

anomaly was a serious sign that the entire lot of fuel rods contained similar defects. However, the final Battelle report concluded that lot number 233 met "the specified quality requirement."

In a lengthy interview, a Westinghouse vice president, Ursell Evans, explained that Westinghouse had been very mindful of its commitment to the success of the FFTF project. Therefore, he said, it was understandable that the Westinghouse standards for the fuel rods were higher than those of Kerr-McGee. "We argued back and forth," he said, "especially in the beginning." He said that Westinghouse objected to Kerr-McGee's practice, in the beginning, of ignoring pieces of silica on the surfaces of the fuel pellets. The silicon "couldn't hurt anyone," Evans said, but Westinghouse insisted on it being eliminated from the surfaces of the pellets. Likewise, he said, rods would arrive at Hanford with scratches or other imperfections which were also harmless, but which Westinghouse insisted be corrected by Kerr-McGee. None of these defects were specifically prohibited under the contract, apparently.

Evans also said there was more "back and forth" with Kerr-McGee early in the

production runs. This partly confirms a statement made by Westinghouse's quality control official stationed at the Kerr-McGee plant, that early on, the rejection rate of fuel rods produced by Kerr-McGee was "90 per cent."

According to Westinghouse spokesmen, Hanford received a total of 19,568 fuel rods from Kerr-McGee, of which 688, or 3.5 percent, were found unacceptable and sent back to Kerr-McGee. Kerr-McGee did not agree that most of these were rejectionable and refinished or repaired many of them. Thus in the final count only 91 were rejected. Westinghouse spokesmen say that, of the group they finally accepted, some 541 are not deemed good enough to be used in the FFTF reactor, and are being kept for assay and destructive testing, and other purposes. Nuclear experts at the Environmental Policy Center say the overall industry figure for fuel rod acceptance is 1.5 percent. Thus, although Westinghouse initially rejected 3.5 percent of the Kerr-McGee pins, in the end, only 91, or 0.4 percent, are being counted as rejected.

Westinghouse spokesmen deny that poor quality assurance on the Kerr-McGee rods was the reason that it termi-

nated the Kerr-McGee contract, whereas it continued another contract with Babcock and Wilcox for rods from its Apollo, Pennsylvania, plant. At present, all the fuel rods for the third and fourth "cores" of the FFTF reactor are being supplied by Babcock and Wilcox.

To those in private organizations who followed the Silkwood affair, the quality assurance issues at Kerr-McGee raise the question of whether the nuclear industry can regulate itself. For "quality assurance" is the name for the series of procedures by which the federal government expects the nuclear industry to police its products to be sure that they are safe.

And environmentalists, such as EPC's Alvarez, as well as lawyers for the Silkwood estate in Oklahoma (who are suing Kerr-McGee for damages), are beginning to raise another concern, namely the quality of the products of the plutonium plant and the adjacent uranium plant—which used the same workers—supplied to other government clients and the commercial nuclear industry. Thus, besides raising questions at the FFTF breeder reactor at Hanford, there are other threads leading from the Silkwood matter still to be investigated.—DEBORAH SHAPLEY

## Sweetness and Light from Industry and Environmentalists on Coal

The National Coal Policy Project (NCPP), which began about a year ago under the leadership of a former president of the Sierra Club and the corporate energy manager of Dow Chemical Company, represents a unique and ambitious attempt to reach an accommodation between environmentalists and industry on issues arising from the nation's increasing reliance on coal (*Science*, 21 October 1977). This is borne out by the project report issued a few weeks ago. As this document shows, the NCPP has in fact led to a surprising amount of accommodation and agreement between its environmental and industry participants, although it is by no means clear yet how much the project will actually influence industry and environmental groups in their behavior.

Nearly 100 persons, divided about half and half between environmentalists and individuals identified with companies that produce or burn coal, have taken part in the NCPP, most of them as members of its five task forces on mining, air pollution, transportation, pricing, and fuel utilization and conservation. Each task force has been led by an environmentalist and someone from industry; in the case of the mining task force, for instance, the cochairmen have been Michael McCloskey, executive director of the Sierra Club and John Corcoran, a former board chairman of the Consolidation Coal Company. Laurence I. Moss, an environmental consultant and former Sierra Club president, and Gerald L. Decker of Dow Chemical are the prime movers behind the project. They

have chaired the environmental and industry caucuses and guided the plenary sessions at which agreements worked out by the task forces were approved.

As the project was getting under way early last year, Congress was already far along in its deliberations over the strip-mining and clean air bills. The NCPP leaders decided that to try at that late date to address directly the controversial issues raised by these measures would be needlessly divisive and quite unproductive. But, as the NCPP report makes clear, there were scores of issues that the project could address, including some that might have a bearing on how the strip-mining and clean air acts are implemented or observed or even ultimately amended.

### Report Highlights

Here are some of the highlights from the report's findings and recommendations:

► A continuing large-scale expansion in the mining of western coal is not going to happen. Given the fact that its sulfur content is not particularly low in relation to its modest Btu value, this coal will not

find a large market east of the Mississippi. Required by the Clean Air Act Amendments to use scrubbers in any case, utilities in this region will find it cheaper to burn midwestern and eastern coal than coal from the West.

(According to the NCPP report, more than 70 percent of the nation's coal, as measured by Btu value, is in the Midwest and Appalachia, with most of it accessible only by deep mining.)

► No proven techniques are available for restoring the agricultural productivity of alluvial valleys in the West after strip mining. Accordingly, permits for mining in such areas should be granted on only an experimental basis. A similar recommendation was made with respect to strip mining on highly productive farmlands in the Midwest.

► To better control the hydrologic impact of coal stripping in Appalachia, the issuance of mining permits in any particular watershed should be limited to minimize the amount of land disturbed at any one time. This recommendation goes beyond the requirements of the new strip-mining law, the NCPP report says.

► "Highwalls," created when strip-pers remove the overburden and cut into a coal seam, should be allowed to remain in certain circumstances in the West and Midwest—for instance, where the back-filling necessary to eliminate a highwall would actually make for less acreage being restored to productive farming. Coal industry representatives convinced environmental participants that this recommendation was warranted even though the strip-mining law calls for all highwalls to be eliminated.

► Old coal-burning power plants, built 20 or more years ago, should not have to be equipped with scrubbers if the cost of doing so would entail a greater expenditure per kilowatt-hour generated than is required for the air pollution control equipment installed for new plants. This recommendation, which contemplates the use of tall stacks, low-sulfur coal, and other means to prevent violations of ambient air standards, also reflects the persuasiveness of industry.

"On this issue," says Bruce Terris, an environmental lawyer and cochairman of the air pollution task force, "we environmentalists on the project are retreating from a past position. But I want to stress it is a retreat that is right. The emphasis should not be on irrational rules for old plants simply because we happen to have won a Supreme Court case. What we gain is a stress on investing in pollution controls on *new* plants, where the payoff will be greater."

► Power plants should, to the extent possible, be built near the place where the power will be consumed rather than in the remote regions where the coal will be mined. As the NCPP report indicates, this recommendation could prove infeasible without conservation practices to limit the amount of new generation required and major technological improvements in pollution control.

#### "One-Stop" Siting

In two other recommendations on the construction of power plants, the report calls for establishing a "one-stop" siting process at the state level in place of the multiple permitting processes which a utility now must usually undergo and making public funds available to responsible environmental, consumer, or other citizens groups to support their participation as "intervenor." The one-stop siting procedure is much desired by the utility industry, and "intervenor funding" is something environmentalists have wanted badly.

In its statement of principles, the NCPP report embraced the concept that the price of energy to consumers should reflect all the costs of producing it, including the environmental costs, and that a competitive marketplace can allocate resources more efficiently than can government regulators. Some of the implications of these principles were spelled out with respect to the pricing of electricity and the elimination of most subsidies in truck and barge transportation of coal.

The success of the NCPP will depend of course on how seriously its recommendations are taken by industry, the environmental groups, and government. Although drawn from several major environmental groups and a number of big coal companies, utilities, and coal-using corporations (such as Dow and U.S. Steel), the project participants represented only themselves. Furthermore, some interests with a major stake in coal policy, such as labor unions and Indian tribes, had no part in the project at all.

A few leaders in government, such as Deputy Secretary John F. O'Leary of the Department of Energy and Representative Al Ullman (chairman of the House Ways and Means Committee), have expressed enthusiasm for the project. But it may not have much influence on government unless industrial and environmental organizations embrace many of the recommendations and show the kind of mutual trust that seems to have prevailed among the NCPP participants.

At this point, it is by no means clear

that this is going to happen. The Sierra Club's Michael McCloskey, cochairman of the NCPP's mining task force, told *Science* that the project "should confirm that the strip mining act is here to stay and is the basic charter for operations." Yet at the very time the NCPP report was being put in final form, the coal mining industry—including three of the major companies which had people taking part in the project (Peabody, Amax, and Consolidation Coal)—filed suits attacking the regulations recently issued under the strip-mining act. To just what extent these suits stand in contradiction to the letter and spirit of the NCPP report is not immediately clear, but it looks as though the coal companies are still maintaining a hard line against federal regulation. According to William Eichbaum, the Interior Department's associate solicitor for surface-mining reclamation and enforcement, should the coal companies prevail in their suits, "implementation of the act would be gutted."

#### Environmental Skeptics

Some environmentalists—such as Louise Dunlap, director of the Environmental Policy Center and a principal lobbyist for the strip-mining bill, and Richard E. Ayres, a Natural Resources Defense Council attorney and lobbyist for the Clean Air Act Amendments—have regarded the NCPP as a presumptuous exercise from the outset and have refused invitations to take part in it. They believe that meaningful compromises on issues of the kind raised in the strip-mining and clean air debates are best reached through the legislative process, which is open to all affected interests and which everyone knows to be "for real." Moreover, Dunlap and Ayres think that by agreeing to allow highwalls and tall stacks under certain circumstances the environmental participants played into industry hands on two key points on which environmental lobbyists managed to prevail in Congress.

These fears may well be exaggerated but leaders of the NCPP are now clearly on their mettle to disprove the doubts of such critics by pointing to evidence that the coal and utility industries are, by word and deed, showing that they do in fact take project recommendations seriously. To this end Larry Moss, one of the NCPP's cofounders, says that, in the implementing phase of the NCPP, any discrepancies between corporate behavior and NCPP recommendations will be forcefully called to the attention of the companies and the environmental protection agencies.—LUTHER J. CARTER