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ANNEX A to
COCOM Doc. No. 3517B

Text of First Franco-U.S. Technical Agreement

It seems to us, inasmuch as this has been a technical discussion, that we should agree on the intrinsic potential or capability of the cable in question rather than to speculate on the use to which the U.S.S.R. intends to put the cable or exactly where it is to be laid. Therefore, the following points are agreed:

1. The cable in question could be laid double.

2. The top frequency of 8 quads in this cable is at least 120 Kc without distance limitation but with some possible impairment of CCITT +) standards for international connections.

3. The capacity of the cable is agreed to be 192 standard 4 Kc carrier-frequency telephone channels provided by the 8 high frequency quads plus 12 circuits provided by the remaining 4 low frequency quads. Alternatively, it would be possible to use 12 channel telephone carrier on each of the 4 low frequency quads with some limitations on the distance and quality of the communications on these channels.

4. It is possible to send through this cable carrier-frequency, voice frequency, railroad information, telegraph, and certain types of early warning information, etc.

NOTE: The operation of a cable of this type along an A.C. electrified railroad introduces important technical problems. First is that which concerns safety of personnel and plant. This can be met by the addition of various types of devices some of which would prevent the use of the low frequency quads for carrier transmission.

There is also the problem of transient disturbances which might limit the speed of data transmission.

The original and second copy of this document were signed by:

FRANCE:	M. Lapeyre	Chief Engineer, Ministry of Industry and Commerce
	M. Sueur	Chief Engineer, Director of the National Centre for the Study of Telecommunications
UNITED STATES:	M. Emling	Director of the Research Centre of the Bell Telephone Co.
	M. Bloecker	Chief Engineer for Carrier Frequency Systems of the American Telephone and Telegraph Co.

+) Comité Consultatif International Téléphonique et Télégraphique (International Consultative Committee for Telecommunications).

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ANNEX B to
COCOM Doc. No. 3517B

Text of Second Franco-U.S. Technical Agreement

In order to clarify the technical discussion in the same spirit as that which inspired our April 27 meeting, the experts of the two delegations, French and American, met to examine objectively the existing cables between Dôle and Vallorbe and the railroad communications and signal requirements which they provide.

They noted that on the Dôle-Vallorbe section of the Dijon-Lausanne international line on which the total daily traffic is about 30 trains, the telecommand, telecentrol and signal installations use a cable with 16 circuits plus two spare circuits plus 1 special 2 mm diameter star quad for CTC and power supply. The specifically railroad telecommunication needs are now assured by a second cable with the equivalent of 32 voice telephone circuits and 6 unloaded quads in reserve.

It is also agreed that Soviet railroad signalling and telecommunications practice are not necessarily similar to French practice.

Signed:

FRANCE:	M. Lapeyre	Chief Engineer, Ministry of Industry and Commerce
	M. J.C. Walter	Head of the Signalling Service of the S.N.C.F.
UNITED STATES:	M. W.E. Bloecker	Chief Engineer for Carrier Frequency Systems in the American Telegraph and Telephone Company
	M. L.W. Sweeney	Technical Adviser, Department of State

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ANNEX C to
COCOM Doc. No. 3517B

US Experts' Interpretive Statement of Technical Agreements reached with French Experts

1. The cable could be laid double (thus disposing of arguments that there are serious limitations on either length or number of circuits).

2. Such a double cable, in fewer than three-fourths of its conductors, could transmit 192 long haul standard telephone circuits and from 12 to 48 other circuits, some with length limitations (thus establishing that this would furnish an important long-distance communications route). +/

3. Such a cable could carry speech, telegraph, railway signals, and some forms of early warning data.

4. Location of such a cable along an electrified railway would introduce technical problems but there would be no serious limitations in its performances except possibly some reduction in the speed of computer input data transmission.

5. 48 circuits are in service for signalling and telecommunication in a section of the French railways selected by the French for review by the technical experts. As spares for future use there are 30 circuits of the same types. In addition, CTC and power supply use 4 special heavy conductors. (Thus, the total French requirements, including spares, are less than one-fourth of the intrinsic capacity of the cable ordered by the Soviets.)

6. Soviet railroad signalling and telecommunications practice are not necessarily similar to French practice. (Indeed, we have considerable evidence that the U.S.S.R. as well as the US would use a small fraction of the conductors used in French practice.)

+/ It is important to recall that it is general practice throughout the world to create as many as 18 teleprinter (teletype) channels on a single telephone channel. Alternatively, in periods of emergency, each telephone channel, by well-known band-splitting methods, is made to carry two simultaneous telephone messages, with some impairment of naturalness.