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GENERAL AND COMPLETE DISARMAMENT

Notification of nuclear tests

Note by the Secretary-General

Addendum

Pursuant to General Assembly resolutions 41/59 N of 3 December 1986 and 42/38 C of 30 November 1987, communications have been received from Australia and the Union of Soviet Socialist Republics, dated 11 August and 6 September 1989, respectively, which are reproduced in the annex to the present note.

* A/44/150.

## ANNEX

## Information provided by States

### AUSTRALIA

[Original: English]

[11 August 1989]

1. I have the honour to refer to resolution 42/38 C, entitled "Notification of nuclear tests", paragraph 3 of which requests States that, while not themselves conducting nuclear explosions, possess data on such events, to make such data available to the Secretary-General.

2. In accordance with that request, I have the honour to attach details of nuclear explosions detected by Australia carried out from January to March 1989 (see appendix I), as well as an explanatory memorandum (see appendix II).

## APPENDIX I

### Quarterly report on presumed underground nuclear explosions

(January-March 1989)

| Month 1989 | Day | Universal time h min | Locality | Estimated body-wave magnitude | Estimated yield kilotonnes | Sequence number |
|---|---|---|---|---|---|---|
| January | 22 | 0357 | East Kazakhstan | 6.0 | 40-150 | 89/1 |
| February | 10 | 2006 | Nevada | 5.2 | 20-80 | 89/2 |
| February | 12 | 0415 | East Kazakhstan | 5.9 | 40-150 | 89/3 |
| February | 17 | 0401 | East Kazakhstan | 5.0 | 5-20 | 89/4 |
| February | 24 | 1615 | Nevada | 4.4 | <10 | 89/5 |
| March | 9 | 1405 | Nevada | 4.9 | 10-40 | 89/6 |

Notes:

Information in this bulletin was derived from Australian seismological facilities and from institutions in other countries co-operating in the monitoring of earthquakes and nuclear explosions.

Unless otherwise noted, the estimated body-wave magnitude is that published by the United States National Earthquake Information Center and is based on observations of magnitude obtained from around the world, including from Australia.

The yields are estimated using empirical equations, but there is no single agreed formula for the determination of yields.

The yields estimated from these relations are not sufficiently accurate to determine compliance with international treaties.

## APPENDIX II

### Explanatory note

When a nuclear device is detonated underground, seismic waves radiate out in all directions. In order to establish that an underground nuclear explosion has taken place, pinpoint its location and estimate the size or yield of the blast, seismologists attempt to detect and analyse the several distinct types of seismic waves generated by the blast. Many factors affect the strength and clarity of these seismic waves, particularly the efficiency with which the explosion transmits energy to the surrounding earth. This efficiency is, in turn, dependent on local geological conditions such as the hardness and water content of the rock surrounding the explosion. Knowledge of the path through the earth which the seismic signals have travelled is also important.

An international network of seismic stations would add significantly to confidence in the ability to detect and locate the source of underground nuclear explosions, whenever conducted. Australia is actively engaged in the international effort to create such a network and, in addition, has established a number of bilateral links for seismic co-operation. Experts estimate that confidence in an international seismic network would extend to coupled explosions with yields down to about 5 kilotonnes and possibly as low as 1 kilotonne; beyond this, distinguishing nuclear explosions from earthquakes and other seismic "noice" becomes a more difficult task and supplementary measures may be necessary.

Estimating the yield of an underground explosion by remote seismic means is especially difficult on the basis of available data. The relationship between seismic signals and yield is not fixed, but is subject to the vagaries of geology and a number of other unknown factors. At the present time we do not have openly available the large and authoritative data base of explosions of known yield in various locations and geological conditions necessary to define the relationship with maximum confidence. This is why the footnotes to the tables in this report stress that the estimated yields are not sufficiently reliable to determine compliance with international treaties. All these questions are being actively addressed in international forums.

## UNION OF SOVIET SOCIALIST REPUBLICS

[Original: Russian]

[6 September 1989]

1. On 2 September 1989, at 8.17 a.m. Moscow time, a nuclear explosion with a yield of up to 20 kilotons was conducted in the Soviet Union, at a test site in the Semipalatinsk region.

2. The test was conducted with a view to refining military technology.

3. Radiation in the test area briefly exceeded background levels by an insignificant amount. Radiation levels outside the test site correspond to background readings.

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