

decisions as to the nature of the source when the observed seismogram is copied rather precisely by selecting the right model for the source. Though many earlier attempts have been made to compute realistic seismograms, it is only now, with a sufficiently precise knowledge of the earth's interior, and with access to large and fast digital computers, that the computation of simple seismograms may have practical merit.

A supplement to the modelling work is the compilation of a seismogram album or atlas. When complete it will contain a wide variety of normal as well as unusual seismograms which could well lead to the development of a crude pattern recognition system. In any case, its publication should be of considerable interest.

The m_b problem

The m_b : M_s and yield problems, which are caused by the variability of m_b , have not been forgotten while these new developments have matured. The United Kingdom working paper CCD/363, 1972 (p. 8-9) suggested that an important cause of the variability in the quantity m_b was the absorption of the high frequency content of the P wave with a consequent diminution of amplitude. The opportunity for the radiated P-energy to take a number of different paths, particularly within the top 500 km or so, was also explained. A paper which provides the detailed evidence is under publication in a scientific journal with the title "P-wave Complexity Re-examined" and it does much to explain the anomalies commonly observed in the first half minute of the short period P-wave train. University interest has been stimulated by the possibilities of mapping these areas of high absorption, and once they are known or can be predicted, the necessary corrections to m_b can be applied.

Data processing

Finally, since the ideas behind the United Kingdom concept of a seismic array station processor (SASP) were presented in CCD/386, 1972 the bulk of the equipment has been delivered at the Blacknest laboratories, and the work on developing the system to its full potential has begun.

Communist Working Paper Submitted to the Conference of the Committee on Disarmament: Ways of Implementing Control Over Compliance With the Convention on the Prohibition of the Development, Production and Stockpiling of Chemical Weapons and on Their Destruction, June 28, 1973¹

Introduction

A system of guarantees to ensure that all parties to the agreement are complying with the obligations they have assumed should

¹ CCD/403, June 28, 1973.

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s to ensure that all parties to the agree- he obligations they have assumed should

be based on national forms of control combined with certain international procedures. This is the basis from which the present working paper proceeds. Of course, it is for each State party to the convention to determine the form and methods of implementing national control. The following considerations may be regarded as outlining possible ways of fulfilling the obligations of States parties, as provided for in article IV of the draft convention submitted by the socialist States on 28 March 1972.²

National control committees

A State party to the convention establishes a national control committee as an element in the national system of control over the prohibition of the development, production and stockpiling of chemical weapons within the territory of the state concerned, under its jurisdiction or control. The national control committee should, by way of random verifications, supervise the destruction of stockpiles of chemical weapons and the closure or conversion to peaceful production of the chemical enterprises which had, before the conclusion of the convention, been engaged in production of means of warfare. It would also supervise compliance with the prohibition of the production of the means of delivery of chemical weapons. The composition of the national control committee could be determined by the State party to the convention. The committee could consist of representatives of governmental and public organizations, depending on the specific conditions existing in the country concerned. The committee staff could include specialists in chemistry and economics. Effectiveness of control is ensured by the modern methods available to specialists in chemistry. These include the use of detection apparatus, analysis of waste gases, analysis of waste water and soil at enterprises, the installation of sealed sensing devices, and visits to enterprises by the appropriate specialists representing the national committee. It is also desirable that the national control committees should, as necessary, be able to examine reports on research work carried out by various research institutions in the chemical industry and related fields. Internal legislation should provide for the national control committees to submit reports to national governments on their activities, and should also allow for the possibility of publishing such reports for general information.

Exchanges of information

The national system of control could also be accompanied by exchanges of information among States, on a voluntary basis, in the form of discussions on new data obtained as a result of scientific research on the development of new products for peaceful purposes.

² Documents on Disarmament, 1972, pp. 120-124.

Statistical analysis

Analysis of statistical data, contained in open publications, on the production and consumption of raw materials and semi-finished products could form one of the elements of control over the prohibition of chemical weapons. A comparison of the amount of chemicals (raw materials and semi-finished products) manufactured over a year or some other long enough period, with the volume of the consumption of chemicals for peaceful purposes, might to a certain degree provide evidence of the way in which a State is complying with the obligations it has assumed under the agreement. A sizeable excess of production over consumption would give grounds for assuming that the surplus was being diverted for military production. In such a comparison, due account should of course be taken of the amounts of chemicals imported, which should be added to the total production figure, and also of the amounts exported, which may nationally be included under consumption. Some proportion of output may be placed in storage if there is temporarily no market for it, or for other reasons. On the other hand, consumption may include chemicals which had been produced before the beginning of the period under study. Bearing these circumstances in mind, any discrepancy between the volume of production and the volume of consumption should be carefully studied. When no data are available on the consumption of a particular chemical, it would be useful to analyse data on the production of substances in whose manufacture this chemical is used as an initial or semi-finished product. If one knows the approximate amount of the chemical needed for the production process, one can thus calculate the total amount of the chemical consumed. At the same time, it is of course essential to remember that the rate of use of one and the same chemical may differ widely from enterprise to enterprise, depending on the level of industrial technology, the degree of mechanization, etc.

Limitations on patenting

It would be expedient, as a measure to increase control over scientific research, to prohibit the patenting of chemical substances, weapons, equipment and means of delivery which are banned by the convention, i.e. to stop issuing patents and to cancel existing patents in this field. This measure, which is in keeping with the provisions of article IV of the draft convention submitted by the socialist States, would considerably lessen the incentive for further research in the field of chemical means of warfare.