STANDARD FORM NO. 64

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Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 22 August 1960

FROM : [redacted] 25X1

SUBJECT: Trip Report - [redacted] 25X1
Contract RD-161, Task Order 3, Frequency to Time Transformation Study

1. On 17 August 1960 the undersigned and [redacted] SPS/EA, monitored progress on the frequency-domain-to-time-domain transformation study being conducted by [redacted] 25X1 25X1
Discussions on this program were held with: 25X1

[redacted]

2. [redacted] are the engineers primarily responsible for the investigation techniques being studied under this contract. Most of the time, to date, has been spent in reasoning out the logical design of the circuitry for accomplishing the frequency to time transformation. It has been found that in sending a signal through the compressive networks, there are formed, inevitably, low-power sidebands which extend to both sides of the main spike. Since it is desired to be able to gate out a signal while the information is in the time domain, and since gating out of only the spike results in elimination of only 90 per cent of the signal, it is felt that it will be necessary to investigate additional shaping of the spike with filter networks in order to eliminate these sidebands from the time domain. [redacted] has several techniques in mind which may be useful in accomplishing this end. The design for the breadboard circuitry has been essentially completed, and components and packaging have been ordered. 25X1 25X1

3. For experimental purposes a possible operational requirement was given to the contractor which necessitated the gating out of all signals in excess of a certain given amplitude. In other words, all high power signals will be eliminated and the information of the low power signals, which would be the signals of interest, could be analyzed without distortion. It appears now that this may be a rather difficult job to accomplish since the low amplitude signals tend to have lower signal to noise ratios and are subsequently more difficult to analyze. It is felt by the contractor that perhaps this form of investigation should be held off for the present until some degree of success has been achieved with easier problems. The most apparent example, requiring a relatively simple technique, would be a shaping device in which all of the signals below a certain amplitude are gated out in the time domain,

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while signals over this threshold would be reconstituted in the frequency domain for analysis. This problem will be discussed with the interested divisions to determine the most desirable direction for the contractor to follow.

[redacted] 25X1

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