

Iraq clings to its nuclear secrets

Dan Charles, Washington DC

BY THE time Iraq's nuclear factories were bombed in February, they had succeeded in enriching small quantities of uranium using electromagnetic devices called calutrons. Iraq worked on calutrons for up to two years, and could have produced as much as 3 kilograms of highly enriched uranium in that time, according to a report by the International Atomic Energy Agency.

While now admitting to having built calutrons, Iraq claims that it produced only half a kilogram of uranium that was 4 per cent enriched. Weapons-grade uranium is enriched to at least 90 per cent, which means that 90 per cent of the uranium is in the form of the lighter isotope uranium-235.

Iraq's lower figure may be accurate, says IAEA officials, but few are willing to take it on trust. IAEA inspectors are now searching for supplies of depleted uranium, from which uranium-235 has been extracted. These would prove that Iraq produced more enriched uranium than it admits.

The experimental calutrons were probably housed in a building at the Tuwaitha nuclear centre called the Nuclear Physics Laboratories, says the IAEA. Bombs destroyed much of this building, and the Iraqis then cleared and levelled the site. This "suggests an attempt to render difficult the identification and purposes of these buildings", the report notes.

The existence of Iraq's calutrons took Western intelligence agencies by surprise when they came to light some months ago (This Week, 29 June). One of the first hints came from uranium residues detected on the clothes of American hostages who were held at the Tuwaitha centre. The residues contained the "signature" of calutrons, a US official said.

The nature of this "signature" is highly classified. But according to David Albright,

a researcher on nonproliferation for Friends of the Earth, traces of uranium chloride or uranium compounds with an extremely low concentration of uranium-235 would have been valuable clues. Only calutrons use uranium tetrachloride in the enrichment process, and most other processes do not produce highly depleted uranium in a single step, as calutrons do.

Iraq probably intended to set up large-scale production of enriched uranium in two massive factories north of Baghdad, says David Kyd, a spokesman for the IAEA. Inspectors from the IAEA finally took possession of these sites last week after an unprecedented cloak-and-dagger foray into the desert. The factories, which were heavily damaged by bombs, were about 80 per cent complete, according to Kyd, and could have started operating in 6 to 18 months.

These facilities, located at Tarmiyah and Al-Sharqat, were served by enormous 100-megawatt power supplies, 25-tonne cranes, and supplies of chilled and purified water. According to the IAEA's report, each of them could have held about 100 calutrons. These two factories might eventually have produced enough uranium each year for several bombs.

Iraq has declared that it possessed 40 of the devices, and has turned over various pieces of damaged calutrons to the IAEA. But many of the devices were destroyed by allied bombing, and others may have been removed by the Iraqis. During one futile

visit to Tarmiyah, IAEA inspectors outside a security fence watched heavy equipment being loaded onto trucks and driven away.

According to Kyd, the Iraqi army is still shuttling these trucks around the country "from barracks to barracks". On several occasions, inspectors have encountered these convoys on the road; shots were fired when they began taking photographs.

Specialists in nuclear nonproliferation have been shocked that Iraq could succeed in developing a home-grown enrichment programme, and worry that other nations could follow its example. Although calutrons are extremely expensive to operate, their components and technology are far easier to acquire or develop than other enrichment processes, such as centrifuges.

"This has sent shivers down the spines of people who thought that export controls alone could solve the proliferation problem," says Albright. While export controls remain important, they should be accompanied by political efforts to "delegitimise" nuclear weapons, Albright believes. These might include restricting their development in nuclear-armed nations, a worldwide ban on nuclear testing, and an arms-control agreement in the Middle East that included Israel's nuclear stockpile.

But US officials do not appear as worried by Iraq's example. "Within the government, there's some amusement at the hand-wringing that's going on," said one. His view is that Iraq was in a unique position, with almost unlimited supplies of cash and electrical power. Other nations, he said, would have difficulty following a similar path. □

