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MEMORANDUM FOR OUSDR&E (Dr. Perry)

SUBJECT: Technology Transfer and Security Assessment of
the Proposed Sale of a LANDSAT-D Ground Station
to the People's Republic of China (PRC)

As I discussed with you recently, Admiral Inman and I have asked our staffs to make a joint assessment of technology transfer and security risks potentially involved in the pending LANDSAT-D Ground Station (LUGS) sale to the PRC. This memorandum summarizes findings thus far in that assessment; we expect work yet to be done (to be completed by mid-December) will augment rather than contradict the findings covered here. The assessment is being approached simultaneously in two contexts. The primary context is that of the risk associated directly with the Chinese gaining access to the technology; the secondary context is that of any risk which would result from Soviet access to the technology, whether by overt or covert means.

PAR 10

Findings

- 4.5.14.1 ✓
2.7.2
- 1 - There appear to be no significant risks associated with Chinese and/or Soviet acquisition of any part of the RF-to-baseband segment of the LANDSAT-D terminal.
 - 2 - The high capacity recorders associated with the LANDSAT-D ground station are a matter for concern. We would be particularly concerned over the product details which would be made available by provision of the recorder hardware. The anticipated spares complement (HDDR heads and LBR modulation/scanning components, at a minimum) includes those components which depend upon fabrication art--as opposed to readily available theory--for final performance levels. A Chinese decision to sacrifice spares to an exploitation/copy effort would hardly be surprising.

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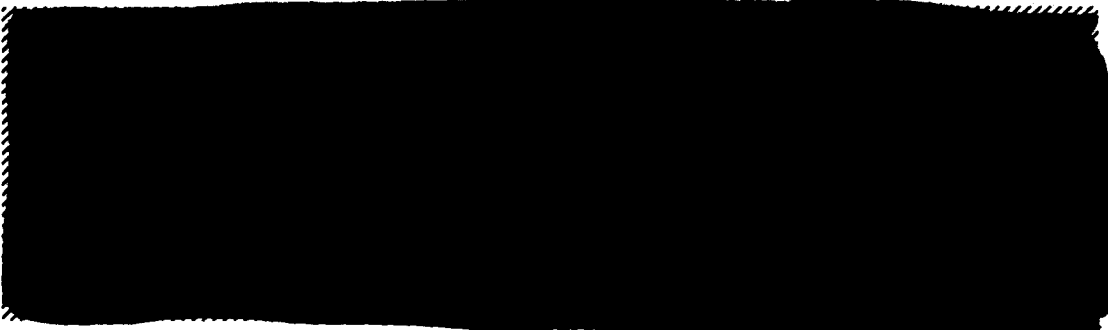
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- 3 - Regarding the Federated Functional Processor (FFP), special purpose firmware translation of the FFP could have very serious consequences for U.S. SIGINT capabilities. The FFP type of pipeline architecture is well suited to high bit rate and/or spread spectrum communications waveform generation/demodulation.
- 4 - A major area of concern focuses on the processing and recording elements of the image processing subsystem; in particular, the architectural and operating system details of the VAX 11780 and the FFP. The major risk could be avoided by offering a ground station configuration which substitutes a hybrid computing segment (e.g. modified Bendix M-DAS or GE Image 100) for the VAX 11780/FFP configuration.

✓ 5 -



✓ 6 -

✓ 6 -

Acquisition of "high data rate" communications components is not believed to constitute a significant risk per se. This is primarily due to the fairly ready availability of equivalent equipment on the international market. However, if there is confidence that the COCOM apparatus could effectively restrict Chinese (and Soviet) market access to this technology, it should not be provided to the Chinese in the proposed LANDSAT-D sale.

✓ 7 -

✓ 7 -

The LANDSAT-D agreement with the PRC should not provide a dual frequency monopulse feed/tracking capability. This capability is believed to represent an advance in current Chinese state of art. Alternative lobe switching or conical scan tracking techniques would constitute a substantially lesser technology transfer risk.

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6 - The films that are being planned for use on the LANDSAT-D program are the same as LANDSAT-C, SO-440 and SC-394. Although these films are special order, they are merely commercially available material, 3414 and 3412 respectfully coated on 7 mil base. There will be no compromise in our film technology with the release of these films.

Naturally, the NSA and KRO staffs are available for any expansion on the points above which you might require.

Robert J. Hermann

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