



# Trust and Verify

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## China tests

Seconds before 02:00 GMT on 5 October 1993, the Chinese authorities carried out an underground nuclear test explosion of a yield of the order of 10-90 kT.

The test took place within the Lop Nor test site at the location 41° 34' N, 88° 41' E. The test caused a seismic event at 5.5 on the Richter scale and was detected by at least 71 seismic stations.

VERTIC was the first to break the news of the test within three hours of it taking place. This test marks the second time that a test by the Chinese has been predicted by VERTIC (see *Trust & Verify* issues No. 30, July/August 1992 and No. 31, September 1992). Chinese testing was the subject of a VERTIC press briefing on 22 September.

For further details see the supplement to this issue.

## Verex conclusion

The last in the series of meetings of the group of experts looking into the scientific and technical aspects of verification of the Biological Weapons Convention (BWC) held its last meeting in September.

## Editorial Comment

A question has been raised: 'why is a national political story such as the Scott Inquiry being given such prominence in *Trust & Verify*?'

The answer is relatively simple. Many international arrangements for controlling the spread of weapons, such as the Missile Technology Control Regime, the Nuclear Suppliers Group and the Australia Group, rely on states co-ordinating their national export control policies in a framework outside of normal international treaty arrangements.

Such regimes are far less workable unless all states in the arrangements can have full confidence in the export control policies of the others.

Although the primary purpose of the Scott Inquiry is to ascertain whether Parliament was misled on the subject of exports to Iraq, it is having to investigate thoroughly the British procedures for controls on exports.

The Inquiry, and the discussion following the publicity of its proceedings, have revealed that the British export control system has had many shortcomings.

The series of meetings, known as 'Verex', held in Geneva, was established by the third review conference of the BWC, held in 1991. Unlike many other arms control treaties, the BWC contains no verification mechanisms.

The Verex meetings looked at 20 possible verification methods, some of which follow on from confidence-building measures, such as declarations, agreed in 1986. However, of 134 parties to the BWC, only 34 have participated in the confidence-building measures.

## Ukraine and nuclear weapons

On 3 September, President Yeltsin and of Russia and President Kravchuk of Ukraine reached a verbal agreement on the transfer of missiles and their nuclear weapons on Ukrainian soil to Russia for dismantling in exchange for fuel for Ukraine's nuclear power stations.

This agreement also included provisions for the transfer of Ukraine's share of the Black Sea Fleet to Russia to offset the debt owed by the former for oil and gas, and a deal for the Fleet to continue to use the port of Sevastapol, which is in Ukrainian territory.

The verbal agreement was backed up by a protocol that was signed by the two states' Prime Ministers a few days later.

Within a few days, the Russians decided to annul this protocol. The stated reason for the dispute is that a text printed in the Ukrainian press on 9 September no longer referred to 'all missiles' but instead referred to 'the missiles mentioned specifically in this text'.

This is not to say that other states should not re-examine their systems.

## Definitional problems

The Scott Inquiry was set up after the collapse of the trial of three people from the Matrix-Churchill company. They were prosecuted for exporting machine tools that was specially designed for defence purposes. But when is a machine tool 'specially designed'?

Most high-value machine tools, such as those manufactured by Matrix-Churchill, are computerized, and may be used to create anything from automotive components to shell casings.

The product depends on the software running the machine tool. However, software is poorly defined in the Export of Goods Control Order. It would follow that a company could export a general-purpose machine tool loaded with software to manufacture washing machine parts and then, at a later date, install software for manufacturing artillery shell casings.

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It is the view of the Russians that these 'amendments' have materially changed the meaning of the protocol and would allow Ukraine to keep some missiles. The status of the original verbal agreement is unclear.

## Belarus and the NPT

It has been pointed out that the deposition of accession by Belarus to the Non-Proliferation Treaty on 22 July has not yet been mentioned in *Trust & Verify*. Apologies.

For the record, Armenia deposited its instrument of accession on 15 July.

## Clinton UNGA speech

On 27 September, President Clinton gave his first speech to the United Nations General Assembly. The speech gave only broad policy outlines, with few details. However, a factsheet issued by the White House covered more ground.

The following are the major points in the categories used by the White House.

### Fissile Material

- To undertake a 'comprehensive approach' to the growing accumulation of fissile material from dismantled nuclear weapons and within civil nuclear programs, including:
  - seeking to eliminate stockpiles of highly-enriched uranium (HEU) or plutonium, and to subject such materials that already exist to the highest standards of safety, security and international accountability;
  - proposing a 'multilateral convention prohibiting the production of highly-enriched uranium or plutonium for nuclear explosives purposes or outside of international safeguards' — a fissile materials cut-off;
  - encouraging more restrictive regional arrangements to constrain fissile material production;
  - submitting US fissile materials no longer required for nuclear weapons purposes to inspection by the International Atomic Energy Agency (IAEA);
  - pursuing the purchase of HEU from the former Soviet Union and other countries and its conversion to peaceful use as reactor fuel;
  - exploring means to limit the stockpiling of plutonium from civil nuclear programs, and seeking to minimize the civil use of highly-enriched uranium;
  - Initiate a comprehensive review of long-term options for plutonium disposition [*sic*]. Russia and other states would be invited to participate;

The President noted that the US does not encourage the civil use of plutonium and, accordingly, does not itself engage in plutonium reprocessing for either nuclear power or nuclear explosive purposes. However, he stated that the US 'will maintain its existing commitments regarding the use of plutonium in civil nuclear programs in Western Europe and Japan.'

### Export Controls

- To harmonize domestic and multilateral export controls 'to the greatest extent possible'. Although 'the need to lead the international community or overriding national security or foreign policy interests may justify unilateral export controls in specific cases.'

### Nuclear Proliferation

- To make every effort to secure the indefinite extension of the Non-Proliferation Treaty in 1995.
- To seek to ensure that the IAEA has the resources needed to implement its 'vital' safeguards responsibilities, and to work to strengthen the IAEA's ability to detect clandestine nuclear activities.

### Missile Proliferation

- To maintain strong US support for the Missile Technology Control Regime (MTCR); to support 'prudent' expansion of the MTCR's membership; and to promote regional efforts to reduce the demand for missile capabilities.
- The United States will not support the development or acquisition of space-launch vehicles in countries outside the MTCR; 'For MTCR member countries, we will not encourage new space launch vehicle programs, which raise questions on both non-proliferation and economic viability grounds. The United States will, however, consider exports of MTCR-controlled items to MTCR member countries for peaceful space launch programs on a case-by-case basis.'

### Chemical and Biological Weapons

- To promote new measures to provide increased transparency of activities and facilities that could have biological weapons applications.
- 'We call on all nations — including our own — to ratify the Chemical Weapons Convention quickly so that it may enter into force by January 13, 1995.'

### Regional Nonproliferation Initiatives.

- To make special efforts to address the proliferation threat in regions of tension such as the Korean peninsula, the Middle East and South Asia, including efforts to address the underlying motivations for weapons acquisition, and to promote regional confidence-building steps.
- To encourage a non-nuclear Korean peninsula to secure North Korea's full compliance with its non-proliferation commitments and effective implementation of the North-South denuclearisation agreement.
- To promote dialogue and confidence-building steps to create the basis for 'a Middle East free of weapons of mass destruction'; to contain Iran's nuclear, missile, and CBW ambitions, while preventing reconstruction of Iraq's activities in these areas.
- To encourage India and Pakistan 'to proceed with multilateral discussions of non-proliferation and security issues, with the goal of capping and eventually rolling back their nuclear and missile capabilities.'
- To intensify efforts to ensure that the former Soviet Union, Eastern Europe and China do not contribute to the spread of weapons of mass destruction and missiles.

### PRD-8

The UNGA speech by President Clinton follows on from reports of the contents of Presidential Review Directive 8 (PRD-8) which covers the policy of the US with regard to proliferation of weapons and their technologies.

PRD-8, a classified document, was rumoured to propose changes to exports controls and controls on fissile materials. These may now have been superseded by the UNGA speech.

### UK response

In response to the President's speech, the UK Foreign and Commonwealth Office issued the following statement:

We shall naturally wish to consider very carefully the implications for our nuclear deterrent of the proposal for a cut-off convention, but we recognise the potentially valuable contribution which a multilateral convention prohibiting the production of plutonium and highly-enriched uranium for explosives purposes

could make to non-proliferation and we will want to explore the potential benefits fully and positively in our approach to this issue. We are hopeful of being able to work towards a multilateral agreement of the kind proposed by the US.

This marks a shift in policy. The last public statement on the British position was by Jonathan Aitken, Minister of State for Defence Procurement, who stated in July 1992 that 'Unlike the nuclear superpowers, the United Kingdom does not have large stocks of surplus fissile material upon which to draw. But United Kingdom production will continue to be kept at the minimum level necessary to satisfy our nuclear deterrent and naval reactor needs.'

## Inhumane Weapons Convention

It now seems likely that there may be a conference held to review the implementation of the Inhumane Weapons Convention, also known as the UN Weaponry Convention.

Article 8 of the Convention allows that, after the Convention has been in force for 10 years, any single party may request the UN Secretary-General to organize a review conference. The Convention entered into force on 2 December 1983.

France has, apparently, already approached the United Nations regarding the holding of such a conference. In its declaration made on signing the Convention, France reiterated points it had made earlier:

Regrets that thus far it has not been possible for the States which participated in the negotiation of the Convention to reach agreement on the provisions concerning the verification of facts which might be alleged and which might constitute violations of the undertakings subscribed to.

It therefore submits the right to submit, possibly in association with other States, proposals aimed at filling that gap at the first conference to be held pursuant to article 8 of the Convention and to utilize, as appropriate, procedures that would make it possible to bring before the international community facts and information which, if verified, could constitute violations of the provisions of the Convention and the Protocols annexed thereto.

The prospects of such a conference may also encourage states that have signed the treaty to ratify it, lest they be excluded from the conference, or only allowed to attend as observers. For example, both the United Kingdom and United States have signed the Convention (on 10 April 1981 and 8 April 1982 respectively), but neither has so far ratified it.

## Iraq gives list of companies

The Iraqi government has provided the UN Special Commission (UNSCOM) a list of companies from which they imported materials, equipment and technologies to support their programmes for weapons of mass destruction and ballistic missiles.

A UK source with UNSCOM connections, who had not seen a copy of the list, stated that he personally felt that, until all information had been revealed by the Iraqis, no list of suspect companies should be published. 'If UNSCOM publishes its own list, it would not surprise me if the Iraqis then produced a list of the companies already known about'.

## Matrix Churchill

Further indications of the high level of overt Iraqi involvement in the Matrix Churchill machine tools company has come to light.

Dr Safa al-Habobi, former chairman of Matrix Churchill, has now been appointed to the post of oil minister in the Iraqi government. He was formerly the deputy director of the Military Industrial Commission and is wanted for questioning in the US in connection with the Atlanta banking scandal.

The post of oil minister is a sensitive one, as Iraq is prevented from exporting oil because of UN sanctions. One condition for the lifting of sanctions is the provision of further information on Iraq's procurement programme; it may be no coincidence that Dr al-Habobi will now be representing Iraq in negotiations on the lifting of sanctions.

## Convention on Biological Diversity

The first significant post-Rio meeting on the Biological Diversity Convention will be held in Geneva from 11 to 15 October 1993. The Intergovernmental Committee for the Convention on Biological Diversity (ICCBD) will meet to begin preparations for the first Conference of the Parties to the Convention.

The ICCBD now has a secretariat led by Angela Cropper (Trinidad). She is backed up by Dr Kalemuni Mulongoy (biotechnologist, Zaire), Dr Arturo Martinez (biologist, Argentina), Susan Bragdon (lawyer, USA), Lone Johansen (communications, Denmark), Song Li (economics, China) and Manab Chakraborty (economics, India).

For further information on the Convention contact: Convention on Biological Diversity, 15 chemin des Anémones, CP 356, CH-1219 Chatelaine, Geneva, Switzerland; tel. +41 22 979 9111, fax. +41 22 797 2512.

Immediately prior to the intergovernmental meeting a 'Global Biodiversity Forum' will be held at the World Conservation Union (IUCN) in Gland, Switzerland. The aim of the Forum is to promote further dialogue on biodiversity amongst interested sectors of society. For further information contact Jeff McNeely, IUCN, Avenue de Mauverney, Gland, Switzerland; tel. +41 22 999 0001.

## Climate Change Convention

As of 14 September 1993, 33 states had ratified, acceded to or accepted the UN Framework Convention on Climate Change. It will enter into force 90 days after the deposition of the 50th ratification, accession or acceptance.

Details given below are for ratification unless otherwise noted. Dates cited are the dates upon which instruments of ratification etc. were received by the United Nations.

Mauritius	4 September 1992
Seychelles	22 September 1992
Marshall Islands	8 October 1992
United States of America	15 October 1992
Zimbabwe	3 November 1992
Maldives	9 November 1992
Monaco	24 November 1992
Canada	4 December 1992
Australia	30 December 1992
China	5 January 1993
Saint Kitts and Nevis	7 January 1993
Antigua and Barbuda	2 February 1993
Ecuador	23 February 1993
Fiji	25 February 1993
Mexico	11 March 1993
Papua New Guinea	16 March 1993
Vanuatu	25 March 1993
Cook Islands	20 April 1993
Guinea	7 May 1993
Armenia	14 May 1993

Japan*	28 May 1993
Zambia	28 May 1993
Peru	7 June 1993
Algeria	9 June 1993
Saint Lucia	14 June 1993
Iceland	16 June 1993
Uzbekistan**	20 June 1993
Dominica**	21 June 1993
Sweden	23 June 1993
Norway	9 July 1993
Tunisia	15 July 1993
Burkina Faso	2 September 1993
Uganda	8 September 1993

\* = Acceptance  
\*\* = Accession

## CD membership changes

On 28 January 1993 the Conference on Disarmament (CD) appointed Australian Ambassador Paul O'Sullivan as its 'Special Coordinator' for the issue of expanding its membership. He reported back to the CD in August.

The recommendations for additional members was planned with the intention of keeping a balance between the regional groupings. Adding fewer than the suggested number could have led to an imbalance occurring. The suggested number has the added benefit of bringing the CD membership up to about one-third of the UN membership — the same proportion it had when the original CD had on its establishment.

It had been hoped, had all gone well, that new members could take their seats at the start of the 1994 session. However, delays have occurred as objections have been made by some existing members against some proposed members. All CD decisions are taken on a consensus basis.

The suggested list of new members is:

Austria  
Bangladesh  
Belarus  
Cameroon  
Chile

Colombia  
Democratic Peoples' Republic of Korea  
Finland  
Iraq  
Israel  
New Zealand  
Norway  
Republic of Korea  
Senegal  
Slovakia  
South Africa  
Spain  
Switzerland  
Syria  
Turkey  
Ukraine  
Viet Nam  
Zimbabwe

If all of the suggested states became parties to the CD, it would bring the total membership to 60. Some reports have listed this total as 61 by including 'Yugoslavia'. There is agreement in the CD that the Socialist Federal Republic of Yugoslavia, an original CD member, has ceased to exist. However, there has been no agreement on successor arrangements, nor on removal of the nameplate 'Yugoslavia'. There is an understanding that representatives of the Federal Republic of Yugoslavia (Serbia-Montenegro) will not attempt to occupy the 'Yugoslavia' seat.

## VERTIC News

### Verification 1993

By the time that this issue of *Trust & Verify* has been posted, copies of *Verification 1993* will have been delivered from the printers. The book is the latest in VERTIC's series of yearbooks.

A cumulative index for the three yearbooks produced so far is included with this edition of *Trust & Verify* as well as an order form for books from this series.

*Trust & Verify* is edited and produced by Richard Guthrie with additional reporting by Vipin Gupta and John Lanchbery and early morning alarm calls from Philip McNab. © VERTIC 1993

### Trust & Verify

*Trust & Verify* is produced by VERTIC 10 times a year. Anyone wishing to contribute information for inclusion in *Trust & Verify*, or to comment on its contents, should contact the VERTIC office.

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Carrara House  
20 Embankment Place  
London WC2N 6NN  
Telephone 071 925 0867  
Facsimile 071 925 0861

### What is VERTIC?

VERTIC is an independent organization aiming to research and provide information on the role of verification technology and methods in present and future arms control and environmental 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.

**VERTIC**  
Verification Technology Information Centre



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Supplement

## Chinese nuclear test — 5 October 1993

This supplement has been prepared in response to the Chinese nuclear test of 5 October 1993, which was anticipated and subsequently identified by VERTIC.

### CTB background

Negotiations for a comprehensive test ban (CTB) are due to start at the Conference on Disarmament in Geneva in early 1994.

The chances of successful negotiations for a CTB are better now than they have been for nearly 15 years. CTB prospects have been enhanced in recent years by the declaration of moratoria by the Russians in October 1991 and the French in April 1992 and the adoption of a pro-CTB stance by the United States Congress which led to a US moratorium on testing.

President Bush had been reluctant to sign the Congressional ban on testing into law. President Clinton has been more supportive of the CTB policy.

### International responses

#### US position

In response to the Chinese test, President Clinton gave instructions to the Department of Energy to make preparations for a possible resumption of testing.

Before the test, the US position had been to extend the Congressionally-mandated moratorium, that had expired on 1 July 1993, to 30 September 1994, providing no other state tested during this period.

On extending the moratorium, the President said:

Additional nuclear tests could help us prepare for a test ban and provide us with some additional improvements in safety and reliability. However, the price we would pay in conducting those tests now by undercutting our own non-proliferation goals and ensuring that other nations would resume testing outweighs these benefits.

Unless other states carry out many tests, it seems highly unlikely that the US will, in fact carry out any tests before September 1996, at which point the US is prohibited by domestic legislation from carrying out any tests unless another state does so.

#### French position

The French position is more complicated than that of the US. When France declared its moratorium in April 1992, it stated that 'tests would resume if other nuclear powers did not follow suit'.

In July 1993, France declared itself to be in favour of a CTB and established a group of experts to study the implications of a permanent cessation of testing on

French nuclear forces and to study whether further tests would be required before a test ban entered into force.

The group of experts have, reportedly, stated that a few further tests would enhance the country's computer modelling techniques. Officials have been keen to stress that before the moratorium took effect, France was in the middle of a warhead development programme.

President Mitterrand and Prime Minister Balladur issued a statement on 6 October stating that contact would be made with the American, British and Russian governments 'with a view to studying the consequences of the [Chinese] nuclear test'.

Indications are that, the group of experts' report notwithstanding, the French government will not resume testing in the immediate future, although preparations

#### Other positions

The British government described the test as 'regrettable'.

Many non-nuclear-weapon states have condemned the test.

### Chinese nuclear programme

China exploded its first nuclear device in 1964. It has now carried out a total of 38 known nuclear weapons tests.

It is estimated that China currently has 300-400 nuclear warheads in stockpile, of at least 5 different designs. These include land-based and submarine-based ballistic missiles and air-delivered weapons. There have also been indications that China has developed nuclear land mines and atomic demolition munitions.

### VERTIC activities

VERTIC was able to break the news of the test within three hours of it taking place. This test marks the second time that a test by the Chinese has been anticipated by VERTIC. Chinese testing was the subject of a VERTIC press briefing on 22 September.

The majority of VERTIC's work in this field has been carried out by Vipin Gupta, a Marshall Scholar at the Centre for Remote Sensing, Imperial College, London.

#### Previous analysis

In August 1992, on the basis of satellite imagery, VERTIC concluded that the Chinese were preparing to carry out more nuclear tests. The prediction was published in *Trust & Verify* No. 30, July/August 1992.

A Landsat Thematic Mapper image taken on 25 June that year showed distinct signs of testing-related

features. Although the image, even when spectrally-enhanced, did not allow sufficient detail to enable an observer to tell which prepared test facilities had been used, there was at least one more prepared site than the number of tests carried out at that location. This indicated that preparations for at least one more test had taken place.

On 25 September 1992, the Chinese carried out a test with an explosive yield of approximately 8 kT and a magnitude of 5.2 on the Richter scale.

### Identifying the latest Chinese test

The breaking of the news of the Chinese test by VERTIC astounded many people who know that this organization doesn't possess any seismic equipment of its own.

The test took place 3.5 seconds before 02:00 GMT on Tuesday 5 October 1993. By 04:45 GMT, VERTIC had the seismic data, collated from the returns of 71 stations, that confirmed a test had taken place.

VERTIC cannot take all the credit for this. The source of this data was a computer database at the US Geological Survey's National Earthquake Information Centre (NEIC), based in Golden, Colorado, USA which collates seismic data from civilian stations automatically.

Having been confident that a test would take place and knowing the geographical layout of the test site, VERTIC staff established a computer system to hook up to this database from London every 30 minutes and ask the NEIC for any new data for the area of the Lop Nor test site.

At approximately 04:30 GMT, the NEIC system had collated the data for Lop Nor and 15 minutes later this was recognized by the VERTIC computer programme installed on a portable machine which then made a loud noise to wake up the dedicated staff member who had taken it home with him.

Within a few minutes of the alarm, the technical data was automatically sent to VERTIC staff via electronic mail and analyzed. A rapid response plan was then executed less than three hours after the test had taken place and before Chinese or US governments had made their announcements. News of the test went around around the world within 90 minutes.

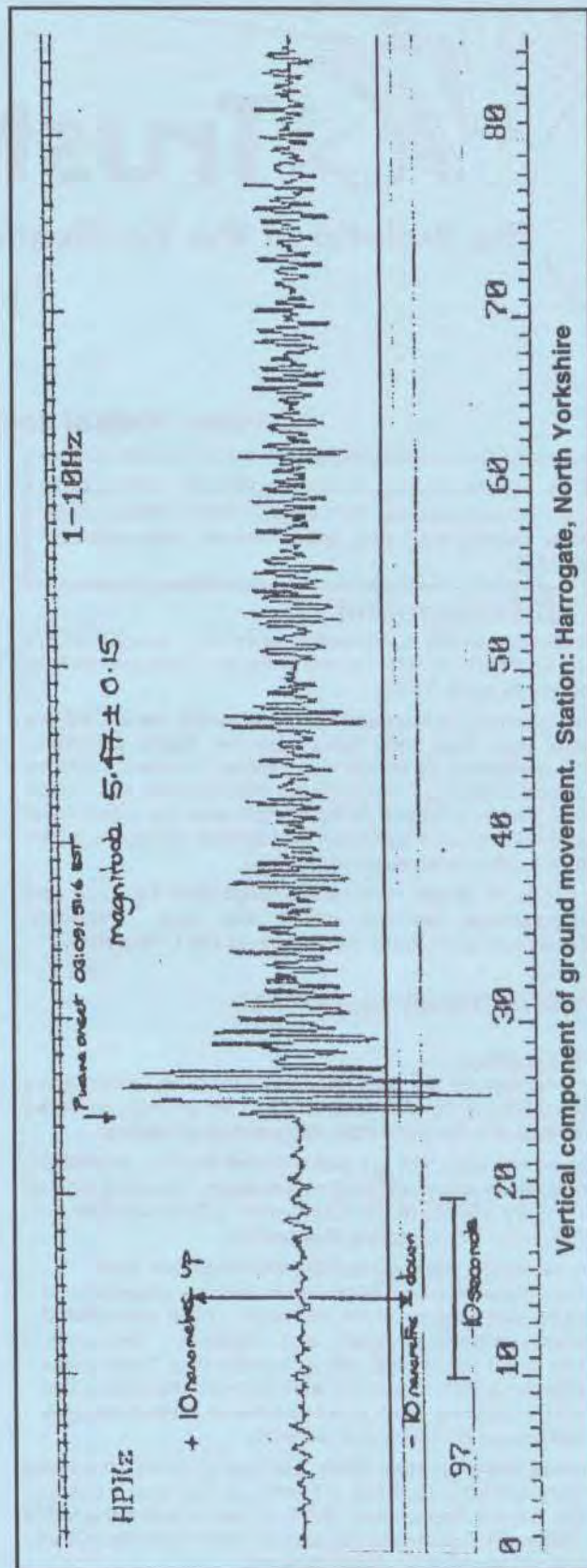
### Chinese test press coverage

The press coverage of the test was extensive. VERTIC provided the technical details associated with the test such as the detonation time, location derived from satellite imagery, shaft orientation, and yield range. VERTIC also presented the political implications of the test.

Most press reports included a credit to VERTIC. The test identification also led to a feature article on the work of VERTIC in *The Independent*.

### Chinese test press briefing

On Thursday 22 September, VERTIC held a press briefing at the Royal Society of Arts building in London. Presentations included a video of the Lop Nor test site, produced by Vipin Gupta from satellite imagery, including images acquired by the US Landsat satellite.



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Carrara House  
20 Embankment Place  
London WC2N 6NN  
Telephone 071 925 0867  
Facsimile 071 925 0861

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Verification Technology Information Centre