

~~TOP SECRET/E/~~ *T. BURKE*
BIF561-F0279-78COPY 226 PAGES

2 MAY 1978

"WARNING NOTICE--SENSITIVE INTELLIGENCE SOURCES AND METHODS INVOLVED"

CLASSIFIED BY BYEMAN 1

EXEMPT FROM GENERAL DECLASSIFICATION
SCHEDULE OF EXECUTIVE ORDER 11652

EXEMPTION CATEGORY 5B (1), (2), (3), OR (4)

AUTOMATICALLY DECLASSIFIED ON:
IMPOSSIBLE TO DETERMINE"NATIONAL SECURITY INFORMATION"
UNAUTHORIZED DISCLOSURE SUBJECT
TO CRIMINAL SANCTIONHANDLE VIA BYEMAN
CONTROL SYSTEM ONLY~~TOP SECRET/E/~~

E-SYSTEMS PAYLOAD LAUNCH HISTORY

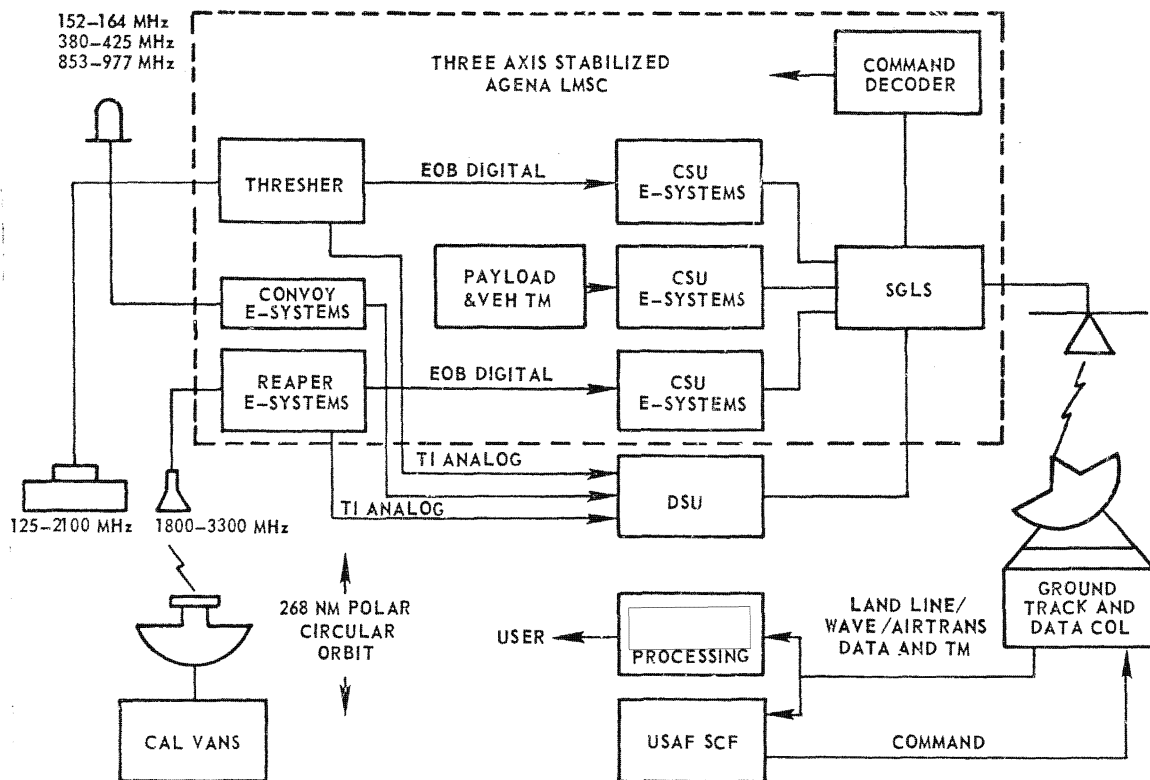
<u>SYSTEM</u>	<u>FREQUENCY</u>	<u>TARGETS</u>	<u>FLIGHT DATE</u>	<u>PERFORMANCE</u>
BIRD DOG I	4.95-5.077 GHz	FOREI GN DEFENSE RADARS	FEBRUARY 1964.	11 DAYS
BIRD DOG I	4.95-5.077 GHz	FOREI GN DEFENSE RADARS	JULY 1964	12 DAYS
BIRD DOG II	0.521-0.648 GHz	FOREI GN DEFENSE RADARS	NOVEMBER 1964	4 DAYS
SQUARE TWENTY	1.55-1.75 GHz	R400 COMMUNICATIONS	OCTOBER 1965	12 DAYS
SETTER I	2.68-2.935 GHz	FOREI GN DEFENSE RADARS	FEBRUARY 1966	41 DAYS
SETTER IA	2.96-2.935 GHz	FOREI GN DEFENSE RADARS	DECEMBER 1966	159 DAYS
SETTER IB	2.6-3.2 GHz	FOREI GN DEFENSE RADARS	JULY 1967	159 DAYS
SETTER IB-II	2.6-3.2 GHz	FOREI GN DEFENSE RADARS	JANUARY 1968	436 DAYS
REAPER I	1.8-3.3 GHz	FOREI GN DEFENSE RADARS	OCTOBER 1968	367 DAYS
REAPER II	1.8-3.3 GHz	FOREI GN DEFENSE RADARS	JULY 1969	396 DAYS
CONVOY	0.160-0.900 GHz	ABM RADARS	JULY 1969	390 DAYS
TOP HAT I	0.45-1.0 GHz	TROPO COMM LINKS	NOVEMBER 1970	44 MONTHS
REAPER III	1.8-3.3 GHz	FOREI GN DEFENSE RADARS	AUGUST 1970	531 DAYS
REAPER IV	1.8-3.3 GHz	FOREI GN DEFENSE RADARS	JULY 1971	455 DAYS
TOP HAT II	0.45-1.0 GHz	TROPOLINK, FSK	APRIL 1974	STILL OPERATING
RACQUEL I	4-18 GHz	PULSE/CW RADAR	NOVEMBER 1974	STILL OPERATING
RACQUEL IA	4-18 GHz	PULSE/CW RADAR	16 MARCH 1978	STILL OPERATING

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REAPER PAYLOAD

MISSION:

RADAR ORDER OF BATTLE & TECHNICAL INTELLIGENCE
ELINT COLLECTION SYSTEM FOR STRAWMAN STABILIZED ~~AGENDA~~ - P770

AGENDA

CONTRACT:

DESIGN, DEVELOPMENT & QUALIFICATION - 5 FLIGHT SYSTEMS & 2 GROUND SUPPORT SYSTEMS
SAFSP CONTRACT - CPIF - S 15 M
INCENTIVE ON PERFORMANCE & COST - PENALTY ONLY

PROGRAM STATUS:

DELIVERY:

1 REAPER MARCH 1968 - LAUNCHED OCTOBER 1968
2 REAPER OCTOBER 1968 - LAUNCHED JULY 1969
3 REAPER AUGUST 1969 - LAUNCHED AUGUST 1970
4 REAPER JANUARY 1971 - LAUNCHED JULY 1971
5 REAPER STORAGE AT LMSC

FEATURES:

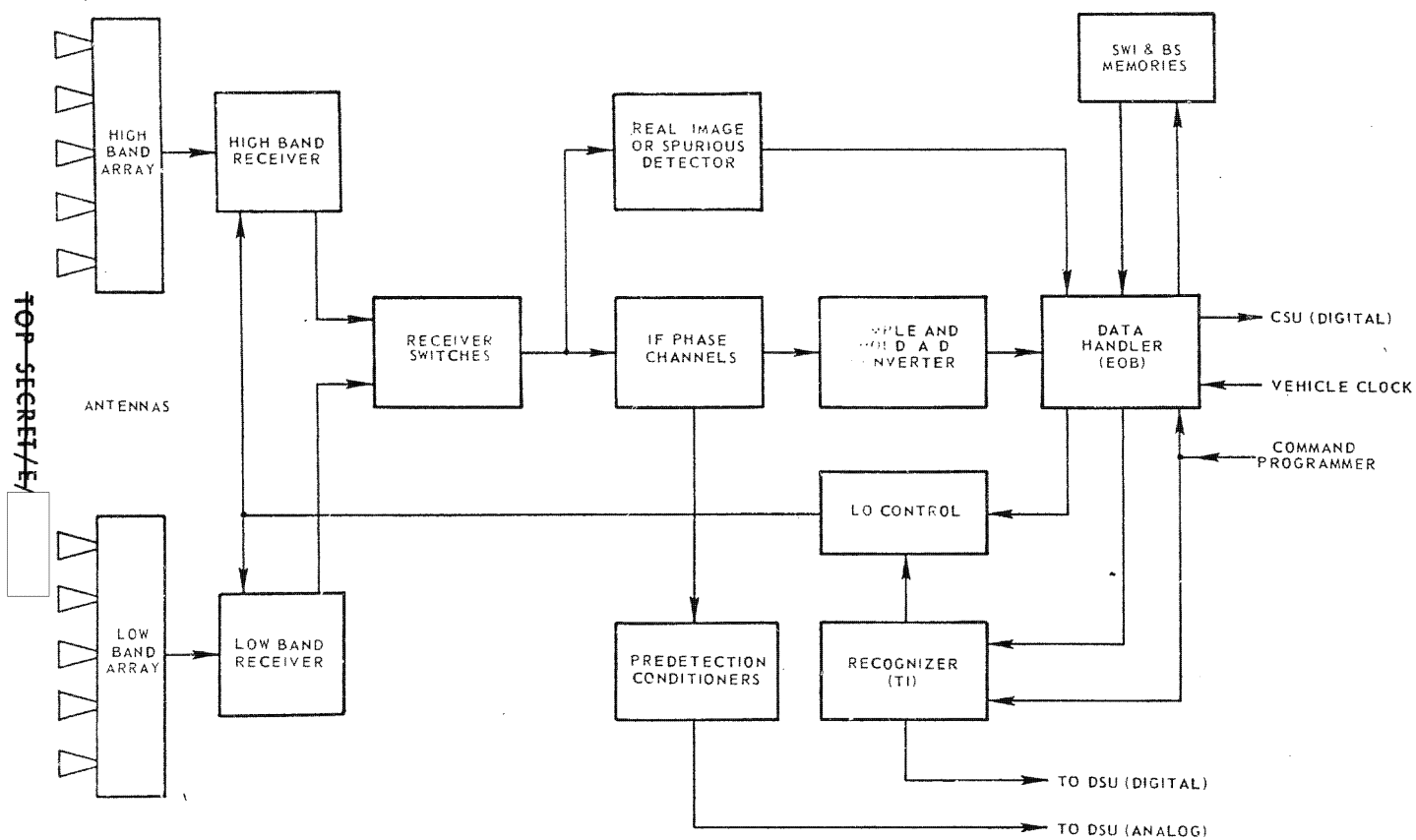
COVERS MOST DENSE RADAR ENVIRONMENT IN SOVIET 1800 - 3300 MHz
ACCURATE & RELIABLE DIRECTION FINDING [] - 95% CONFIDENCE
DEINTERLEAVES & PRESORTS DATA - MINIMUM GROUND PROCESSING
WIDE BAND RECORDING OF TECHNICAL INTELLIGENCE
HIGH RELIABILITY PROGRAM - INCENTIVE FOR LIFE ON ORBIT
WEIGHT 230 LBS. POWER 230 WATTS

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REAPER BLOCK DIAGRAM



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PROGRAM SUMMARY TOPHAT PAYLOADS

* MISSION

* INTELLIGENCE COLLECTION ON [REDACTED]

* [REDACTED] COLLECTION SYSTEM/SPINNING P-11 SPACECRAFT-P-989

* CONTRACTS

* DESIGN, DEVELOPMENT, QUALIFICATION - 2 FLIGHT SYSTEMS AND GROUND SUPPORT SYSTEM

* LMSC CONTRACTS CPIF

* PROGRAM STATUS

TOPHAT I

LAUNCHED NOVEMBER 1970
OPERATIONAL 44 MO.

TOPHAT II

LAUNCHED APRIL 1974

* FEATURES

* [REDACTED]

- * DETERMINES LOCATION OF EMITTER
- * DETERMINES AMOUNT OF TRAFFIC
- * DETERMINES TYPE OF TRAFFIC
- * DETERMINES POINTING DIRECTION OF LINK
- * FINE TUNE RX (TOPHAT II)

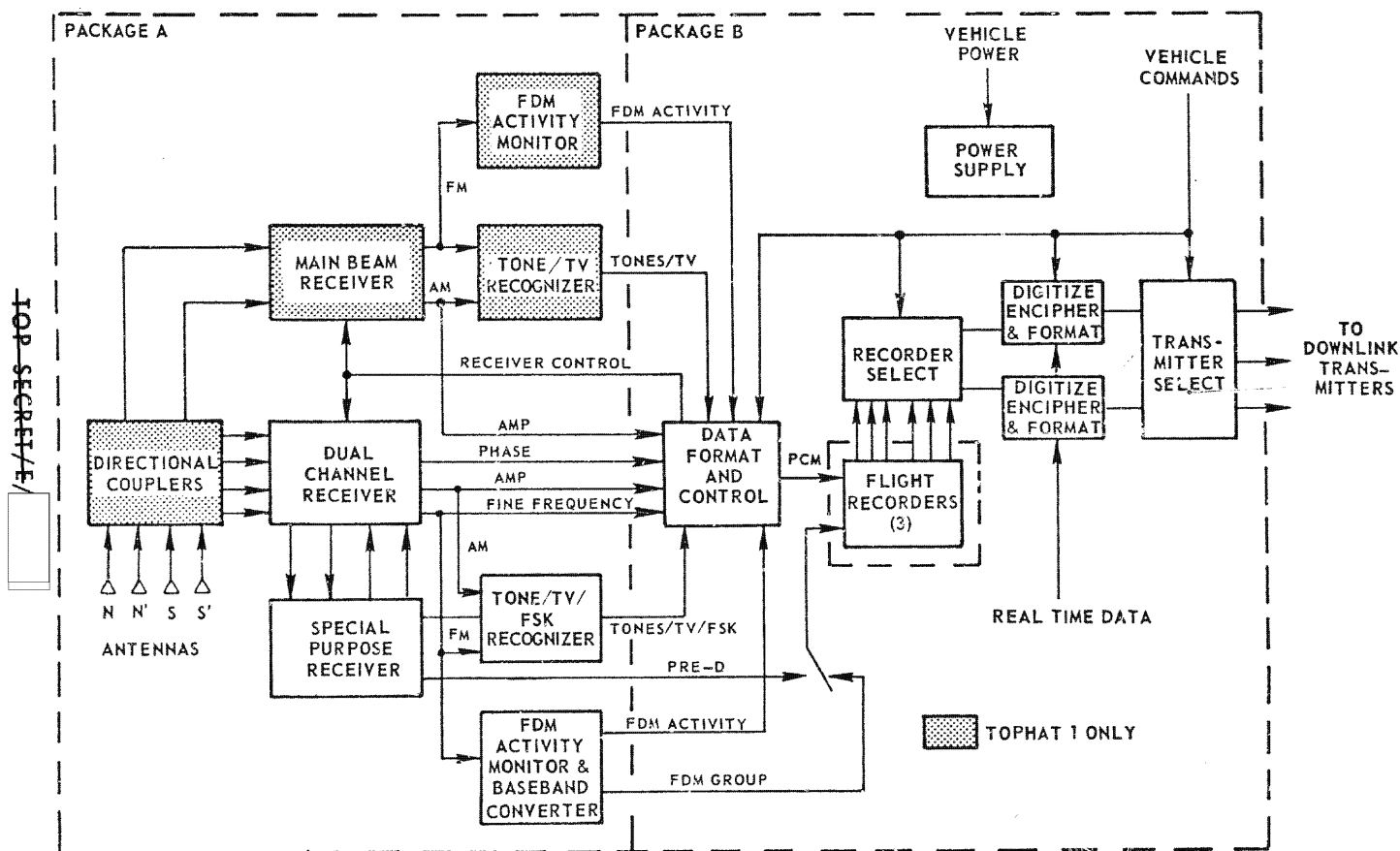
* ENCRYPTED DIGITAL READOUT OF THE TRAFFIC ON THE LINK

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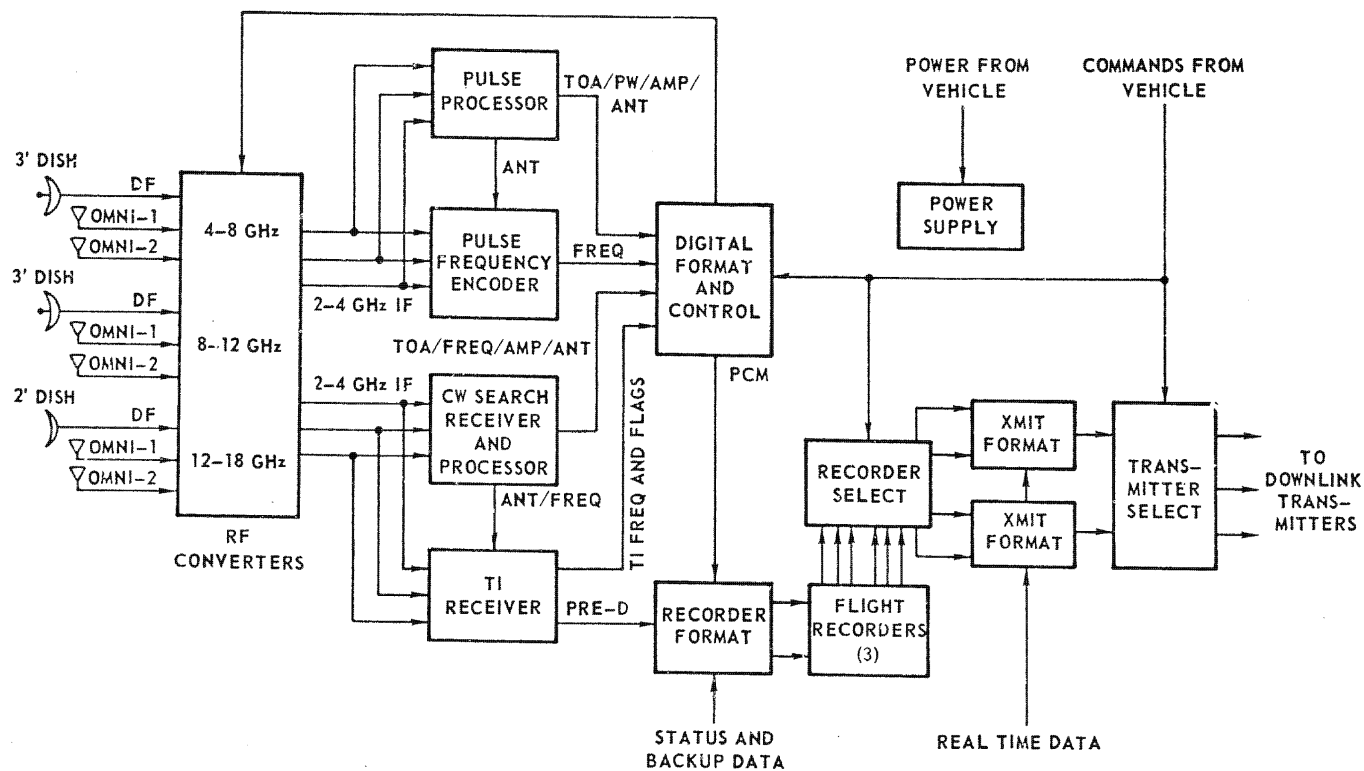
SIMPLIFIED TOPHAT PAYLOAD FUNCTIONAL BLOCK DIAGRAM



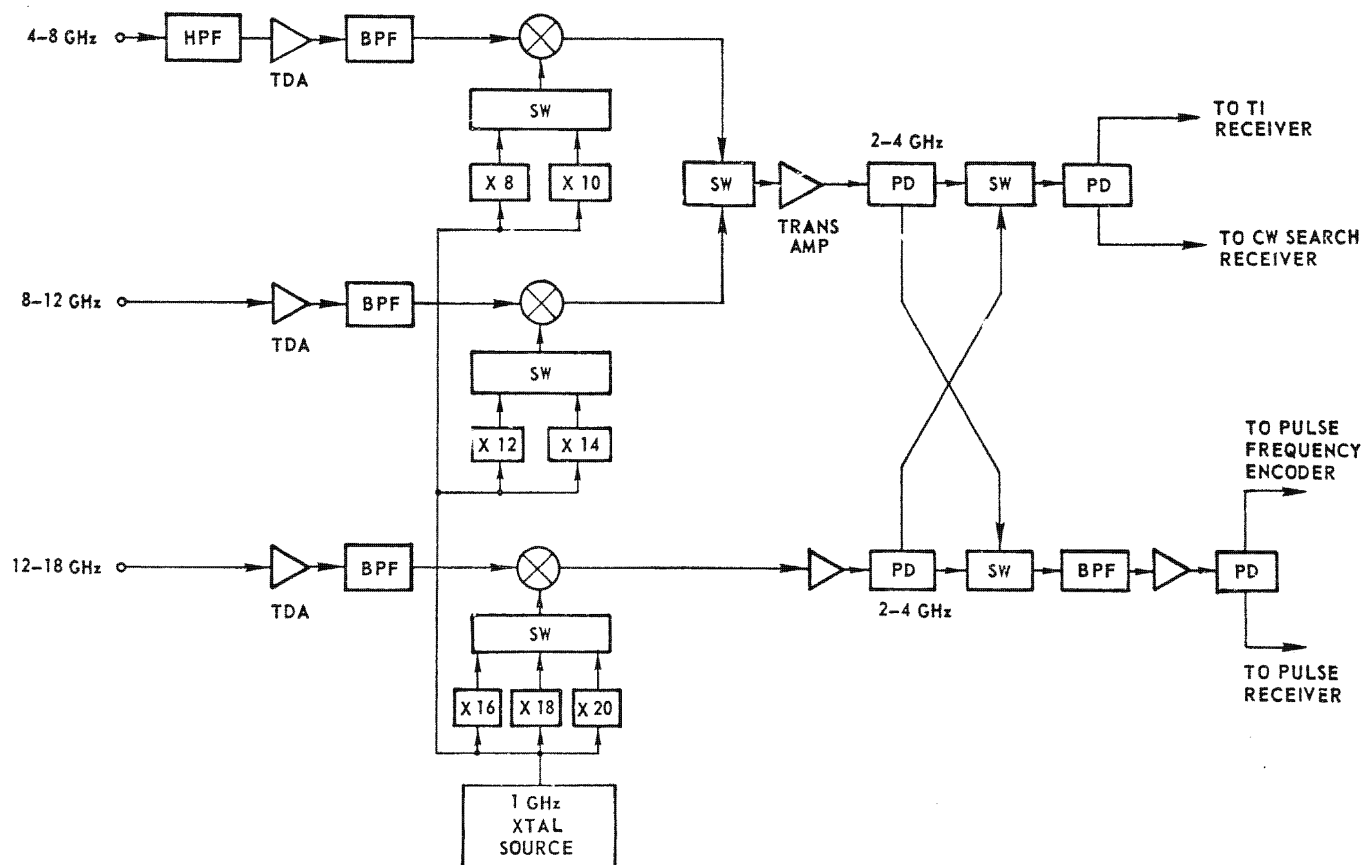
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SIMPLIFIED RAQUEL PAYLOAD FUNCTIONAL BLOCK DIAGRAM



RAQUEL RF CONVERTER (1 of 3 channels)



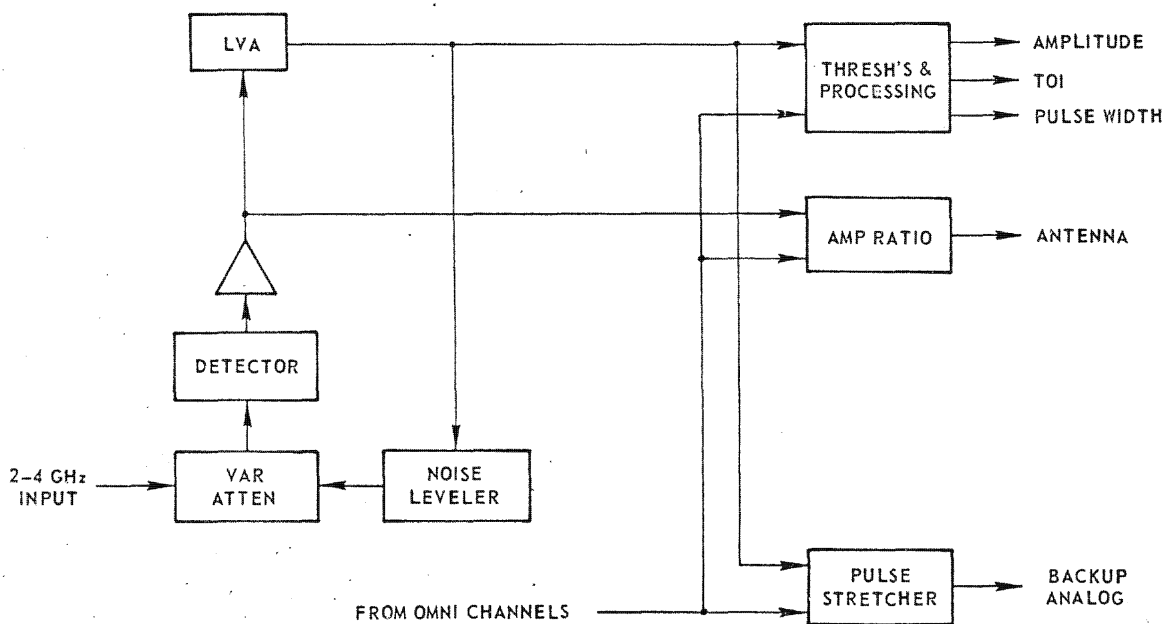
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RAQUEL PULSE RECEIVER

(1 of 3 channels)

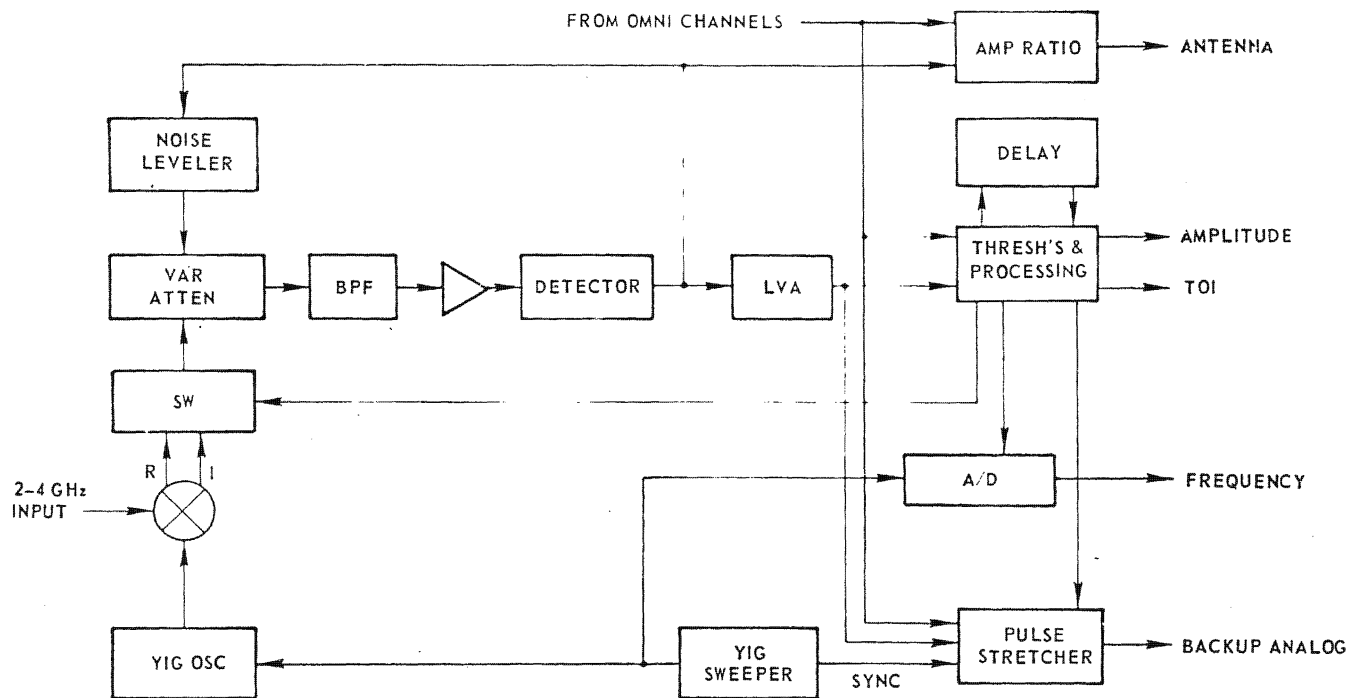


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RAQUEL CW SEARCH RECEIVER (1 of 3 channels)

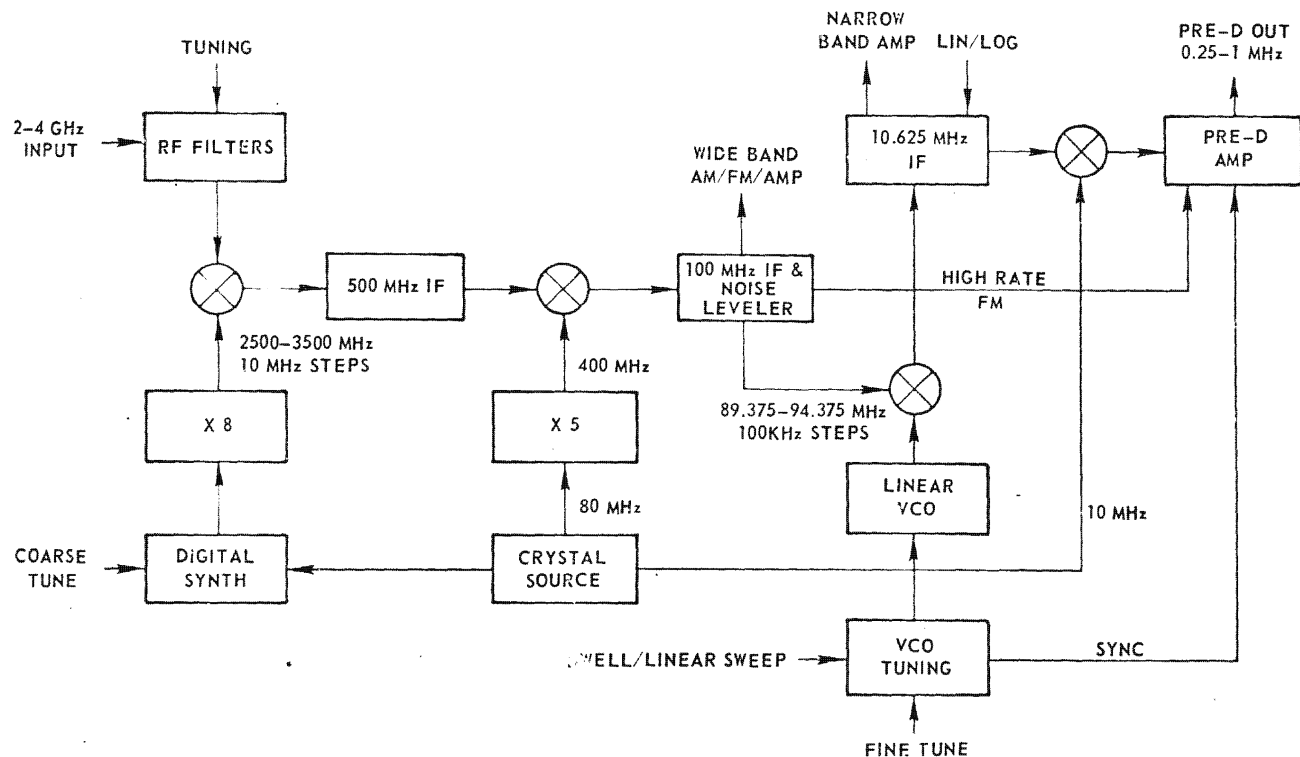


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RAQUEL 2-4 GHz SYNTHESIZER TUNED RECEIVER

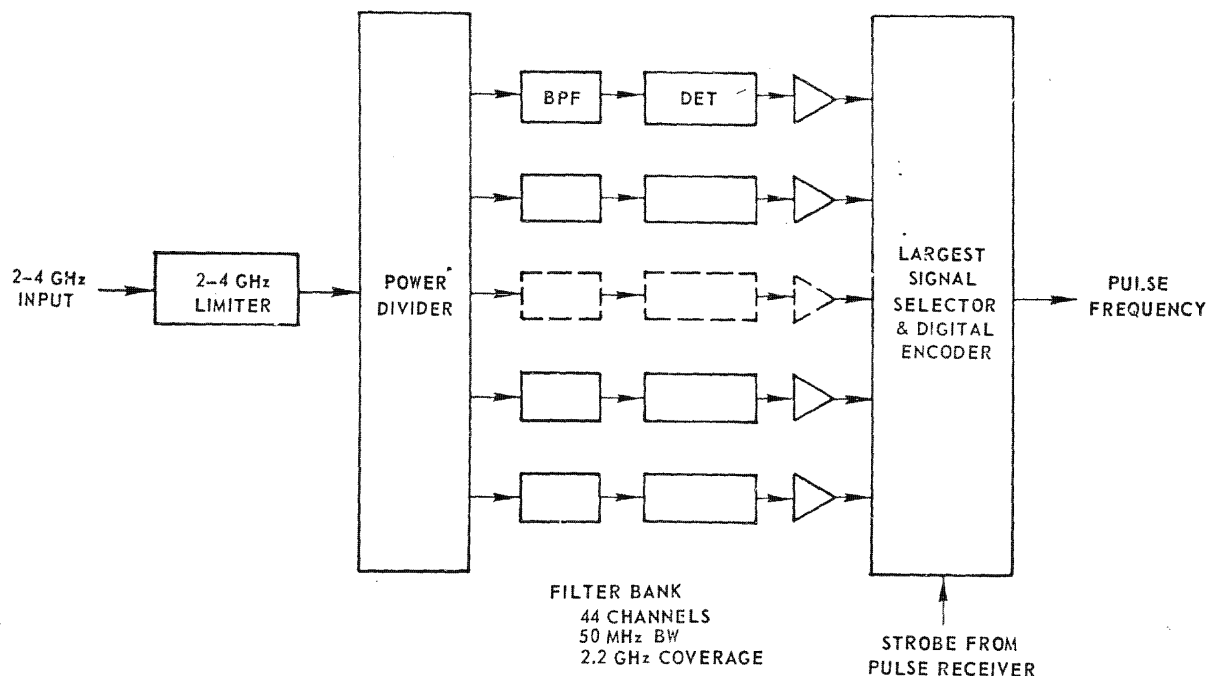


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RAQUEL PULSE FREQUENCY ENCODER

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