

Bhopal

Liability for disaster still disputed

New Delhi

THE question of compensation for victims of the Bhopal disaster still remains unresolved on the second anniversary of the leak of methyl isocyanate (MIC). The legal wrangle has taken a new turn with the Union Carbide Corporation (UCC) alleging that it did not own the plant and therefore is not liable for the incident on 2 December 1984.

In a 179-page document filed in the court of Bhopal's district judge, UCC said the Indian claim was based on the "erroneous assumption that the plant belonged to, and was designed, operated and maintained" by UCC. It said the plant was designed and constructed by Union Carbide of India Limited (UCIL) in consultation

with Indian engineering companies, and that UCC provided only the process design of certain parts of the plant in accordance with the provisions of the design transfer agreement approved by the Indian government. The agreement, according to UCC, specifically stated that UCC "shall not in any way be liable for any loss, damage, personal injury or death resulting from or arising out of the use by UCIL of the design packages". UCC said it was only a shareholder of UCIL which alone "is exclusive owner of the Bhopal plant".

Apart from seeking to transfer responsibility for the plant to UCIL, the US company has denied that the emission of MIC from the plant occurred as a result of

defective plant conditions. It said that the incident occurred because large quantities of water were deliberately introduced into the MIC tank by connecting a water hose to the opening from which the tank's local pressure indicator had been removed.

According to UCC, the pressure indicator was in place on 30 November (two days before the accident), but on the morning of the accident it was found to be missing and a water hose was noticed lying on the top of the tank. UCC claims that the plant supervisor's daily notes included a sketch showing that water had entered through a connection to the pressure indicator. It said that somebody deliberately intending



to introduce water into the tank could, within a few minutes, close the isolation valve, remove the pressure indicator, connect a water hose from a water service drop only 10 ft away and open the three valves necessary to introduce water.

UCC said that the facts "establish that a water connection to the tank was found and concealed by the operators and supervisors on the third shift" and that the Central Bureau of Investigation and the scientific advisers, with all the evidence available, "apparently desired not to reach the conclusion that the event was caused by a deliberate act". This "had the effect of aiding the persons involved in maintaining their deception", according to UCC.

The government of India maintain that UCC was liable for the consequences of the incident and is suing the corporation for \$3,000 million in damages, saying that 2,347 people died and 30,000-40,000 were seriously injured in the disaster.

The legal arguments are expected to be prolonged, offering no immediate help for the survivors, many of whom, according to the Indian Council of Medical Research, continue to suffer from chest ailments and are without jobs. The Madhya Pradesh government has so far spent more than \$40 million on health care and rehabilitation; UCC and UCIL have made available about \$16 million.

K.S. Jayaraman

Space Station cooperation

Money the root of conflict

Washington

DISAGREEMENT continues over arrangements for European participation in the planned US Space Station. European officials are pressing the United States for assurances on operating procedures and cost-sharing, asking that these be specified in a formal intergovernmental agreement. The United States, however, wants many of the details left to a memorandum of understanding between the National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA). At issue are the financial returns the partners can expect from the collaborative venture and the extent of European autonomy in planning.

Several high-level meetings have been held recently between government and space agency representatives from different countries, including Japan. The negotiations are taking place against a background of uncertainty about the cost of the whole project. Recent NASA estimates suggest that the original figure of \$8,000 million will fall far short of requirements unless the station capabilities are reduced. All sides say they want to reach final agreement as soon as possible, frustration is evident. One European official commented that Europe knows from experience that the United States does not take memoranda of understanding to be binding, a reference to the US decision some years ago to scale down its participation in the International Solar Polar Mission.

Officials also concede that serious differences remain over key aspects of management and sharing of costs and space station resources. Europe remains committed to its own \$2,000-million pressurized module called Columbus, but is unhappy with the US view that that should

limit its share of the total returns to 15 per cent. NASA is required by congressional directive to recoup 80 per cent of space station benefits; one important question, according to Richard Barnes, director of NASA's international affairs division, is whether Columbus should be considered an integral element of the space station system or an adjunct. The same applies to the European plan to develop a manned free flier, on which it has insisted despite US misgivings. Questions remain about how shuttle or Ariane launches and provision of payload specialists should appear in the accounts.

Europeans are also unhappy with a US congressional requirement that the United States should be responsible for materials science operations in its modules, leaving biological sciences for the Europeans. Officials say, however, that despite the congressional directive, there is now understanding that Europe will participate somehow in materials science research on the space station and be allowed some of the benefits. It is agreed in principle that commercial companies will have laboratory units that will sometimes be closed to general access in order to keep proprietary information confidential.

Both sides say they want final agreement on both the memorandum of understanding and the intergovernmental agreement by the end of the year or by very early in 1987. The European Council of Ministers is meeting to discuss space next spring, and would like a definite framework established by then; NASA wants to release a final request for proposals for the four main station work packages in January so that detailed development can begin in earnest next summer.

Tim Beardsley