

low take-up of work by companies. Background research, that is existing company data on intellectual property rights defined by patent or copyright, can be protected. But foreground research, that produced during a funded contract, is not protected by the memorandum.

As things stand, a US prime contractor would be legally entitled (under US law) to patent foreground research, denying use to the originator for 17 years. This patent defines the owner as the body which pays, not the individual or organization which completes the research.

A further problem for British researchers is that the memorandum does not waive those items of US law, in particular the Export Administration Act, that make



At least we've proved the existence of Black Holes...

it difficult for items of technology or technical data in the form of proposals or descriptions to be passed freely between Britain and the United States.

Technology transfer law still applies to SDI work. "Both Governments will make every effort to process within 30 days requests for export licences for technical data packages or other controlled information for direct bidding", according to the memorandum. In practice, clearance can take several months, by which time an SDI contract will have been let. Visits to secure sites, to closed conferences, or to discuss classified information with a partner in the United States requires prior clearance, and full vetting, of any person by the US authorities. It is likely that positive vetting will be carried out by US embassy staff in the United Kingdom. Most British citizens will be required to sign the Official Secrets Act.

The memorandum is "secret in perpetuity", or top secret. A full debate on British participation has been requested by Labour MP Tam Dalyell but denied on the basis that the United Kingdom has negotiated a good deal which the United States does not wish other allies to know of in detail. All the UK opposition parties, Labour, Liberal and Social Democrats, have pledged that they will do away with the memorandum and pull out of SDI.

Paul Walton

US space

Shuttle faces more delay

Washington

THE US National Aeronautics and Space Administration (NASA) announced last week that shuttle flights will not now resume before 1988, despite earlier estimates that the shuttle might fly again as soon as next summer. Although disappointing, the delay, say NASA officials, is necessary to complete a review of the design and testing of the solid rocket motors (SRMs) responsible for last January's shuttle accident.

In a report requested by President Reagan, NASA spelled out its plans for implementing the recommendation of the Rogers Commission on the accident (see *Nature* 321, 637; 1986). NASA hopes to redesign the SRMs so that existing hardware can be used, but there are alternatives using completely new hardware in case that plan is frustrated. At NASA's request, the National Research Council (NRC) has established an independent oversight group, chaired by H. Guyford Stever, to superintend the redesign.

Other hardware modifications recommended by the Rogers Commission included improvements in the tyre, brake and nose-wheel steering systems. NASA says that some of those improvements were under way at the time of the accident, and that the other modifications are in hand. Until the improvements are judged a success, the shuttle will continue to land at Edwards Air Force Base in California, where there is a longer landing strip. Ultimately NASA hopes to land shuttles at the Kennedy Space Center in Florida where they are launched. NASA also plans a thorough review of all critical safety items on the shuttle, and a second NRC oversight panel is being formed to watch over that process as well. Not sur-

prisingly, safety issues are uppermost in the minds of most NASA officials. Waivers allowing marginal parts to be used in launches will be few and far between, says one NASA official.

NASA has also begun two separate reviews of its much criticized management practices. One will look at the shuttle programme, the other at NASA as a whole. Many at NASA involved in the shuttle have either left the agency or been transferred since the accident. The latest casualty is Lawrence Mulloy, director of the SRM programme at the beginning of the year, who resigned last week after having been transferred from that programme.

NASA has yet to make a final decision about crew escape systems, but preliminary conclusions suggest that no approach will provide a safe escape route under all conditions. But further attention is to be paid to procedures for aborting launches, including one scheme for transatlantic escape.

The Rogers Commission pointed out that total reliance on the shuttle for launches had put heavy pressure on NASA to increase its launch rate. NASA hopes that the pressure will be partly reduced by the new policies it has adopted on the choice of cargo for the shuttle bay, but it is also now backing the claims of other agencies that there should be a mixed fleet of launch vehicles, including expendable rockets. Responding to a request from Congress, NASA has asked NRC to form a third panel that will evaluate launch rates and the balance between manned and unmanned launch systems. Edward David, president of Exxon Research and Engineering Company, will chair this committee.

Joseph Palca

Now it's save French science!

FRENCH scientists appear to be getting more and more like their British colleagues — absolutely desperate. But in one way the French are going further. Discovering that appeals to their own government over recent cuts have failed (no doubt in part because, as it is said, the new science minister is uninterested in politics), they have gone to the lengths of producing an international petition: "Save CNRS" (the principal French research council).

"We the undersigned members of the international scientific community", the petition reads, "wish to express our grave concern regarding the policy followed by the French government. The policy has already resulted in: budget cuts (more than FF 4,000 million — £400 million); 25 per cent reductions in new posts for 1986; a

decision to cut the number of scientists employed by government in 1987; the smallest ratio of research spending to gross national product in the West; and the suppression of the CNRS Comité National." The Comité is a decision-making body whose loss brings to a standstill the whole administrative machinery of the CNRS — including the setting up of new posts and grants.

The petition calls for the French government to reinstate the Comité National, and reverse the new downward trend in jobs and cash for French science. What it fails to do, however, is to give an address to which to send the completed petition. But interested readers could always try the French Prime Minister, Jacques Chirac, at the Matignon... Robert Walgate