

Coal Industry Overwhelmed

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OAK RIDGE, Oct. 1 — The coal men came, they saw, and they were conquered.

Or rather, the coal industry was overwhelmed by nuclear power advocates who seemed to convince the coal people that reactors and fission will replace coal in this century as the primary fuel for electric energy.

Such a realization, said one veteran coal leader, is good for the coal operators, the miners and the railroad carriers in such mine fields as East Tennessee, Kentucky and Virginia. The coal economy, he said, now must buckle down to this new competition and find better mining methods and new uses for coal.

Many of the some 150 coal representatives who came here this week for a two-day briefing by the Atomic Energy Commission and the TVA were skeptical of the nuclear threat to their industry. This weekend, however, skepticism was replaced by realism. The sessions just could mean that coal has decided to turn another major corner—now and not some mythical date in the future—in order to survive.

Still Snapping

Still, coal executives were snapping at the heels of the atomic experts at every turn—but mostly they were arguing with themselves in last-gasp opposition to the reactor monster.

"What about those breeder reactors you keep talking about?" asked a delegate. "Won't there be so many engineering obstacles that they won't be practical?"

"Technology and total resources will overcome any engineering problem," replied Milton Shaw, Washington, AEC's director of reactor development and technology, and longtime top assistant to Admiral Hyman Rickover and the nuclear submarine emergence.

"Federal Power Commission's projection in 1964 was that 500,000,000 tons of coal would be burned in this country by 1980," said Dave Sweeney of Illinois Central Railroad at yesterday's forum. "If the reactors are coming, isn't such a prediction's meaning we are living in a fool's paradise?"

Prognosis Changing

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the mine fields across the country to big markets.

"TVA is hedging now on building a new steam plant at Cumberland City near Nashville, but even if it does this likely will be TVA's last coal-fired steam plant. Oh, it may add units at Bull Run and Paradise Steam Plants, but we in coal believe this will be the extent of it.

"This means that TVA as a coal market will diminish. TVA is buying 35,000,000 tons this year and may go to 30,000,000 tons next, but from then all it looks like a downhill drag.

'Future Assured'

"Coal's future is assured, provided coal gets smart. If these major coal reserves weren't valuable, then you wouldn't find the big oil companies moving into the coal arena. Look at Continental Oil taking over big Consolidation Coal Co.

"In Appalachia, the fragmented coal industry must pull itself together if it is to survive. Several companies may have to pool resources and mine the coal seams owned by all—sort of like a downtown office building spreading over individually-owned tracts of real estate.

"TVA now is talking about the possibility of having power units for peak periods, leaving the plants idle at other times, but coal can take no cheer in this. A gaseous chamber . . . jet engines . . . reverse pump (reversing the cycle of water by holding it in reserve reservoir until electricity is needed) . . . all such would not mean the purchase of more coal by TVA.

Wants Positivism

"Thus, coal must adopt a positive program. Coal people cannot afford a negative approach. We lost the railroad steam engine market to diesel fuel, and we've lost most of the home heating market, but each time coal recovered. It must recover from the reactor threat, and AEC's five-year warning that comes now should be accepted with thanks by the coal people."

"And I am not one of those coal alibists who stick their heads in the sand like an ostrich. For example, I don't believe we will run out of uranium ore. There's a terrific drive on everywhere and Uncle isn't letting up.

"And I'm not faulting Uncle Sam for pouring more money into reactor research than he is in coal research. If there was \$100,000,000 today for coal research, the industry probably couldn't agree on what research to spend it on."

'Needs Policy'

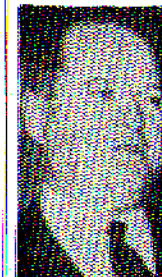
ment support as does nuclear energy.

Dr. Weinberg, differing from most of his colleagues on the question, feels nuclear fuel poses no immediate danger to the coal industry. During the past year, he said, more coal was used in the United States than in any year since 1945. And new coal-fired power plants built last year, he said, are expected to run for "a good 30 years" and with out demand for energy growing. "I cannot see a diminishing absolute market for coal."

But the coal industry, said the scientist, must overcome two main technical handicaps if it is to regain its "unchallenged position as the fuel for large central stations." One is pollution and waste products, and the other is the relatively high cost involved in producing electricity. One way to eliminate air pollution caused by burning coal, he suggested, was by liquifying coal, converting it to a crude oil essentially by adding hydrogen to the coal. Such a new market for coal, Dr. Weinberg said, might also prove its salvation as a basic economy in the land. Should this happen, he said, uranium and coal could indeed become partners.

'Coal Must Get Smart'

The briefing was valuable, said Moody, in alerting the coal industry to this new competition.



Moody

"Coal men by now should be convinced the industry must develop a hard-hitting program to meet this new competition from atomic reactors and to find new markets for coal," he said.

"The atomic doctors say coal has five more years of normal life—maybe 10 years. The warning gives us time to get our things in order and we don't prepare we will die.

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When all was done, the atomic scientists had fielded most criticisms with logic, leaving the coal men limp but generally convinced.

A major complaint by the coal men was that Uncle Sam finances research on power reactors for the nuclear industry but doesn't do enough for coal, such as finding new uses for the mineral. Even AEC leaders agree this is so, but they also point out that coal's quarrel should be with Congress and not AEC which is doing what the AEC act directs them to do.

Both Speak Out

The views of both sides are expressed below—those of Joseph Moody, Washington, president of the National Coal Policy Conference via an interview, and Dr. Alvin M. Weinberg, director of the Oak Ridge National Laboratory, via an address here in which he said he was speaking for himself rather than for AEC or the Government.

"This new threat could very well be the best thing that has ever happened to coal—and this briefing could underscore coal's salvation. If nothing else, coal people are now convinced that nuclear scientists are determined to overcome every technical problem on the way to placing fast-breeder reactors on the power line—reactors that use scarce uranium over and over again, and making nuclear power cheaper than coal power."

"TVA Hedging"

"When the reactors came through at Oyster Creek," he said, "the breakthrough had been scored. And TVA's switching to reactors for power production was the winning of the war.

"Coal must be more competitive—finding ways to beat the traffic cost, ways to mine it more economically, and through research go into new fields, such as oil that could be refined for gasoline and piped from

coal alfibists who stick their heads in the sand like an ostrich. For example, I don't believe we will run out of uranium ore. There's a terrific drive on everywhere and Uncle isn't letting up.

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"Needs Policy"

What the coal industry needs, said Moody, is a coal policy. The nuclear field has a policy and look what's happening, he declared.

And look, he said, at another angle. If coal were to find a way to be used as oil and take only 10 per cent away from the oil industry it would mean the use of 140,000,000 tons of coal a year.

On the other hand, one pound of uranium used in reactors to make electricity is equal to 1300 tons of coal!

Whatever coal's road is to be, Moody says the industry had better get out a road map quickly and get behind the wheel.

He listed these strengths of coal power:

1. Coal-fired power plants have operated successfully much longer than have nuclear plants.

2. Coal-fired plants, no matter in what size, need no engineered safeguards.

3. Coal's ashes, though troublesome, are far less dangerous than are fission products.

4. Coal-fired plants are cheaper than nuclear plants in the smaller sizes.

5. Coal, in addition to being a source of energy, is a valuable organic chemical and reducing agent: It can be used to reduce iron ore, and it can be converted into liquid fuels, or even to synthetic stockings.

It's weaknesses:

1. Coal contains noxious pollutants, like sulfur.

2. Coal costs about 30 cents/MBtu, compared to nuclear fuel, which may cost as little as 5 cents/MBtu, and the cost of coal rises sharply with distance from the mine.

3. The coal industry is relatively fragmented, and "I suppose I would say, less scientifically oriented than is the heavy electrical equipment industry."

4. Coal, though supported by the Department of the Interior, hardly enjoys as much Govern-

ments in order and we don't prepare we will die.

'Coal Could Be Partner'

The United States Government would do well, says Dr. Alvin M. Weinberg, of Oak Ridge National Laboratory, to reexamine



its position so that the "full potentials of both uranium and coal will be exploited for the benefit of all."

Noting that most tax dollars today favor nuclear power research over coal

research, Dr. Weinberg's personal credo is that "if uranium is coal's best friend, coal doesn't have to look for an enemy." He has, he admitted, been fascinated by the problem of energy for 25 years.

Nuclear energy, he said to the delight of the coal man, has its weaknesses. But so does coal.

Here's how he summed up nuclear strengths:

1. In large sizes, nuclear electricity appears to be extremely cheap.

2. Because nuclear fuel is compact, the price of nuclear electricity does not depend upon the location of the plant.

3. If breeders are successful, "we shall have available an essentially inexhaustible source of energy in the residual uranium and thorium in the earth's crust."

4. Nuclear power plants can be built so as to be almost pollution-free.

5. Nuclear energy is a child of aggressive large-scale research, much of it sponsored by the Government, and it continues to profit by the research

activities of a vast technical establishment.

Nuclear power's weaknesses:

1. Nuclear energy is really cheap only in very large sizes—say 100 MwE and above.

2. Nuclear converters of the present generation burn only a small part of uranium. Even if more cheap uranium is found, the cost of energy from burner reactors will eventually rise.

3. "Though I believe nuclear power plants can be made arbitrarily safe, to do so requires elaborate 'engineered' safeguards. How much these must cost to insure beyond any possible doubt against a nuclear catastrophe will always be a matter for argument. In any case, I can understand why so far people are reluctant to place large reactors very close to large cities.

4. Disposal of radioactive waste products from a large nuclear power plant is relatively complicated.

Dr. Weinberg said in his opinion that "the cheap, safe breed-

er is one of our society's most important technological goals, and we ought to be prepared to spend much more on it than we are now doing."