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Memo to DECOURT

1. The bands proposed on 21 August 1963, for use in the 7104 Mission were as follows:

7104A-1 158 to 180
-2 550 to 610 with Signal Level R & D Notched Data type Associated Experiment.
-3 4900 to 5300
-4 9050 to 9500

In addition this payload would include a Three-Axis Stabilization Experiment. The frequency coverage was selected to be of sufficient importance so as to be considered independant of the 7103 Effort. The reasoning here is to define one payload so that its design could be in progress during the launch and evaluation phases of the 7103 Mission.

7104-B-1 200 to 240
-2 570 to 710
-3 820 to 1080
-4 2600 to 3250

7104C-1 230 to 290
-2 570 to 710
-3 830 to 1080
-4 2600 to 3250

7104D-1 280 to 340
-2 2550 to 2850
-3 5300 to 6000
-4 6500 to 6700

2. ~~Since this proposal was forwarded there has been~~ Considerable study given to the possibility of designing into the 7104A and 7104B payloads (both 24" diameter ~~with~~ gravity-gradient 3-axis stabilization types) a second group of antennas, filters, detectors and video amplifiers which can be switched over (as a group-of-four) to replace the primary group of four collection band experiments. This second group has been referred to as the DORMANT or Alternate set. At this time it is understood that it will only be possible to select from one group of bands ~~or the other~~ for a particular interrogated pass. In order to presenve the absolute certainty (which has been exhibited in the data for the past year) that the data originated in a specific collection band it will be necessary to describe the data by some means which identifies if the primary experiments were used or if the Dormant experiments were used.. Normal Telemetry information is available for this but this information is not now included with the data.recordings.

3. The utilization of the Dormant Collection Experiments gives rise to several rather attractive possibilities which have not been utilized in the past. One of these is the fine-grain frequency experiment on the frequency band from 550 to 1080 mc, to be described later. Another possibility is the complete 100% band overlap between two payloads as advocated in the 7104B & C bands 2,3&4. Another possibility is to fulfill the General Frequency Search requirement in bands which are not normally so productive as to warrant continued search or observation but with this Dormant Collection Experiment they might be observed periodically by a payload designed to carry out a different mission for the more continuing basis.

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ANY attempt will

4./ ~~The~~ to utilize the Dormant Collection Experiment in these payloads/ make the choice of compatible collection bands far more difficult because the design antenna/situation has not enjoyed any relaxation of critical requirements and the volume inside the payload shell remains the same; only hope is to utilize this volume more effectively, and possibly shrink some of the components which will be duplicated in both Primary and Dormant experiments. The first attempt to utilize this Dormant Collection Expeiment should be chosen so as to minimize the requirement for additional antennas. It is this advantage which has led to the advancement of the following Fine-Grain Frequency experiment as the first Dormant type experiment:

7104A-1	550 to 650	Data sent to Hut Receiver as	Chan B narrow data.
-2	690 to 920		Chan B wide data
-3	600 to 770		Chan C wide data
-4	820 to 1080		Chan C narrow data

*** Note that the overlapping nature of these band definition filters will provide the following narrow bands unambiguously:

550 to 600	B n only	
600 to 690	(Bn) and Cw	
690 to 690	Bw only	Bw Cw
720 to 820	Cw only	
820 to 920	Bw and Cn	
920 to 1080	C n only.	

This is assuming that All Channel B Data from this payload is recorded on a given Track of the tape recorder and wide pulses can be separated from the narrow ones, 690 - 720 — all Channel C data recorded on another Track of the Tape etc.

This experiment will be such that only four each Antennas, Filters, Detectors, and Four Video amplifiers are needed to provide this resolution of frequency over this very active Band. The steepness of the slope of the rejection characteristic of these band definition filters is critical and it is anticipated that Very Powerful signals may if they exceed the threshold level by 20 db, activate more than the one adjacent frequency band, ~~within which they are situated~~. Valuable signal level information can thus be derrived from such measurements, if the selectivity of the filters are stable and calibrated.

5. It is for the obvious reasons of simplicity of concept, independance from 7103 effort, minimum/compatibility with Primary experiments and importance of the 550 to 1080 mc frequency band that it is proposed to include the above design in the 7104A Dormant Collection Experiment. The Primary Collection Experiments now proposed which are ~~most~~ compatible and ~~most~~ independant of the 7103 effort are as follows: 7104A-1P 158 to 180

-2P 200 to 240
-3P 6500 to 6700
-4P 9050 to 9500

** Note-- The above bands are marked with P to denote the Primary nature and their frequency coverage differs from that advocated on the 21 August proposal, ~~with~~ in the second (-2P) band which has been changed to utilize a common antenna system with the (-1P) band, i.e. three mutually perpendicular monopoles about 35 inches long. An exchange of Band (-3P) with that proposed for the 7104D-4P is made so as to utilize the broad band antennas in common with -4P mounted on the equatorial band of this payload. Tunnel Diode type preamplifiers are to be evaluated for use on these two highest frequency bands. The Signal Level R & D experiment proposed for band-2 in the 21 August proposal is easily shifted to another payload.

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