Top Secret [redacted]

1 August 1962

I. Introduction:

In an effort to tie up the loose ends and establish a firm working base line for the 5430 Experiments associated with the November Thor-Agena Launch this paper is being prepared; as a starting point A definition of PL # 121 follows:

II. Payload # 121::::::::

a. Data Link Transmitters will be provided and they will radiate on the Turnastile antennas system at frequencies referred to hereafter as F_1 and F_3. The Peak power should be as high as possible with 600 mw a suggested goal. F_1 and F_3 should be separated sufficiently so that system interaction is minimized with a minimum separation of 50 kc as a suggested limit.

b. Each Data Link Transmitter will have two different pulse lengths, one will be about 400 microseconds in duration and the other will have a basic width of 150 microseconds for all pulse rates below about 2000 pulses per second and for pulse repetition frequencies above this rate the duration of the pulse will be reduced so that the duty cycle is approximately 50%. For example for a prf of 10,000 the pulse width will be about 50 microseconds. Harmonic content of this signal will be held to a level below 1×10^{-10} watts per square centimeter at 10 ft.

c. Data Link Timer will be used to hold the collection system in operation, following an interrogation, for a period of about 45 minutes.

d. Trigger level adjustment will be provided so that pulse signals above this threshold will trigger the data-link transmitter ON with the full peak power for the duration of the either 400 or 150 microseconds. This trigger level will be adjustable from a point where noise will continuously trigger the transmitter down until it takes a signal 6 db above tangential signal level to trigger the transmitte r.

e. There will be a trigger amplifier for each of the collection bands in this payload (four in number) or two for each transmitter.

f. Collection Bands in this payload will be given the following nomenclature:
Bands A_1, B_1, C_1, and D_1 are in the ascending order of frequency.
The subscript ($_1$) indicates that these bands are in Payload#121

g. Asignment of the pulse duration to the various bands while it may seem arbitrary, has some significance to the expected duty cycle of the data and it is suggested that the following arrangement be followed:

Band	A_1	B_1	C_1	D_1
Data Link Frequency	F_1	F_3	F_1	F_3
Pulse Time Duration	Wide	Wide	Narrow	Narrow

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h. Band A_1 will be associated with the North and South Pole Antennas, will have a single Video Amplifier and a two channel Bias Distribution Box. Band Pass filters for this band will be a six-section tubular type followed by a Detector Mount of the same type used in the past.

Top Secret [redacted]

-1-

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i. Band B_1 will be associated with both the Polar and the Equatorial antenna systems in order to give an effective system of orthogonal dipoles; this Band will also have a single video amplifier and a six channel bias distribution box. The Band Pass filters for this band will be of the tubular type and have four sections each; there will be a single filter and a single detector mount for each of the six antenna elements used in this Band.

j. Band C_1 will be associated with the symmetrical system of six antennas which are mounted at about the 36° Latitude on the outer sufface; and for each of these six elements there will be utilized a single filter and a single detector mount, both tubular in configuration and of the same standard size and shape. A single video amplifier and 6-channel bias box will be used in this Band.

k. Band D_1 will also use the system of six antennas mounted on the gurface at approximately the 36°Latitude, and for each antenna element this Band will require a Band Pass Filter and a Detector Mount which are sketched in the enclosure as outline D_1 Filter and D_1 Detector Mount. A single video amplifier and six-channel bias box will also be required for this Band.

2. Material to be furnished by this Code will be as follows:

Band	Antennas	Filters	Outline	Detector Mt.	Outline	Bias Box	Outline	Video Ampl.
A_1	2	4		2		1	h	1
B_1								

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