Resins Raise Problems for TMI Cleanup

A potential new problem has arisen in the cleanup operations at the crippled Three Mile Island nuclear reactor. Highly radioactive resins, used to decontaminate some of the cooling water, may have become unstable. This could pose difficulties for their long-term storage or their ultimate disposal.

Some scientists have argued that the problem has arisen because the wrong materials were used in the decontamination process. Rustum Roy, professor of materials science at Pennsylvania State University, says, for example, that he initially warned against the use of organic resins if they were going to be exposed to high loadings of radioactivity. But organic resins were used anyway and, he says, they were loaded to "fantastic levels."

The resins were used in a process, known as EPICOR II, which removed most of the radioactive elements from some 500,000 gallons of contaminated water. The EPICOR II system works like a commercial water softener. The contaminated water is passed through a series of columns containing tiny resin beads, which act as ion exchangers, removing some dissolved salts from the water.

When the resins had done their work, they were transferred to steel containers 4 feet in diameter and 4 feet high, which are now being stored in special concrete bunkers at the Three Mile Island site. The fear is that the very high levels of radioactivity in the resins may have caused them to deteriorate, and they may be corroding the containers. There are some 47 containers with resins that have been loaded with radioactivity at a level believed to be sufficient to initiate this process.

The possibility that the resins may become unstable under the influence of high levels of radioactivity was raised early last year, and the Department of Energy consequently sponsored a series of tests at Brookhaven National Laboratory, Pennsylvania State, and Georgia Institute of Technology. These tests indicated that three types of changes may be taking place in the resins. First, hydrogen may be formed as the resins deteriorate, raising the internal pressure in the containers. Second, the medium may become acidic and corrode the steel casing. And third, the beads themselves may agglomerate, forming a mass that could be difficult to remove if the wastes are ever processed for final disposal.

The Department of Energy recently shipped one of the containers to the Battelle Columbus Institute, where it will be opened in a special "hot" cell to determine what changes have taken place so far. The results of that examination will determine whether it is safe to continue storing the resins at the site or whether they could safely be shipped to another location for processing and ultimate disposal.

Asked whether it was a mistake to use the resins in the first place, Bernard Schneider, head of the Nuclear Regulatory Commission's Three Mile Island operations office, said that he believes that the problems were not known at the time the EPICOR II system was approved. In future, however, inorganic ion exchange media, which are expected to be more stable, will be used in the first stages of the cleanup process for the remaining contaminated reactor water.

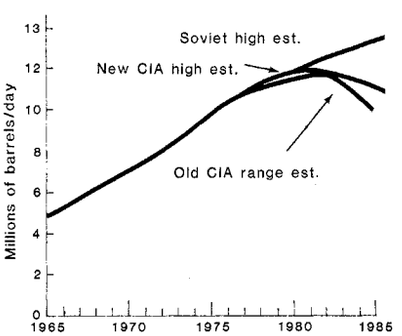
—Colin Norman

Soviet Oil Decline Put Off 3 Years

The Central Intelligence Agency (CIA) in May indirectly admitted an error in forecasting Soviet oil production rates by revising a controversial report first issued with President Carter's energy message in 1977. In effect, the agency agreed with those of its critics who have said the Soviet Union is not about to face an oil crisis in the early 1980's.

The new CIA outlook changes the message of the 1977 study, which estimated that Soviet crude oil production would peak in the near future, perhaps as early as 1978, at 11 million barrels per day (MBD) or as late as 1983 at 12 MBD. After peaking, the CIA predicted, oil output would decline to 8 to 10 MBD by 1985. The implication was that the Soviets would have to buy oil on the world market or tap new sources outside Siberia to supply satellite nations in Eastern Europe. Many people speculated that the invasion of Afghanistan in 1979 was inspired partly by the search for new energy resources.

The Soviets, however, have been producing more oil than the CIA predicted. Instead of peaking in 1978, production has climbed. It stands at about 12.1 MBD and shows no sign of dropping off soon. Furthermore, Soviet planning councils have set an ambitious goal of producing 12.4 to 12.9 MBD by 1985. As a result, the CIA has conceded a point to critics in the United States, including Marshall Goldman, an economics professor at Wellesley College, who claimed that the CIA report was unduly pessimistic. The agency has revised its oil forecast, leading Goldman to tell the *New York Times* recently that "those who think the Soviets must go into the Middle East for oil are wrong."



Although the CIA has made some concessions to its critics, it has not done so gracefully, nor has it abandoned its belief that Soviet oil production will decline in this decade. Because the Reagan Administration ended the CIA's practice of briefing the press on such issues, the agency is not defending its argument in detail. But the CIA did release a terse statement in May noting that the press had "overstated" the extent of the revision. The underlying analysis remains unchanged, the CIA claims, and the advent of the oil crisis has only been postponed a few years.

"All the problems that we foresaw the Soviets facing are emerging, although the [oil] output in the near term will be somewhat higher than we anticipated in 1977," the CIA's announcement says. "Despite extremely costly efforts, Soviet output at most is likely to remain at about present levels of 12 MBD for 1 to 3 years, and then begin to decline. We now expect 1985 outputs to approximate 10 to 11 MBD,

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