The Politics Of The Nuclear Fuel Cycle

Leading European, Japanese, and developing-sector countries are directly accusing the U.S. government of imposing wartime-type de facto embargo of vital uranium fuel supplies. Officials of the U.S. State Department, Energy Research and Development Administration (ERDA), and Nuclear Regulatory Commission profusely denied that the U.S. has embargoed strategic uranium fuel supplies, but then cited "administrative delays" as the reason an embargo is in fact being imposed.

The embargo is being attributed internationally as an attempt to implement the recent Trilateral Commission-Carter administration call for safeguards against what it likes to call "nuclear proliferation." Such de facto interruptions of internationally contracted uranium fuel deliveries, as a special ERDA study warned last May, is rapidly eroding U.S. credibility as an assured and reliable source of nuclear reactor fuel. This, in turn, undermines the nuclear Non-Proliferation Treaty (NPT) under which the actions are being justified since the Carter Administration is reneging on its export guarantees under that treaty!

In fact, the Carter policy has nothing at all to do with any concern for stopping the danger of nuclear war internationally but is actually insuring that the world is plunged in the immediate period ahead into such an irreversible course. Under the ruse of non-proliferation, the Trilateral Commission Cabinet is carrying out a short-run policy of economic and political warfare against its presumed international allies which makes sense only as subsumed feature of a policy of rapid deindustrialization and energy reduction.

Origins of the Non-Proliferation Hoax

Like many war gameplans, the Carter Administration's current control of various phases of the so-called nuclear fuel cycle under the guise of "proliferation" originates with the Rand Corporation. In April, 1976 Rand Corporation associate Albert Wohlstetter published a study titled, "Moving Toward Life in a Nuclear Armed Crowd?" This report served as the policy trigger for key Senators such as Percy (R-Ill), Javits (R-NY) and Ribicof (D-Conn) to call for fuel export restrictions which among other things would prohibit the transfer to any non-nuclear weapons possessing country of any technology, component or facility capable of producing, fabricating or reprocessing special nuclear material. Although congress has yet to enact such an Export Reorganization Act, this is the policy being implemented by Executive fiat to sabotage the substantial Brazil-West German reactor deal which includes development of nuclear reprocessing facilities. In actual fact, although it is theoretically possible for a country such as Brazil to develop a workable nuclear device, using reprocessed plutonium, they will lack even the facility for reprocessing until 1982-85. Assuming brazen violation of agreed to international safeguard inspection arrangements and a full-scale attempt to develop a militarily effective bomb, it would be years more before that could occur. What is at issue is a U.S. government strategic deployment to sabotage energy-intensive advanced technological development worldwide. The technology is the same whether diverted for weapons or for peaceful energy. The ultimate determinant of which prevails is the long-term healthy industrial development policies, not top-down police enforcement of Trilateral Commission controls. Nuclear "proliferation" per se is a meaningless argument in this context.

Control of the Fuel Cycle

Implementation of this policy becomes clearer when the entire fuel cycle is looked at strategically. The overall fuel cycle for nuclear fission reactors encompasses the uranium enrichment to provide fissionable fuel for reactor use of an approximate 3.5 per cent grade of fissionable U235 (up to 90 per cent U235 is needed to produce an explosion), through to the eventual reprocessing of spent fuel, a method that promises to increase available fissionable fuel by at least 25 per cent.

In the course of carrying out a full-scale vigorous world energy development program under which fossil fuel as well as fission energy resources are developed at the most rapid feasible rate to fulfil world energy need transitional to a nuclear fusion economy, existing world uranium reserves become critically short and the needs become great for reprocessing as well as a full transitional development of the so-called fast-breeder reactor technology which "breeds" its own fuel. All of these technologies in one or another degree are essential for any present assured development of nuclear resources. The present situation is enormously complicated by the Rockefeller family-Trilateral attempt to sabotage any substantial nuclear "independent" capability on the part of Europe, Japan, and the developing sector. All such attempts — aside from "Naderite" deployment of "environmentalist" groups to stall actual plant construction — have zeroed in on control of the critical fuel cycle. The following is a summary of the international resources to withstand such sabotage:

Uranium Reserves

The majority of known world uranium reserves outside the Soviet Union lie in the United States, Canada, Australia, and South Africa, with small immediate reserves in France and potentially enormous reserves in Sweden. Since the lead time to bring reserves into production is 8-10 years, it is useful to consider what

countries are actually presently mining uranium. Currently, the U.S. and Canada supply approximately 50-60 per cent of all Europe's enriched uranium, making the current U.S. embargo extremely significant.

In the United States, which has approximately 30 per cent of uranium reserves outside the Soviet Union, control and regulation of the mining is held by ERDA and the Nuclear Regulatory Commission, who have been "delaying" approval for various exports of natural and enriched uranium. By all serious estimates of world needs, current U.S. mining is grossly inadequate with some 13,000 tons total produced in 1974. To expand output means significant capital investment in further mining and milling capacity. This is not presently being done and latest estimates are that actual milling is being reduced.

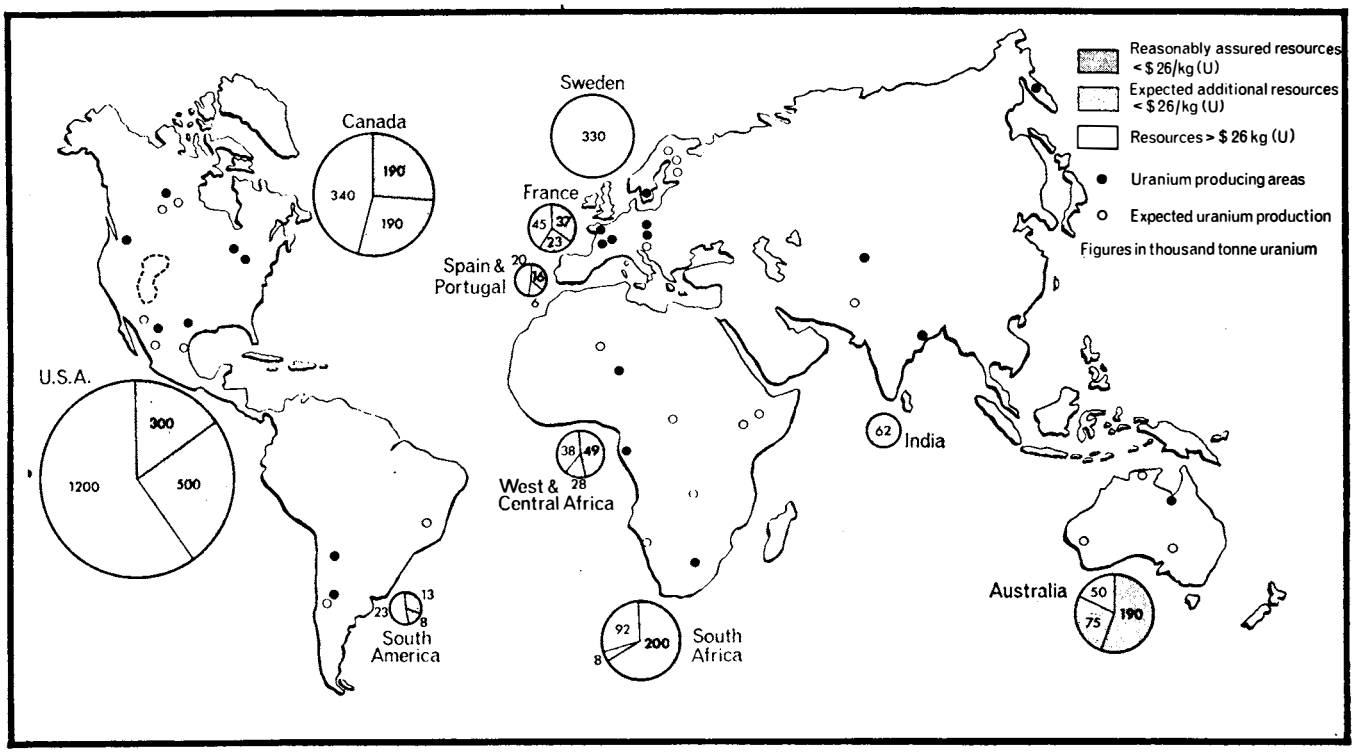
Australia, which has huge reserves of what are regarded as the world's most readily available uranium is currently producing virtually none. The reasons are explicitly political dating to sabotage of major international exploitation agreements between the former Whitlam government and Japanese and European customers in 1975. Although the second largest Australian labor union, Australian Workers Union has just called for a major development of Australian uranium resources to provide 20-30,000 jobs, currently the only actual mining is at the small 300-man Mary Kathleen mine owned by the Rio Tinto Zinc. The restriction is deliberate and tied to international intelligence deployments operating through the Kaplan Foundation-funded Friends of the Earth. These "Friends" have sabotaged development of the immense reserves by organizing the Transport Union to refuse to ship any uranium and passage of an Aborigine Rights Bill which gives aborigines veto rights over mining on rich uranium lands. (see EIR, Vol. IV, no. 4, "A Company Against Uranium Use").

Canada, which has one of the largest uranium concentrations in the world, is virtually shut down. Out of a total of 8 milling plants, three were active in 1975 and producing only 3,700 tons. Further, since Jan., 1976, Canada has halted all international export of uranium for renegotiation of a new law which imposes prohibitive terms on consumer countries for export. Renegotiations with the Japanese importers broke off last week over the stringent terms. Euratom is currently in talks to work out an agreement. Another restrictive prohibition in this law requires Canada to maintain a 30-year domestic reserve.

In *Europe*, although there are potentially large reserves in Sweden, these are not presently being exploited. France is the only European country presently producing uranium from its own resources in regular and useful amounts, though reserves are small and annual production in 1973 was 1,600 tons. It also gets some 1,400 tons from additional mining arrangements in Gabon and Niger.

This international situation of deliberately controlled restriction of non-Soviet uranium resources leaves only the politically volatile Southern African reserves where aside from South African reserves which in 1973 produced about 4,000 tons, the huge Namibian Rossing Mines owned by RTZ are due to come on line sometime in 1977.

Main uranium producing regions of the world.



Enrichment Capability

The next stage in the fuel cycle process in a similar strategic choke point. The U.S. government has attempted to maintain an effective monopoly on enrichment under the rubric of control of nuclear weapons capability. Neither the U.S. nor Europe have at this point any capability for further forward contracts of enriched uranium beyond existing commitments reaching into the next decade. U.S. cutoff of new enrichment contracts in 1974 accelerated both European development of independent enrichment capability as well as increased imports from the Soviet Union of enriched uranium which now forms a significant portion of supplies to West Germany, France, Italy, and Sweden.

The most recent U.S. government run enrichment facility was completed in 1956 and a Ford proposal lasst year to provide government underwriting assurance for construction of a major private enrichment facility by a consortium called Uranium Enrichment Associates for $3.5 billion gaseous diffusion plant in Alabama was effectively killed by the Nader lobby. The facility, of which Bechtel was to have been a major participant, would have increased present U.S. enrichment capability by fully 33 per cent and would have assured export supplies to Japanese and European energy installations. As it is now, the grossly under-capitalized U.S. government facilities at Oak Ridge, Tenn., Paducah, Ky.; and Portsmouth, Ohio are over-booked and since 1974 have issued conditional delivery contracts.

Sabotage of the Uranium Enrichment Associates deal insures a critical bottleneck of world enrichment supplies into the future, which since the early 1970s and especially since the depradations of the 1973 oil crisis has forced major acceleration of European and other countries' development of the critical and highly energy-intensive enrichment technology. Beginning in the early 1970s, the French took the initiative to form the Eurodif consortium in direct response to by-then-obvious U.S. policy of guaranteed uncertainty of future supplies. Eurodif, which now includes French, Italian, Belgian, Spanish and Iranian participation, began work in 1975 on a facility at Tricastin in France which is scheduled to begin operation in 1979. The Eurodif member countries and Japanese buyers have fully booked all Eurodif capacity into the 1990s. Until then, beginning with the French decision in 1971, European nuclear users have made substantial import agreements for enriched uranium from the Soviet Union.

Urenco, a joint West German, British, Dutch uranium enrichment consortium is the second major European enrichment project underway. Development of the Almelo facility of Urenco, which is slated to supply a major portion of Brazil's enriched uranium for its West German reactors until completion of its own enrichment capacity in 1985, is under question due to opposition within anti-nuclear layers of the Dutch Labor Party. This week, West German and British memebers of the Urenco consortium announced they would go ahead with development of the scheduled capacity should the Dutch withdraw. To date, the Urenco commerical enrichment capacity has been limited to three small pilot plants of 60 SWU (separative work unit) outpur per year. The committed capacity through the 1980s is for 2,000 SWUs. Eurodif capacity is planned for 10,800 SWU by 1982, with a second "Eurodif II" of Coredif which involves Eurodif, Frnch and Iranian participation planned for the mid-1980s.

The estimated supplementary supplies of enriched uranium from the Soviet Union are assumed to be 3,000 SWUs per year to Western Europe. Present U.S. enrichment capacity is 22,800 SWU per year.

The entire European and U.S. enrichment capacity is drastically underdeveloped even given present "realpolitik" estimates of international nuclear power capacity. Enrichment supply thus represents a major strategic chokepoint to possible political and economic blackmail of Europe and the U.S. energy supplies. Europe's existing dependence on nuclear power for commercial electricity is approximately twice that of the U.S., ranging from 10-18 per cent of total national electric power.

Reprocessing and Fast Breeders: Breaking the Uranium Blackmail

In order for the long-term energy blackmail around control of enriched uranium for existing light-water reactors, to be effective and allow cartellized raising of world uranium to prohibitive levels, development of reprocessing capability and the so-called fast breeder reactors must be effectively sabotaged. This is the essential explanation for the recent Trilateral commission call for a world moratorium on all reprocessing development. It is the reason the Wohlstetter study cited above. A proliferation of other Rand and Rockefeller family-funded efforts of "environmentalists" have zeroed in on stopping development of reprocessing such as is involved in the West German-Brazil deal. This is the reason behind the public statement this week by Otto Wolff von Amerongen, head of the West German Industry Association (DIHT) that there is "no need to either delay the building of reprocessing plants or have these procedures be managed in the U.S. or elsewhere."

Fast breeder reactors, reactors capable of "breeding" surplus fuel, thus not dependent on enriched uranium, require an initial fuel mix which contains some 20 per cent Plutonium 239. Plutonium is an artificial isotope which must be obtained from reprocessing of spent fuel from existing light water reactors. A substantial international commitment to reprocessing and fast breeder development destroys the apparent ruse of the present uranium blackmail and for this reason, over the past year the issue has become the target of a concerted international scare campaign as to the danger of "nuclear terrorism" and bomb proliferation. Under the kind of international program of world energy growth rates necessary to raise the world to the present level of the advanced sector in terms of industrial development, fast breeder reactors must come on-line within the decade as forseeable uranium supplies are exhausted.

Presently, the one operating commercial reprocessing plant in the U.S., in West Valley, N.Y. has been permanently shut down due to financially prohibitive environmental requirements. The Nuclear Regulatory Commission of the U.S. government is presently delaying all decision on reprocessing pending issuance of final "environmental impact" regulations, generally referred to as GESMO regulations. In Europe, West Germany, Britain, and France have formed a joint reprocessing consortium, called United Reprocessors, which includes the Windscale facility of British Nuclear Fuels Ltd., the La Hague and Marcoule facilities of the French Atomic Energy Commission (CEA); and a planned site to be announced soon in West Germany to be run by PWK and KEWA. Japan has recently made a major push to complete its commercial reprocessing facility at Tokai Mura due to be completed in the late 1980s. Brazil and Pakistan currently have reprocessing contracts from West Germany and France respectively.

The development of the fast breeder, whose theoretical design has been available since the 1940s Manhattan Project, is currently being actively developed only in France, Britain, and the Soviet Union. The U.S. program is postponed indefinitely at this point. The French Super Phoenix, a joint project with West German and Italian collaboration, got the go-ahead late last year after two year successful operations of the Phenix prototype.

Commitment to develop a breeder program is presently a major pending governmental issue in Britain, and Japan, and the British currently have 250 MWe prototypefast reactor, the PFR and there is a demonstration breeder under construction in Japan though completion is still years off at this point.

Summary of reprocessing projects around the world and current

Location	Operator	Type of plant	Capacity te/y	Date operational	Status
U.S.A.					
West Valley, N.Y.	NFS	Oxide	300	1966 to 1972	630 te processed before shut down for expansion
		Expanded, oxide	750	early 1980s	Dependent on new construction permit
Midwest Morris, Ill.	GE	Oxide, advanced process	300	—	Inoperable in present form Currently providing fuel storage
Barnwell S.C.	AGNS	Commercial, oxide	1500	1977–78	Depending on GESMO decisions
—	Exxon	Commercial, oxide	—	mid-1980s	Looking for site
U.K.					
Windscale	BNFL	Nat. U metal	1500–2500	1964	Operating near full capacity Head end improvement programme in hand
		Oxide head end	300	1972 to 1973	Operated but shut down for investigation of incident and subsequent modification
		Refurbished oxide head end	400	1977–78	Will feed into nat. U separation plant depending on availability of capacity
		New commercial oxide plant	1000	1984	For expected domestic requirements part of United Reprocessor's plan
		New commercial oxide plant "overseas"	1000	1987	Awaiting decision on public acceptability of overseas contracts
France					
La Hague	CEA	Nat. U metal	800	1966	Main plant for reprocessing EdF nat. U fuel but due to be changed over to oxide
		Oxide head end	150 to 800	1976	Phased build up feeding into existing separation plant
		New commercial oxide plant	1000	1985	Detailed design just starting
Marcoule	CEA	Nat. U metal fuel	900–1200	1958	Early military plant. Will take over commercial nat. U from La Hague
Germany					
Karlsruhe WAK	KEWA	Pilot scale oxide	40	1970	Operating with fuel of increasing burnup
—	PWK/KEWA	Commercial oxide plant	1500	1984	Design specification being prepared. Site to be selected
Japan					
Tokai Mura	PNC	Demonstration scale oxide	200	1976	Non-active commissioning
—	PNC	Commercial oxide plant	1000	late 1980s	Projected if site can be found
Belgium					
Mol	Eurochemic	Multi-purpose semi-commercial international plant	60	1966	Shut down. Future in doubt. Has been used for reprocessing development
Italy					
Saluggia Eurex 1	CNEN	Pilot scale oxide	10	1969	Currently shut down for modification
India					
Trombay	IAEC	Pilot scale nat. U oxide	60	1965	

Note: Several other pilot and laboratory scale plants have and are being operated for development of reprocessing technology. Commercial reprocessing of research reactor fuel has also been undertaken in several plants around the world. Fast reactor oxide fuel will be reprocessed in pilot scale plants in France and the U.K. and a plant for mixed thorium uranium oxides was built in Italy but has not been operated.

Enrichment capacities in operation or in construction in U.S.A. or Europe and assumed supply from U.S.S.R. (in million SWUs)

	1980	1982	1984	1986	1988	1990
U.S. ERDA	22·8	25·2	25·9	27·6	27·7	27·7
Urenco	1·0	2·0	2·0	2·0	2·0	2·0
Eurodif	6·1	10·8	10·8	10·8	10·8	10·8
Total	29·9	28·0	28·7	40·4	40·5	40·5
Assumed supply from U.S.S.R.	3·0	3·0	3·0	3·0	3·0	3·0