

IN BRIEF

Windscale contract details

In the second week of the Windscale inquiry in Britain, during the whole of which BNFL's managing director, Mr Con Allday, remained on the stand, further details of the proposed deal with Japan to reprocess spent oxide fuel emerged. Having earlier given sight of the proposed contract, BNFL published a summary of the terms detailing the amount of fuel involved (1,600 tonnes), the Japanese payment of development costs (£150 million) under the 'cost-plus' arrangements, and the value of the contract to BNFL (£400 million).

An official of the French reprocessing firm COGEMA, speaking at the Uranium Institute meeting last week, gave details of French reprocessing plans and listed the conditions attaching to the 'cost-plus' type of contract that COGEMA and BNFL have developed to fulfil "social and political requirements". These were: no financial

risk for the reprocessor in reprocessing foreign fuel; an advance from the utility of its share of the total plant investment in the form of prepayment for reprocessing services; and a contractual agreement, backed by an understanding between governments, giving the option of returning waste to the country of origin for final storage in an agreed form.

Whale quotas announced

At its Canberra Conference last week, the IWC announced the largest cutback in the number of sperm whales which can be caught in the North Pacific. It recommended a complete moratorium on the killing of male sperm whales in the area and set the quota for females at 763; the equivalent figures adopted for this year were 4,320 and 2,800 respectively. As the North Pacific is the main whaling ground for the USSR and Japan, the two countries may find it no longer economic to

keep their whaling activities going in the area. Under the IWC's rules, however, objections to decisions can be raised up to 90 days after the conference and Japan and the USSR are expected to do this.

Although some conservationists thought the cutbacks were as favourable as could be expected, others feared that the IWC's reductions for next year were an indication of mismanagement in previous years: overwhaling had meant that stocks were now very low.

Marshall move

Dr Walter Marshall, chief scientist at the UK Department of Energy, is to leave his post and resume full time work for the UK Atomic Energy Authority. An announcement this week from the Minister, Mr Benn, says this is in view of the UKAEA's significant role in forthcoming important nuclear decisions.

JUDGED by results, the Viking's journey to Mars last summer was an enormous success. Not the least of the wonders was successfully putting down both the landers by programmed automation, virtually blind-fold, among rocks large enough to topple them. These obstacles were too distant to be perceived in the images received on Earth before the descent started. The final 30 kilometres of drop lasted only 5 minutes. Six kilometres above the surface, the parachute blossomed out, unseen in the thin and ghostly atmosphere of Mars. Retro-rockets were ignited that pushed backwards against gravity, the lander settled gently on the surface, and its camera had taken a picture of the terrain before anyone learned of the landing. Automatic instruments chattered out the news by radio waves that took 20 minutes, at the speed of light, to get back to huge dishes, poised 350 million kilometres away in Australia, Spain and California, scooping up the incredibly faint signals.

The news was not of little green men, but of nitrogen, oxygen, krypton and xenon, of the exact temperature, and of a reddish magnetic dust on the surface. But it was the pictures of the barren, rock-strewn landscape with the metal footpad of the lander in the foreground, that spread the tidings most dramatically all over the world.

Incredibly, all the complex instruments were in working order in both landers except for one seismometer. Martian soil was scooped up and tested for life by three procedures.

The first (gas exchange) measured changes in the gas above a sample of soil moistened with a rich culture medium. The Martian soil im-

Mission to Mars**THOMAS H. JUKES**

mediately released some oxygen (surprise number one). The second procedure (labelled 'release') looked for production of radioactive gas from a culture medium containing radioactive nutrients. There was rapid evolution of such gas when a fresh soil sample was added to the medium.

The third test shone a light on untreated, unmoistened soil in presence of $^{14}\text{CO}_2$ and ^{14}CO for 120 hours. The

soil was then pyrolysed and the gases that escaped were examined for products of photosynthesised organic matter. The first result was positive, although weakly so. But later experiments showed that preheating the soil to 90° for nearly 2 hours had no effect on the reaction, so the experimenters concluded "... it is unlikely the reaction is biological".

And so the initial feelings of gratification and excitement became tempered with wonder and mystification. We had steeled ourselves for negative findings (a cat without a grin), but we had not expected atypical and perhaps non-biologically positive results (a grin without a cat). The absence of the cat was underscored by negative results in tests for organic compounds in a fresh sample of soil carried out with an extraordinarily delicate 'gas chromatography mass spectrometer'.

The other instruments in the Vikings have sent a wealth of information on Martian climate, geology, meteorology and elementary composition. The North polar cap is now known to be ice. The atmospheric analysis agrees with a concept expressed by one scientist that the cap may be the tip of an iceberg; the rest of the ice is covered with Martian soil.

And so the Earth spins on its orbit delicately poised between the sterile inferno of Venus and the cold and dreary desolation of Mars. We are just the right distance from the Sun to be the planet of harvest, dew and rain; the source and abode of life, unnumbered as the sand.