possess nuclear weapons but are
e thereto.
ges the nuclear-weapon States,
s for nuclear disarmament, to
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of a comprehensive nuclear test
I of this Treaty. It urges the
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tion wishes to reiterate the in-
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ed at nuclear non-proliferation.

State Kissinger: Détente and
ctract], June 25, 1976 [1]

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ow do you account for the fact
sed to be widely acclaimed are
détente. Is that due to shifts in
inherent in these policies? Has
is the position of the U.S.S.R.
ou started? Has détente reached
to continue?

that a year from now, the policy
en to be reflecting the existing
r that matter, moral policy that

e period of the fifties and sixties,
and other issues, crises that led

vo countries possess the capacity
nduct their affairs on the basis
uclear weapons. They have an
f possible, to moderate crises if
ive relationship.
oralize their publics. They will
ntry, that accuse their govern-
l obligation of protecting them
y fact that there are no signifi-

976, pp. 129–130. The interview was
amburg.

cant such movements in any Western country today is an important tribute to existing policy.

Secondly, where, exactly, has détente been a one-way street? What concrete agreement was to the unilateral benefit of the Soviet Union?

Mr. Sommer: Your critics quote SALT.[2]

Secretary Kissinger: What was the alternative to SALT? And indeed, what was the essence of SALT? In 1971 the United States was involved in the war in Viet-Nam; the United States had for five years not begun one single new strategic launcher program. The Soviet Union was building 120 sea-based and about 90 land-based missiles a year. The numerical balance was therefore shifting with every month against the United States. Given long leadtimes, the United States had no possibility for at least five years to redress it. I therefore fail to see why an agreement that stopped ongoing Soviet programs but no U.S. programs, could have been against the interests of the United States. A much more persuasive case can be made that it was unilaterally to the Soviet disadvantage. But what the Soviets obviously calculated was that they were balancing our capacity for long-term buildup, not what we were actually doing.

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United States Working Paper Submitted to the Conference of the Committee on Disarmament: Verification of Destruction of Declared Stocks of Chemical Warfare Agents, June 29, 1976 [1]

In working paper CCD/436 (16 July 1974), the United States delegation described the procedures employed in the disposal of mustard gas at Rocky Mountain Arsenal and outlined some preliminary ideas as to how such a disposal operation could be verified.[2] Since that time, a number of delegations have expressed interest in on-site monitoring of destruction of chemical warfare stocks. The basic purpose of on-site monitoring would be to confirm information provided as to the type and quantity of agent destroyed. To satisfy this purpose, it would be necessary to specify, in detail, what general technical methods and procedures would be used in the confirmation process.

This paper presents in greater detail the preliminary results of our evaluation of possible methods for carrying out on-site monitoring. These ideas are, of course, subject to further refinement.

The techniques discussed below are based on two premises: (1) that the chemical agent would be destroyed either thermally (incineration) or chemically (by treatment with caustic, for example), and (2) that the disposal facility would be similar to that described in CCD/436. If other disposal methods were employed or fundamentally different

[2] For the SALT agreements, see *Documents on Disarmament, 1972*, pp. 197–205.
[1] CCD/497, June 29, 1976.
[2] *Documents on Disarmament, 1974*, pp. 335–340.

types of facilities used, substantial change might be required in the verification techniques applied. Even if major revisions are not necessary, some adjustments may be needed to adapt the basic techniques to a specific situation.

In principle, the objective of confirming the declaration of the type and quantity of chemical agent destroyed is similar to the objective of ensuring accountability in facilities which process nuclear materials. Consequently, some of the techniques which have been developed for safeguarding nuclear material appear to be adaptable for use in CW verification.

Discussion of verification at a specific destruction facility should begin while the destruction operation is in the planning stage. Representatives of the facility management and the observers would cooperate in working out detailed arrangements needed for that facility.

The observers would arrive at the site before destruction operations were to begin. They would be provided with engineering drawings showing all areas of the destruction facility and with a detailed technical description of the destruction process. On the basis of this information, they would inspect the plant to confirm the information and to ensure that diversion of agent within the plant was not possible. Periodic facility reinspections would be needed during the destruction operations to ensure that no illegal plant modifications had been made. These procedures would serve to provide assurance that agent could not simply be drained off and that a simulated waste material could not be introduced into the plant. Additional assurance might be obtained if the observers were allowed to introduce a tracer material into the chemical agent before destruction.

During the destruction operations, the observers should be authorized to visit any area of the facility at any time under the same conditions as host state personnel and to observe all activities. In order to supplement the observers and to minimize the need for their continuous presence in particular locations during the destruction operations, surveillance of certain areas may be carried out remotely using closed-circuit television systems. Additionally, areas requiring surveillance, but in which facility personnel would not normally be present, might be monitored using cameras that are triggered by a motion detector and random interval timer. The level of observation required could also be reduced by use of tamper-resistant, tamper-indicating seals to close off certain areas of the facility or to prevent tampering with process or monitoring equipment. (Such seals have already been developed for use in nuclear safeguard operations). Provision for supervised access in an emergency or to handle needed maintenance would be made.

The techniques discussed above, while providing important safeguards against certain types of illegal activities during the destruction operations, cannot provide confirmation of data furnished on the type and quantity of chemical agent being destroyed. One technique for

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verifying the quantity of chemical agent destroyed would be continuous monitoring of the rate at which agent flows into the destruction chamber. From this data, the total quantity destroyed could be calculated.

Two methods which would help to confirm the nature of the material being destroyed would be to measure the toxicity of the agent to animals, as recently suggested by Sweden, and to conduct a chemical analysis of the agent. Either method would require taking small samples periodically near the flow meter, which should not be difficult technically.

In addition, to confirm the nature and quantity of agent it would be necessary to monitor any chemical substance that is added to the agent or to its decomposition products. For example, chemicals used in hydrolyzing an agent or in treating the effluent should be monitored to confirm that their use was consistent with the description of the destruction process.

Air sampling, a less intrusive technique, might supplement, but not replace, sampling of the agent stream. Current air sampling techniques can collect and concentrate chemicals which are present in the air at extremely low levels. At a destruction site, traces of the agent and its decomposition products, as well as traces of other chemicals involved in the destruction process could be collected and analysed, although sophisticated instrumentation may be required.

This procedure would yield information on the types and relative concentrations of the chemicals present in the air in different locations at the facility. It would provide additional assurance to the observers that the type of material being destroyed had been correctly represented, but would not be adequate to confirm the information on quantity. It should be noted that air sampling would have to be conducted before disposal operations were to begin so that the "chemical background" would be known. This preliminary sampling would be conducted at the locations inside and outside the destruction facility where sampling would be carried out during the destruction operations.

It would also be very desirable to check whether or not the nature of the waste handling equipment and the toxicity of the decomposition products, as well as their general composition, were consistent with that expected from the nature of the material ostensibly being destroyed. For example, most nerve agents contain one phosphorus atom per molecule. Also commonly present are either one atom of fluorine or one atom each of sulphur and nitrogen. In addition, if a tracer had been added to the agent feed, analysis of the concentration of the tracer in the effluent would help provide assurance that no diversion of agent had occurred.

Another technique which could be useful if the identity of the agent were known is the material balance. This would involve comparing the amount of decomposition products actually produced with the quantity which should result from a given quantity of agent. For this method

to work, there could not be any significant loss of gases, liquids or solids from the system. It should be possible to meet this condition for chemical detoxification processes. For incineration methods, some gases may be lost, permitting only a crude balance to be obtained even when measured as accurately as possible.

In order to carry out their work, it would be essential for the observers to have their own technical facilities at the site. A well-equipped workshop would be needed for calibration, maintenance and repair of monitoring equipment. On-site chemical and toxicological laboratories with sophisticated equipment would also be necessary for conducting agreed upon measurements.

Summary

In summary, we believe that the provisions we have described for on-site monitoring would provide assurance that the nature and quantity of material destroyed were as represented. In our view, such monitoring must cover the entire disposal process and include observers and instruments. We believe this can be accomplished in a manner which is not unreasonably intrusive.

United States Working Paper Submitted to the Conference of the Committee on Disarmament: Use of Seals and Monitoring Devices in Chemical Weapons Verification, June 29, 1976 [1]

In an earlier presentation to the Committee (CCD/332) the United States' delegation noted the possibility of using unattended, tamper-indicating seals and monitoring equipment as a part of a CW verification system. As pointed out in CCD/332, seals and monitoring devices could help to ensure that CW agent production was not resumed illegally at a shut-down facility.[2] Subsequent evaluation has shown that the use of seals and monitoring devices could also be used to assist the on-site observers needed to monitor destruction of declared CW stocks and help to reduce the number of observers required.

This paper describes several types of seals, cameras and sensors which have been developed for safeguarding nuclear facilities. Various methods by which such devices could assist in CW verification are discussed.

Fibre Optic Seals

Current fibre optic seals are improved versions of the seal described in CCD/332. The basic concept, however, remains the same. Glass or plastic fibres are grouped in a bundle to form a cable, which is placed around the item to be sealed. The two ends of the fibre cable are interlaced to form a single bundle and the seal made by securing the inter-

[1] CCD/498, June 29, 1976.
[2] *Documents on Disarmament, 1971*, pp. 389–395.