provided the Soviet Union joins the ban, the US will destroy 98% of its chemical arms stockpile. Over the following 10 years all remaining Soviet and US stocks will be destroyed, once all "chemical weapon capable" countries sign a worldwide ban. Even before such a treaty is signed, said President Bush, the US will scrap 80% of its stocks, provided the Soviet Union cuts its stocks to the same level.

The immediate Soviet response to the proposal was positive. Indeed, in his speech to the UN the day after President Bush had made his proposal, Soviet Foreign Minister, Eduard Shevardnadze said that the Soviet Union would go further than the US and destroy all its existing stocks of chemical weapons, even before a worldwide treaty was signed.

The US called this a "very constructive response" indicating "good common ground for a chemical weapons ban." However President Bush rejected "absolutely" the idea of elimination of all chemical weapons before a global treaty is agreed. He particularly emphasised what he saw as the need to retain poison gas weapons by referring to certain countries capable of producing such weapons such as Iraq and Libya. He added: "We need a certain sense of deterrence and we need some leverage to get other countries to abandon them".

These superpower proposals represent the culmination of talks that have been going on for some time between the two countries alongside the 40 nation Conference on Disarmament in Geneva. Apart from questions of inspections and data exchange, agreement has also been reached on the order in which chemical weapons would be destroyed under a chemical weapons convention and how parity could be reached within eight years of a chemical weapons convention. Indeed, both sides had already said that they would begin to destroy weapons in advance of a formal treaty, even before the official statements by Bush and Shevardnadze this month. The US has already begun to destroy certain chemical stocks while Mikhail Gorbachev said in April 1987 that the USSR no longer produces chemical weapons.

However, some experts have called the US and Soviet proposals "meaningless". In the new York Times (26/9/89), Elisa Harris argues that much of the data exchange outlined in phase one of the two-phase plan has already taken place. "On closer inspection, (the proposal) turns out largely to codify existing commitments. The US is required by law to destroy all its chemical stocks by 1997. Indeed the elimination of some of these weapons is already underway...Eduard Shevardnadze announced in January 1989 that the USSR would begin destroying its chemical weapons as soon as a facility for disposing of them was complete. In short both sides have already committed themselves to unilateral but mutual reductions. A truly radical step toward chemical disarmament would be to accompany these reductions by a mutual, verified halt of chemical weapons production. Without such a production halt both sides could eliminate their aging chemical stocks while retaining new and modern weapons (at which point) it may become more difficult to convince US opponents of chemical disarmament to accept a global chemical weapons ban."

She goes on, "Equally important, reducing rather than eliminating US and Soviet chemical weapons will do nothing to halt...proliferation in the third world. As long as both sides continue to produce no third world country will heed exhortations to forego acquiring chemical weapons. If the US-Soviet reduction agreement ends up as the first and last step in chemical disarmament, then nothing will have been done to curb the wider proliferation problem."

A few days before Bush's announcement to the UN, the US made a proposal to a 67 nation conference on chemical weapons in Canberra that an international body should be set up to monitor and help control the proliferation of chemical weapons. Richard A. Clarke, deputy secretary of state for regional analysis, also urged other nations who already possess chemical weapons to acknowledge the fact. At present only the US, USSR and Iraq acknowledge possession, although about 20 countries are thought to have stocks or capability. Mr Clarke hoped that an international agency could "explore verification procedures, monitor and analyze trial inspections, explore methods of safely destroying chemical weapons". Such an agency would also prepare the way for a similar body in the event of a worldwide ban on chemical weapons.

At the same conference the US chemical industry pledged to monitor its own sales of chemicals capable of producing weapons. The move was endorsed by many representatives of the world's chemical industry.

Soviet representatives endorsed all these US moves. Mr Nikita Smidovich, head of the Soviet Department of Arms Control and Disarmament said "We welcome the US technical monitoring proposal. We also welcome

inspection of any of our chemical plants. There should be no right to refuse an inspection".

For an outline of problems facing verification of a chemical weapons agreement, see "Trust and Verify" no. 3 (Aug/Sept 1989).

Stop Press : Recent press reports have revealed the US Government's desire to carry on producing chemical weapons even after a global treaty banning them takes effect. The DoD said that the binary chemical weapon programme will be at an early stage when a treaty is completed and that continued production would be needed to protect plans for producing modern binary chemical weapons.

An administration official said that the US would seek revisions in the agreed text of the draft treaty.

Soviet N-Test Moratorium

The Soviet Union has offered a new moratorium on nuclear testing. In Eduard Shevardnadze's speech to the UN the Soviet Foreign Minister said that the Soviet Union would reinstate its earlier moratorium "at any day and hour" if the US would do the same. The offer was overshadowed by Mr Shevardnadze's counter-proposals on the subject of chemical weapons but should be regarded as a positive step, perhaps more important than the as yet uncompleted discussions over ratification of two earlier testing treaties.

Senior Pentagon officials have failed to agree about a recent Soviet initiative regarding ratification of the Threshold Test Ban Treaty (TTBT) (1974) and Peaceful Nuclear Explosions Treaty (PNET) (1976). The TTBT limits underground tests to 150kt and the PNET limits the size of nuclear explosions used for peaceful purposes.

The disagreement centres on the Soviet offer to allow highly intrusive on-site inspections of all its underground nuclear tests with an expected yield of more than 75 kilotons, providing the US allows similar inspections.

Soviet Rocks Labelled "Secret" by Pentagon

Rocks gathered by American scientists from deep below the surface of Soviet territory with Moscow's approval have been classified as secret by the Pentagon. Government certification is required in order to handle them. Soviet officials seem baffled, saying that they are just rocks, but the samples are now in a vault at Los Alamos National Laboratory.

Bernard Minster, a geophysics professor from Scripps Institution of Oceanography in La Jolla, California said "We were told the rocks are deemed sensitive material and we cannot have them". Minster and a team of researchers from five universities received a \$750,000 grant to study the rocks collected by geologists who visited the Semipalatinsk nuclear testing site in South Central Asia. Testing was to be carried out on the absorption of shock waves from nuclear explosions. Such information is vital to accurate measurement of the explosive force of tests, and therefore useful in checking for violation of testing treaties. As well as keeping the rocks hidden, the administration is also refusing a request made by the Natural Resources Defence Council (NRDC) made under the Freedom of Information Act, to see seismic recordings gathered at the same time as the rocks.

Nevertheless, one independent researcher, Thomas Ahrens of California Institute of Technology managed to obtain a portion of the rock collection. Shortly after receiving the rocks under a separate Defense Department study contract, an official from Los Alamos called to tell Ahrens that "there is some sensitivity about the rocks". The official enquired "what the status of the rocks was" and Ahrens told him that they had been completely destroyed by the laboratory examination. One wonders whether any remaining particles of rock dust will now be swept up and locked away, or simply consigned to a top secret dustbin...

West European Verification Satellite Under Discussion

Two contradictory reports on Britain's attitude towards NATO Verification Satellites not dependent on US co-operation have recently appeared in the scientific press.

Space Weekly (September 4th) announced that West European aerospace companies, government officials and defence experts have been discussing the possibility of collaboration in the development of a new observation/photoreconnaissance satellite capable of monitoring compliance with conventional arms agreements.

Britain, West Germany and Italy were said to be the most heavily committed to the project, with support from the US and other NATO countries. France is already developing an equivalent satellite but other NATO powers have to rely on US co-operation.

However, a second report in Satellite Week (September 25th) claimed that Sweden (Tellus) and Canada (Paxsat) were both developing verification satellites. Canada has been trying to interest other NATO countries in its project, so far without success, with the strongest opposition coming from Britain, according to diplomatic sources. The Canadian project would place two satellites in geostationary orbit and two in low orbit of 300km to survey the European continent every 48 hours and map it monthly.

Many European experts see the thaw in US-Soviet relations as a step towards future lessening of US of commitment to Western Europe, such as the withdrawal of troops, and wish to be capable of independence in the area of photoreconnaissance should that occur. At the moment the Pentagon and the CIA share data gathered by KH-11 or Big Bird satellites concerning the Eastern Bloc with the European allies but do not always reveal exact sources and methods used to gather it.

So far US officials seem to be as worried about its allies being able to check claimed weapons capabilities as they are about the ability of unfriendly nations to pinpoint targets. They were also worried by the apparent endorsement by the Western European Union of looking into ways of independently verifying US-Soviet arms treaties.

Baker-Shevardnadze Talks Smooth The Way

The successful meeting between US Secretary of State James Baker and his Soviet counterpart Eduard Shevardnadze has apparently solved a number of problems previously blocking the way to agreement on several arms control fronts.

Apart from the agreement reached on chemical weapons detailed elsewhere in this issue, agreement was also reached on the two remaining obstacles to a START

treaty, the US having already given way on the issue of mobile missiles (the US previously wanted a ban, while the USSR preferred ceilings and the missiles to be included in the terms of a START Treaty). The Soviet Union now appears ready to drop the formal link between a START treaty and the ending of US SDI experiments. It has now stated that limited experiments can take place within the confines of the existing ABM Treaty. The Soviet Union has also agreed to dismantle its Krasnoyarsk radar station which the US saw as in breach of the ABM Treaty. In return Soviet observers will inspect US stations in Greenland and the early warning radar station at Fylingdales, North Yorkshire, to check compliance with ABM.

The two sides also reached agreement on the question of Sea Launched Cruise Missiles (SLCMs). The Soviet Union has up to now demanded inclusion of SLCMs in any START Treaty. These missiles will now be left out of START, ceilings agreed, and separate negotiations begun sometime in the future. The Soviet Union has also proposed a series of trial inspections on naval vessels to assess whether reductions in SLCMs can be verified. This seems likely to be refused by the US.

A further vital boost to prospects for an accord came when Mssrs Baker and Shevardnadze agreed on arrangements for "pre-treaty verification" measures, covering factory inspections to determine numbers of warheads carried by ballistic missiles.

In the News

GPS 16 Satellite In Orbit

The third Navstar Global Positioning System (GPS-16) was placed in orbit on August 31st. Rockwell International expects it to be fully operational by mid October.

Last Titan Carries Military Payload

The 15th and final Titan 34D was launched successfully by the US Air Force on September 4th. The payload was classified and some experts thought it may possibly be the UK Elint satellite (formerly dubbed "Zircon"). The Martin Marietta Transtage used as the upper stage of the launch vehicle has previously been used in association with the Titan to place communications relay, missile warning and electronic intelligence spacecraft in orbit.

The Titan 34D is soon to be replaced by the Titan 4, successfully launched for the first time on June 14th.

The first commercial Titan 4 will carry Skynet 4, a British military communications satellite. At least 44 Titan 4s are due to be launched by 1995.

Nuclear Materials On Black Market

Japanese police have arrested five men for trying to sell 8.8 lbs of natural uranium to the US Embassy in Tokyo. They were willing to sell the material for a mere \$83 million and offered a sample as proof of validity. One of the men left his business card at the Embassy. The uranium is thought to be part of a larger quantity of the material held by an organised ring, perhaps operating out of Hong Kong. Strange as it may seem, the men failed to interest any other buyers.

Galvin On Verification

The International Herald Tribune (8/9/89) carried an article by John R. Galvin, Commander of allied forces in Europe, entitled "Verification Can Secure This Treaty". It

was essentially a call to recognise the fundamental importance of verification technology and application both in arms control agreements and as part of a nation's defence. The following are extracts from the article:

"It is partly because national leaders change that solemn treaties rather than verbal agreements are binding in international politics and that verification systems are the price of doing business in arms control."

"Beyond the obvious benefits of deterring violations and detecting possible cheating, verification systems offer a number of indirect contributions to security...Because a comprehensive verification package provides physical evidence of a build up by the adversary, it contributes to deterrence."

"A well-constructed verification system also offers the opportunity to improve the confidence with which East and West deal with one another. It was Soviet compliance with the terms of the INF Treaty that helped make possible the current negotiations on conventional forces...Without a strict verification regime many in the West would have refused to believe that the Soviets fulfilled their obligations."

"Oddly, it is the openness that a verification system promises that has led to objections in the West. Some argue that a comprehensive regime may force the West to divulge some of its military secrets...but...if one side can benefit more than another by improving communication between East and West, the net gain will be ours."

Microchip May Aid Chemical Weapon Detection

Dutch scientists have developed a surface acoustic wave (SAW) microsensor for detecting nerve gas, reports *Jane's Defence Weekly* (16/9/89).

The sensor is based on the generation of an alternating electrical field on quartz or silicon using two aluminium electrodes. If the correct crystallographic direction of the quartz or silicon is used an acoustic wave is created, restricted under certain conditions to the surface of the quartz or silicon. This wave can then be measured. Two more electrodes act as receivers.

A change in mass of the surface between transmitter and receiver, as a result of absorbing a specific particle from the atmosphere into a special chemically reactive layer (chemical interface) applied to the equipment, can then be measured. Scientists at TNO Prins Maurits Laboratory and Delft University of Technology say that a "proof of principle" test has already shown that

nitrogen oxide can be detected using this method. Experiments are now proceeding to find suitable chemical interfaces for the detection of chemical weapons.

If successful the entire apparatus, placed on a single microchip, could be carried like a watch by every soldier on the battlefield or by every arms control inspector.

VERTIC News

VERTIC Director Dr Patricia Lewis was featured on the BBC Radio 4 programme "The World This Weekend" on Sunday 3rd September along with Air Vice Marshal Tony Mason, discussing developments in the CFE talks in Vienna. On the subject of verification difficulties slowing down an agreement, Dr Lewis said: "They are going to have to monitor [any] reduction process: actually witness the tanks being destroyed, for example, as well as go and visit sites where they are deployed, and check that the numbers that they have been told exist at that site do exist at that site. It has to be cooperative now. It is not a question of we are going in whether you like it or not. It is, please come in and have a look." Dr Lewis was also interviewed on BBC World Service's "The World Today" on Friday 8th September.

An article by Dr. Lewis entitled "But What If They're Cheating?" appeared in the *Daily Telegraph* on 26th September. In the article Dr. Lewis covered a broad range of issues, notably "pre-treaty verification", on-site inspections, tagging of missiles, counting rules, verification of missile plants, verification of weapons at sea, the "Black Sea Experiment", conventional arms verification and chemical weapons.

In summing up Dr. Lewis wrote, "In the end verification serves two functions. First, it provides confidence that parties to a treaty are complying with the agreement, or to what extent they are not. Second, the very possibility of being found out by an inspector, satellite or closed circuit TV acts as a deterrent and forces any state intent on cheating to pay a very high financial price to keep its activities hidden and a very high political price if it is caught. Certainly the technologies exist for verification. The degree to which a treaty can be verified depends on the amount of investment in the technologies and manpower and hence on the political will."

Dr. Lewis and the Council for Arms Control's Andrew Chapman presented their report, commissioned by the Foreign Office on "Verification of a Conventional Forces Treaty in Europe" on Friday 29th September. An unclassified version of the report will be published.

What is VERTIC?

VERTIC is an independent research 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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