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~~(S)~~ NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

18 September 1968

THE NRO STAFF

7164
no card
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MEMORANDUM FOR CHAIRMAN, SIGINT OVERHEAD RECONNAISSANCE
SUBCOMMITTEE

SUBJECT: CONVOY I Mission Description

The CONVOY I Mission Description is forwarded as an attachment to this correspondence. This Elint reconnaissance system is specifically designed to collect data on the DOG HOUSE emitter and is an add-on module to the STRAWMAN I (THRESHER/REAPER) SIGINT mission scheduled for launch on 1 October 1968.

This mission description supplements the briefing provided the SIGINT Overhead Reconnaissance Subcommittee by the NRO member on 24 July 1968.

F-CC

George H. Sweeney
For EDWIN F. SWEENEY
Colonel, USAF
Deputy Director for
Satellite Operations

Attachment
As Stated

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MISSION DESCRIPTION

CONVOY I

The CONVOY I payload is an add-on module to Missions 7164/7233 (THRESHER/REAPER) and is specifically designed to collect data on a priority basis from the DOG HOUSE emitter.

The basic system block diagram is depicted in Figure 1. A preamplifier is used to set the system noise level. The output is down-converted and applied to two separate signal channels. Each of these channels has a 20 MHz bandpass filter which is designed to pass only one of the DOG HOUSE beams, thereby minimizing interference between beams. The output of each filter is applied to a limiter to permit the system to handle large signal excursions while accurately reproducing the RF signal characteristics and remain within the dynamic range of the divider circuit. After limiting, the signals in each channel are frequency divided by 8 so that the 20 MHz frequency excursion in each band is reduced to 2.5 MHz after division. Following division, the two bands are filtered, down-converted and recombined with the total two beam frequency bands extending from 500 KHz to 5.5 MHz. Amplitude data is preserved, however, by detecting the output of each bandpass filter, low pass filtering and modulating a VCO.

CONVOY I contains its own recognizer circuitry independent of the primary payload. It consists of an amplitude threshold circuit which produces a standard amplitude, variable pulse width output when a signal of greater than -82 dbm (referenced to receiver input) is received. This pulse is then integrated and passed through a pulse width threshold circuit. When the [redacted] milliseconds, an output voltage is generated that switches the CONVOY I output to the DSU (recorder). The recognizer will retain the DSU for CONVOY I for 32 seconds after the last intercept has been received, at which time the DSU will revert back to THRESHER/REAPER use.

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Recognition of the DOG HOUSE signal by CONVOY I will override THRESHER/REAPER use of the DSU. If it is desired to ensure other target signals are afforded higher priority when within

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the intercept envelope (theoretically horizon to horizon) of DOG HOUSE, CONVOY I must be disabled. However, considerable flexibility is afforded in that the payload may be enabled for any specific time period desired. DSU may be in the OFF, STANDBY or STEADY-STATE-ACTUATE mode.

A summary of payload specifications is as follows:

Frequency:	Channel 1 386-406 MHz Channel 2 406-426 MHz
RF Threshold:	-82 dbm
Recognition Threshold	
Dynamic Range:	-82 dbm to -25 dbm
Predection Outputs:	Channel 1 .5 to 3.0 MHz Channel 2 3.0 to 5.5 MHz
Reference Tones:	6 MHz 25 KHz (modulated by ANGSQ53A Code)

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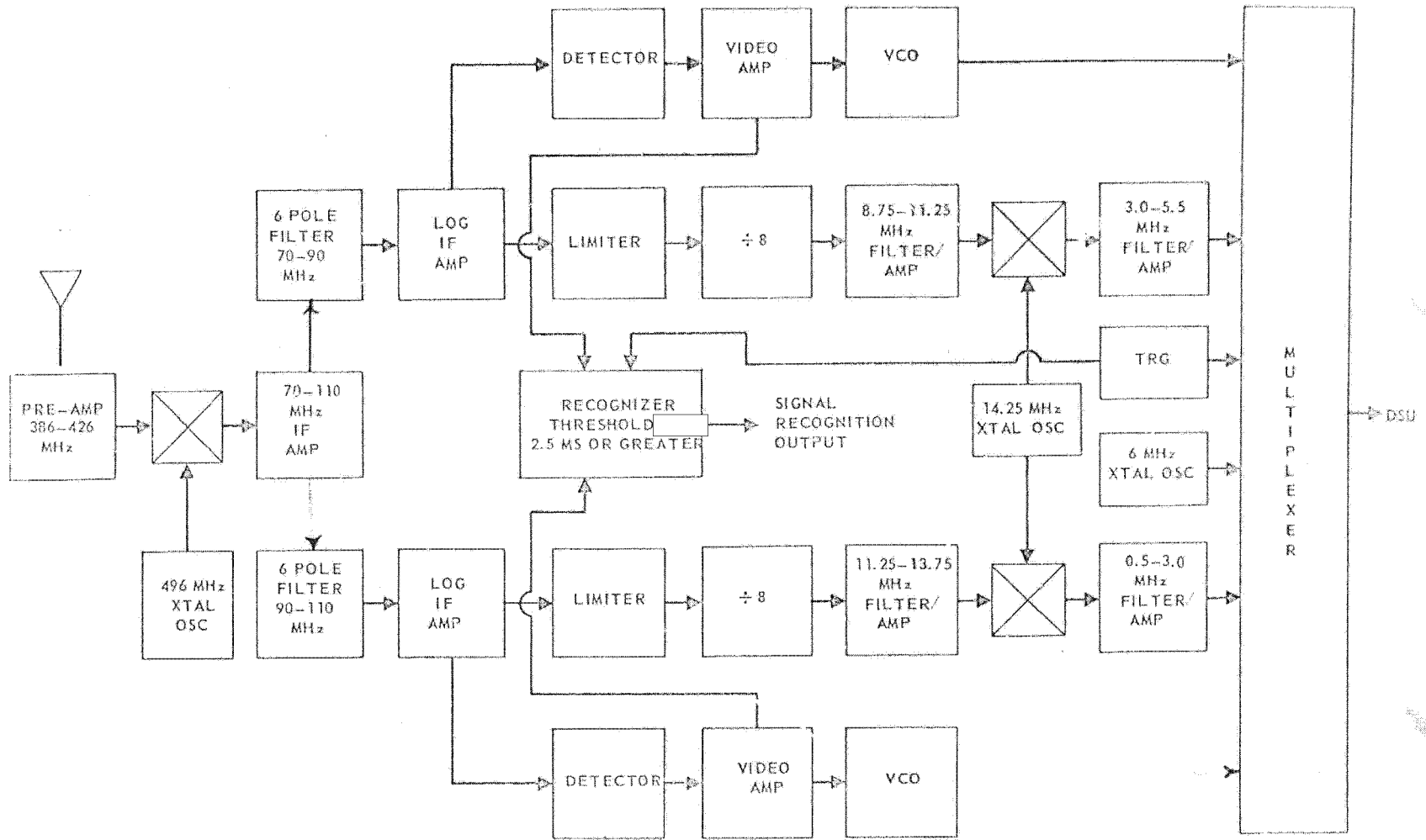
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CONVOY I
BLOCK DIAGRAM

Figure 1

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