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E.O. 12065: N/A
FROM : AmEmbassy MOSCOW DATE: 20 OCTOBER 1979
TAGS: TECH, ENRG, UR
SUBJECT : Visit to the Chernobyl' Nuclear Power Generating Plan
REF : MOSCOW 20842 (NOTAL)

OES

SUMMARY: A Kiev Advance Party Officer recently visited the Ukraine's one operating nuclear power generating plant, located at Pripyat' in Kiev Oblast'. The plant now operates two "units", each with its own water-cooled channel graphite reactor, turbines, and automated control system. Each unit is capable of producing over one million kilowatts of electricity. A third line is scheduled for completion late next year, with a fourth to follow "later". The two units currently in operation only recently (October 5) reached full capacity. At present, the plant is capable of generating 13 billion kW-hours of electricity per year, which is the target for 1980. The reactors are shut down twice yearly for "preventive maintenance". Fuel is slightly-enriched uranium (less that 2% U 235). An average 6% of total output is consumed on site to operate plant equipment. An R&D establishment attached to the plant seems to be concentrating on problems of materials' strength and durability. The station's output amounts to about 1% of total USSR power generation, and between 10 and 15% of that of the Ukrainian SSR. Eventually this plant will be an integral part of the CEMA Mir power grid; for that purpose a massive 750 kV transmission line is now being built westward toward Zhitomir. Officials of the plant seemed especially sensitive to problems of radiation leakage; they went to great lengths to assure the visitors there never has been an "incident" at this or any other nuclear power plant in

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the USSR. Interestingly, the plant officials were extremely well-informed of the Three Mile Island accident. They were particularly curious to know how "uninformed US public opinion" can succeed in adversely affecting government policy on the further development of nuclear power. For them it is "obvious" that nuclear is the only solution for the "bridging period" until exotic energy sources are developed. END-SUMMARY.

On Tuesday, October 9, the Ukrainian Ministry of Foreign Affairs organized an excursion for the Kiev Consular Corps to the Chernobyl' Nuclear Power Generation Station (Chernobyl' skaya Atomnaya Elektricheskaya Stantsiya). The plant is located about 15 miles west of the district (rayon) center of Chernobyl', at the edge of the former village (now rapidly growing town) of Pripyat'. The site is in extreme northwest Kiev Oblast' on the Pripyat' River and close to the border of the Byelorussian SSR.

At the plant the consuls were received by two deputy chief engineers, Taras Grigoryevich PLOKHIY and Mikhail Alekseyevich LYUTOV. They, with several subordinates, served as guides for the three-hour excursion through the facility.

The site itself is a bee-hive of activity. The plant is being expanded, and power transmission lines out from the site are being built. At present two "unit" or "lines" are in operation. These each consist of a water-cooled graphite reactor (1.05 million kilowatts capacity) and two 500,000 kW turbines. All four turbines (manufactured in Kharkov) are arranged in a line in one long building. The reactors are located side-by-side in an "L" of the same building. Each line is operated from its own automated control center. The engineers declined to specify where the reactors were built, but did give some detail of their operation. Apparently the key principle is that the reactors can be re-fueled without shutdown, being shielded loading-unloading "tube" operated by one worker.

The fuel used is uranium, enriched to "slightly less than 2%". The fuel rods are inserted in any one of several hundred "channels", which also facilitates replacement of any one fuel element without shutting down the reactors. The reactors

are shut down twice yearly, however, for planned "preventive maintenance" work.) Once in place, the fuel rods remain 1100 "working days" (rabochiyye sutky). The reactors together consume some 6.6 kilograms of fuel per working day. (COMMENT: This figure appears far too low. A 2000 MW light water reactor would consume over 200 kilograms of fuel per day. END COMMENT.) The entire facility itself uses up roughly 6% of the total generated electricity for operating power.

The officials noted that once the plant reaches full design capacity (four or more reactors), there will be storage capacity available only for about five or six years worth of spent fuel. The government "is working on this problem", they assured the visitors, with a view to providing "centralized storage facilities" eventually.

Also as part of the site is an artificial cooling pond, 20 square kilometers in size. It was formed by dredging an area adjacent to the main channel of the Pripyat' river.

Upon entering the main administration building of the plant, the visitors were greeted by large signs proclaiming the fact that the station had on October 5 reached its full operating capacity of two million kilowatts. The officials stated that the 1980 plan calls for the plant to generate some 13 billion kilowatt-hours of electricity. This is equivalent to 1% of the USSR's total electricity production, and between 10 and 15% of that of the Ukrainian SSR.

A third operating unit is presently under construction. Completion is expected "by the end of 1980". The engineers were much more vague as to when the fourth line will be finished, but one ventured a guess of 1982. As the plant was begun in 1973 that would mean a total of nine years from start to final completion. On the other hand, it was pointed out that thought is being given by GOSPLAN and the relevant ministries to add several more units to the site. Thus, the planned total capacity of 4 million kilowatts may eventually be increased substantially.

The Pripyat' site was chosen, the engineers explained, mainly because of its proximity to both water and rail transportation but also because of its hefty distance from major population areas. Also, the region has very sandy soil and is thus

unsuited for agricultural use. (COMMENT: While all currently operating Soviet nuclear power stations are located a fair distance from major population centers, there is still a large group led by Academy President Aleksandrov which argues that nuclear plants can be safely operated inside large cities. The siting of a nuclear heat supply station in Voronezh (Reftel) indicates that no decision has been made to restrict nuclear power plants to remote sites like Pripyat'. END COMMENT.)

All the major components of the units, as noted above, are of Soviet manufacture. Ancillary equipment, however, has been supplied by many of the CEMA countries, and also by Yugoslavia. For instance, the GDR supplied armatures; Hungary chemical equipment, including filters; and Yugoslavia "generator drums". While at present all the station's output is consumed domestically, plans are afoot to integrate it into CEMA's Mir power grid. For the purpose a massive 750 kV transmission line is being built westward from the plant toward Zhitomir (where it will presumably link up with other Mir lines). (A joint Polish-Soviet nuclear power station is slated for construction in the near future at Khmelnitskiy in the central Ukraine. It will also be part of the Mir network as well as a purely Soviet nuclear station under construction at the Ukrainian oblast' center of Rovno.)

There are 3240 workers employed at the site. Of these 2000 work within the station itself, while the rest are construction workers. Of the plant personnel, some 600 have university degrees. There are 490 Party members at the station. 90% of all the staff are either Russian, Ukrainian, or Byelorussian; another 15 Soviet nationalities are also represented in the work force.

The plant and its parent ministry offer numerous benefits (l'goty) to attract and retain qualified personnel to the project. For example, both average wages and bonuses are higher. An engineer could expect to earn R180 per month, and 50% bonus for plan fulfillment. All workers are provided a free hot breakfast each morning, and a "high calorie" second meal at nominal cost. Both housing and municipal services are said to be of high quality. (COMMENT: By outward appearance, at least, housing in Pripyat' is of very high quality indeed. Housing blocks are attractively laid out and aesthetically pleasing. END COMMENT.)

Pripyat' itself is a classic "company town". The power station is the one industry in the area. Once a miniscule village, it is now booming and everything appears brand new. The present population of 25,000 is expected to double. New theaters, a cultural palace, and sports facilities are springing up everywhere.

The plant officials seemed particularly concerned to demonstrate both the safety of nuclear power generally and the many measures that have been taken to safeguard workers' health in particular. One purpose of this was presumably to convince the other consuls (all East Europeans) of the benefits combined with complete safety of the nuclear power option their Soviet comrades would like to see grow in importance in the EE/SOV energy quotient.

A lengthy presentation was given of safety measures in force at the plant. These conform to recommendations of the International Commission for Radiation Protection. Broadly, they take two forms: 1) protection of individuals themselves through the use of protective clothing, repeated instrument checks for body radiation, etc.; and 2) protection of the atmosphere around the plant itself. Inter alia, this latter is accomplished through the utilization of sensitive monitoring devices to register radiation "deviations" in grass, water, and milk supplies of the surrounding areas. (COMMENT: Getting in a dig at the Chinese, the officials claimed that the only time these instruments picked up noticeable radiation was last year following a PRC nuclear device test. END COMMENT.)

The plant apparently has a sizeable R&D establishment attached to it. This group is said to be concentrating on problems of materials' strength and durability. It is mandated to work on new materials for nuclear stations of the future as well as to assure the "absolute reliability" of the Chernobyl' station through testing materials to detect possible stress defects long before they occur.

The plant officials proved to be remarkably well informed about nuclear power developments in the United States. In particular, they seemed to know all the details of the Three Mile Island incident. To their way of thinking, events at Three Mile Island proved the reliability of the plant in the

face of "human error", rather than pointing up the dangers of nuclear power. They questioned the reporting officer at length about the "hysteria" they perceive as having grown up around Three Mile Island "from an uninformed public that does not know what it is talking about". They seemed not to understand how this public opinion could adversely affect the further development of nuclear power in the US. They specifically requested the reporting officer to inform the US Government of their strong conviction that nuclear power is not only absolutely safe when developed properly but that its use is inescapable if the industrialized nations are to make it through the bridging period until exotic energy sources can be developed.

ADDED COMMENT:

A three-column article appeared in the Soviet newspaper TRUD on October 13, 1979, which described very poor social and living conditions for workers at Ukrainian atomic power station construction sites. It noted that an irresponsible attitude had "reigned" toward worker needs at the Chernobyl' facility, much as now exists at the 5 other atomic power stations being built in the Ukraine, especially at the worker village of Kuznetsovsk near the Povenck atomic power station. In many cases workers are cramped in old buildings or barracks, without amenities, including stores, medical clinics, etc. Labor turnover has been high because of these conditions. A separate Airgram is being drafted based on the TRUD article. END COMMENT.

WATSON