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	<u>MEMORAN</u>	Handle via BYEMAI Control System	
Subject: Radio Interferen	ce to POPPY Col	llection Station,	
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1. Introduction:		:	
Examination of POPPY	data collected	from	
2. Interference Definitio	<u>n:</u>		
A study of the RF spec (a, b, c) were the major of and recorded as follows: Signal	ctrum (148 to 15 causes of degrad 'he characteristi a	0 MHz) revealed dation to the POP cs of signals (a, b	that three signals PY system at b, c) were measured
A study of the RF spec (a, b, c) were the major of and recorded as follows: Signal Frequency (MHz)	ctrum (148 to 15 causes of degrad 'he characteristi a 148.455	0 MHz) revealed dation to the POP cs of signals (a, b 148.545	that three signals PY system at b, c) were measured c 148.935
A study of the RF spec (a, b, c) were the major of and recorded as follows: Signal Frequency (MHz) Signal Level (at	ctrum (148 to 15 causes of degrad 'he characteristi 	0 MHz) revealed dation to the POP cs of signals (a, b 148.545 -95 dbm	that three signals PY system at b, c) were measured c 148.935 -92 dbm
A study of the RF spec (a, b, c) were the major of and recorded as follows: Signal Frequency (MHz) Signal Level (at ) Modulation Type	ctrum (148 to 15 causes of degrad 'he characteristi 	0 MHz) revealed dation to the POP cs of signals (a, b 148.545 -95 dbm Narrow Band F.M	that three signals PY system at b, c) were measured <u>c</u> 148.935 -92 dbm
A study of the RF spec (a, b, c) were the major of T and recorded as follows: Signal Frequency (MHz) Signal Level (at ) Modulation Type Hours of Transmission	ctrum (148 to 15 causes of degrad 'he characteristi a 148.455 -90 dbm	0 MHz) revealed dation to the POP cs of signals (a, b 148.545 -95 dbm Narrow Band F.M Continuous 24 hours a day	that three signals PY system at b, c) were measured  148.935 -92 dbm 
A study of the RF spec (a, b, c) were the major ( I and recorded as follows: Signal Frequency (MHz) Signal Level (at ) Modulation Type Hours of Transmission Percent of time carrier is modulated	ctrum (148 to 15 causes of degrad 'he characteristi 	0 MHz) revealed dation to the POP cs of signals (a, b 148.545 -95 dbm Narrow Band F.M Continuous 24 hours a day 5%	that three signals PY system at b, c) were measured  148.935 -92 dbm  1%

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## 3. Location of Interference:

The three signals were monitored and found to be part of "minute man control," which is primarily a mobile communications relay for top level officers.

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## 4. Station Effects:

Interference from (a, b, and c) to the POPPY System at is as follows:

- 4-1 Spacecraft 7106A data link #1, and 7106C data link #1, plus R&D spacecraft data link #1. The interference is so close in frequency and high signal level, that no data may be collected from
- 4-2 Spacecraft 7105A data link #2, 7105C data link #1, and 7105D data link #1, are useful only about 10% to 15% of the time (when ground station antenna nulls are providing sufficient attenuation).
- 4-3 Spacecraft 7106C data link #2 and 7106D data link #2 are useful 80% of the time and are affected only when the ground station antenna is pointed in the relative bearing of the interference.
- 4-4 Graph A4 illustrates the relationship of the interference to the POPPY down link frequencies.

## 5. Ground Station Evaluation:

POPPY ground station technical characteristics were studies. The three major areas which might have offered some help were:

- (1) Receiver bandwidth
- (2) Antenna sidelobes
- (3) RFI shielding

The conclusion of this study showed that only marginal improvements can be achieved by these methods due to signal level and frequencies involved.

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## 6. Conclusions and Recommendations:

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The fact that these signals (a, b, and c) are 50 db stronger than the system sensitivity suggests that the best solution from POPPY viewpoint is to relocate these signals in the 149.200 MHz thru 150.00 MHz region of this band. This would allow collection of POPPY data 100% of the time. The second best solution would be to key the carriers on, only when modulation takes place. This would allow POPPY to collect and process data when no information is being transmitted.

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