6004

31 July 1974

MEMORANDUM FOR:

OSI

SUBJECT : Comments on Soviet Electroslag Remelting Capability

Attached, in response to our telephone conversation of 29 July, are comments on Soviet electroslag remelting capability requested for the upcoming meeting of the Materials Advisory Board, National Science Foundation.

In the absence of , I'll be happy to try to assist if you have any further questions on this or related subjects.

— OER

Attachment:
as s/

(31 Jul 74)

Comments on Soviet Electroslag Remelting Capability

The USSR is recognized as a world leader in the use of electroslag remelting (ESR) in ferrous metallurgy. Licenses for ESR equipment and technology have been sold to Austria, France, Britain, Japan, Sweden and the United States. The Soviets have also sold an unknown number of ESR units to Czechoslovakia, Romania, Poland, East Germany and Yugoslavia.

The Soviets first introduced the ESR process on a commercial scale at the Dneprospetstal Steel Plant in 1958. In 1965, the USSR claimed that "at present there is no plant for high grade metallurgy in our country where there is no electroslag furnace." Although it is not clear how many plants this may include, evidence indicates that by 1970 the ESR process was being successfully employed in at least seven additional steel plants located at Chelyabinsk, Elektrostal, Izhevsk, Volgograd, Zaporozh'ye, Zlatoust and Novo Kramatorsk. At some of these plants more than one ESR furnace was in operation.

Soviet ESR capacity amounted to an estimated 400,000 tons in 1970, compared with 70,000 tons in the United States in that year. The USSR plans to commission at least fifteen additional ESR furnaces during the Ninth Five Year Plan, suggesting that output will increase to about 800,000 tons by 1975.

The Soviets are not known to be using ESR technology on a commercial scale in nonferrous metallurgy. Titanium is being produced on a laboratory scale at the Ye. Paton Electric Welding Institute in Kiev. Reportedly this process will be used to produce titanium on a commercial scale in the future. In addition, the Soviets are doing work on chromium-bronze alloys and copper-nickel ores using the ESR process. Further information on these latter applications is available in the following issues of Tsvetnyy Metally: #2, 1970, p. 49; #4, 1970, p. 32; #7, 1970, p. 8.