

requirements demanded by the International Atomic Energy Agency (IAEA). The safeguards, which are used to detect any diversion of nuclear equipment or material for weapons production, cover not only the life of the technology transfer agreement itself, but also the useful life of all installations constructed under the terms of the agreement and the application of German technical "know-how" to any other facilities built in Brazil.

These "know-how" agreements, applied for the first time between a signatory nation (West Germany) and a nonsignatory nation (Brazil) to the Nonproliferation Treaty, are becoming that standard model for all nuclear technology sales, following decision reached by the so-called London Group of countries in possession of nuclear technology.

Furthermore, although Brazil is not currently a signatory to the Treaty on the Nonproliferation of Nuclear Weapons, the accord with West Germany makes the entire agreement contingent upon negotiation of a safeguard agreement with the IAEA, "assuring that these nuclear materials, equipment and installations as well as the special fertile and fissionable materials produced in them, processed or used, and the respective technological information, are not used for nuclear weapons or other nuclear explosives."

Indian PNE Model For Expanding Food Production

On May 18, 1974, in the western state of Rajasthan, India carried out a 10-15 kiloton underground peaceful nuclear explosion (PNE).

The Indian government and its Atomic Energy Commission (AEC) justified the underground explosion,

citing agreements within the IAEA which permit peaceful nuclear explosions for research and industrial purposes. The AEC reported that it was testing the effects of using the PNE for civil engineering purposes, to study radioactivity, the fracturing effect on rocks, and the ground motion caused by such explosions. Before and after 1974, India has repeatedly pledged it will never utilize the nuclear option for any military purposes.

Despite the Canadian government's subsequent suspension of nuclear supplies to India, charges that India had violated bilateral agreements by diverting nuclear fuels supplied by the Canada government for the 1974 Pokharan experiment, are baseless. India never signed the NPT and is not bound by its agreements, having opposed it as "discriminatory" and controlled by a few "have" nations.

AEC Chairman Homi Sethna stated that the plutonium used in Pokharan was produced at the Trombay reprocessing plant (completed in 1965). The Canadian claim that the CIRUS experimental reactor, the result of an Indo-Canadian collaborative effort completed in 1960, was the base for the Pokharan experiment has not been verified. India's policy in these collaborative efforts has consistently been one of wholly indigenous development. Within five years of their completion, the Trombay plant was a national effort and collaborative ventures with Canada have been administered fully by Indians.

The Indian PNE effort originated in imaginative ideas developed in the U.S. in the 1950s and named "Operation Plowshare." The application of PNE, or the Plowshare model, to the Ganges and Brahmaputra regions, and the Rajasthan desert was based on studies conducted jointly by the U.S. AEC and the Indian Bhabha Atomic Research Center, as the basis for tripling food production through adequate irrigation and water storage.

Coal Conversion Bill: An Expensive, Wasteful Hoax

The Joint House-Senate Energy Conference Committee is currently in the process of thrashing out the final version of the Carter Administration's National Energy Act of 1977, and the conferees have divided the bill into five provisions. The first provision to be agreed on by the joint conference was the coal conversion portion, analyzed in this report. As a growing number of industry and trade-union representatives as well as Congressmen, have remarked, the Carter energy bill is more correctly labeled a tax bill, which will in effect force a shutdown of industry across the nation if its full provisions are instituted. The implementation of the coal conversion section is at this point dependent on passage of an overall bill, and passage of such a bill itself is still somewhat doubtful, at least before the 1978 election year. But the coal provisions provide a chilling example of the impact such a bill will have on already depressed U.S. industry.

Under unanimous attack by the utilities, industry, the National Coal Association and consumers, coal conversion would not save energy. Even in its most benign form, the coal conversion program will divert billions of

dollars out of capital investment and industrial modernization; pour more billions in to pollution control equipment; cut the productive capacity of those who agree to convert by 50 percent, raise energy costs substantially; waste irreplaceable resources in coal-handling and other equipment. The measure would also put unreasonable strains on both the coal producing industry and the transport system.

The original Carter proposal was a ban on the burning of natural gas in all new utility facilities by 1990 with the authority to ban both oil and gas use in future facilities. The measure would impose a punitive tax on utilities and industries that continue to burn oil and gas in their currently operating plants if they did not convert to coal within ten years. The tax schedule included a \$ 1.10 per thousand cubic feet (Mcf) of natural gas, \$3 per barrel on oil for industry, and \$1.50 per barrel for utilities.

The House of Representatives basically concurred with the Carter tax schedule but added considerable exceptions to the facilities forced to convert. The Senate then added provisions which exempted 90 percent of

facilities originally targetted. At the same time, the tax of the companies "best able" to convert was doubled. The Conference Committee "compromise" retained the more punitive Senate version of the tax schedule, while leaving the guidelines for exemptions vague; one provision states that the environmental and financial impact of burning coal rather than cleaner oil or gas must be considered.

After the 1973 arab oil embargo, the Federal Energy Administration (FEA) began studying the possibility of conversion and issuing suggestions where it could take place. However, *not one* of the companies issued a voluntary conversion order obeyed it.

Undaunted, the FEA released compulsory conversion orders to 24 existing industrial plant sites in 17 states on May 9, noting that they had already initiated similar actions against 105 existing electrical power plants at 50 sites. The coal conversion provisions in the proposed National Energy Act are sufficiently vague, ensuring their enforcement will have to be decided in court. While the Executive and the Department of Energy, will continue to exercise the power of ordering conversion.

Cost of Conversion

Considering only the conversion orders that the FEA has already issued for industry the cost is over \$225 billion. With the conservatively estimated cost of only industry conversion of \$277 million, each of the 19 targeted companies could incur \$40-50 million per year increase in operating expenses. Administration energy officials have conceded that the cost of conversion could increase industrial prices by 1.5 to 2 percent which would be passed on to consumers.

The conversion cost for existing utility facilities and the construction increases for 143 planned power plants that come under current guidelines for conversion could be another \$50 billion, according to the Edison Electric Institute. EEI adds that this cost will also be passed on to the consumer, making the entire program "financially disastrous."

Along with the increased cost to the utilities and consumers, Carl Bagge, president of the National Coal Association has pointed out that the switchover plans for present plants would "divert manpower and capital from new, larger and more efficient plants ... designed to burn coal." The NCA has continuously suggested that instead of conversion, a program of phasing out and replacing older facilities that burn oil and gas could be aided with the same \$50 billion, under a vigorous coal and nuclear development program.

Industries such as steel that are already financially reeling under increased costs mandated by equipment to minimize pollution from coal-burning, cannot even imagine using even more coal at increased pollution-control cost. In May the *Wall Street Journal* surveyed 50 companies to try to understand their hesitancy to support aspects of the Carter energy program. Of the companies checked in New England, none have any plans to convert to coal. "The costs are prohibitive," remarked the vice-president of Norton Company. Even in Pittsburgh, near large coal supplies, Westinghouse has been cutting back on coal use in recent years to meet air pollution standards.

The proposed cost to industry and the power producers is so unrealistic that bans and prohibition orders could very likely lead to the shut-down of small or marginal industries. If oil and gas use is not prohibited, the conversion program will translate to a tax on energy for producers, and an inflationary rise in services and products for consumers.

The Cost in Energy

In the estimation of engineering experts, however, the conversion program *will not save any energy*. The utility industry estimates that pollution control devices which are currently unnecessary with clean-burning oil and gas could add an additional 10 percent to the cost of a new power plant. In addition, if the cost of reduced energy productivity resulting from unproductive pollution control technology, plus the cost in energy to produce the scrubbers and other paraphernalia were added to the energy balance of conversion, there is virtually no savings!

By substituting coal, therefore, the cost of electricity is increased, whereas the supposed motivation was to replace expensive, (supposedly scarce) oil and gas with "cheaper" coal.

New Production Costs

Ernest S. Robson, vice president for energy and materials management at Monsanto Company has said that most boilers burning natural gas can't be converted to coal use, since a plant would have to install "unloading, conveying, storage, ash-handling and air-cleaning equipment." He estimates that the cost of a coal-burning system would be four times that of an equivalent gas-burning boiler.

Testimony submitted by the American Iron and Steel Institute before the Subcommittee on Energy and Power of the Senate Committee on Interstate and Foreign Commerce on May 25 asserted that, "...retrofitting present gas or oil-fired boilers to use coal is at best inefficient, due to the small combustion space and lack of ash hopper and soot blowers in these units. Furthermore, it is probably impossible to convert present gas and oil-fired boilers to coal without a loss in capacity of about 50 percent so these conversions would also require new boiler installations just to maintain present capabilities." In other words, if steel companies were to go along with conversion through rebuilding existing boilers they would eliminate half of their capacity!

A statement by the American Boiler Manufacturers Association, submitted to the subcommittee on May 27, made the case even stronger. "If the unit was not initially designed for future coal-firing, gas-to-coal or oil-to-coal conversion, conversion of an industrial or utility boiler is virtually impossible and totally impracticable, both as relates to economic feasibility and boiler capacity, which can be reduced as much as 60 percent. All design paramters are *radically different*: a coal furnace is usually twice as large..., extensive and expensive pollution control equipment, coal pile area, etc. *This situation really means boiler replacement.*"

They conclude that even if the steel and other industries could afford to replace their boilers, the boiler manufacturers could not produce at that rate! Moreover, many industrial and utility facilities that have never burned coal have no access to rail lines, meaning coal would have to be delivered by truck, the entire program becomes one so physically and economically costly as to

wreck industry.

Even the National Coal Association, which one would assume would be thrilled with this new-found importance for coal, has attacked the proposed bill as having devastating economic consequences, and completely unrealistic goals for the coal industry itself.

— *Marsha Freeman*