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FKC

PIB DISCUSSION AIDS

(USE WITH [redacted])

6 JULY 1967

hold for PIB's Discussion mtg Thurs 7/13

[redacted]

SYSTEM OBJECTIVE

- INCREASE THE STEREOSCOPIC PAIRS OBTAINABLE FROM A FIXED SUPPLY BY USE OF A DELAYED START AND STOP OF THE AFT LOOKING CAMERA.
  - 1080 EXTRA STEREO PAIRS FOR 180 OPERATIONS
  - 2400 EXTRA STEREO PAIRS FOR 400 OPERATIONS - UTB ESTIMATE OF FUTURE NO. OF OPERATIONS WITH SHIFT REGISTER COMMAND SYSTEM
- PROVIDE CAPABILITY FOR NEARLY FULL LENGTH MONO MISSION IN CASE OF AN EARLY FAILURE OF ONE INSTRUMENT.
  - MISSION LIFE IS SHORTENED BY 8 DAYS (1ST DAY FAILURE, UTB & 400 OPERATES) WITHOUT PIBS BECAUSE OF EXCESSIVE CONTROL GAS CONSUMPTION AT START AND STOP OF GOOD INSTRUMENT.
- PROVIDE HIGH RELIABILITY BY
  - KEEPING PIBS MECHANISM INDEPENDENT OF THE INSTRUMENTS
  - PROVIDING A REAL TIME COMMAND TO DISABLE PIBS AND THE DELAYED START AND STOP OF THE AFT LOOKING INSTRUMENT
- MINIMIZE POWER CONSUMPTION
- KEEP STARTING SURGE OF PIBS BELOW THAT OF ONE INSTRUMENT

FILM SAVING WITH DELAYED STEREO START

- AT 85 N.M. DELAYED STEREO START ALLOWS:
  - THE FORWARD LOOKING CAMERA TO BE PROGRAMMED OFF APPROXIMATELY 10 SECONDS SOONER THAN THE PRESENT J-3 SYSTEM.
  - THE AFT LOOKING CAMERA TO BE PROGRAMMED ON APPROXIMATELY 10 SECONDS LATER THAN THE PRESENT J-3 SYSTEM.
    - THIS RESULTS IN AN OPERATING CYCLE FOR EACH INSTRUMENT THAT IS 10 SECONDS SHORTER THAN THE PRESENT J-3 SYSTEM.
- AT 85 NM 10 SECONDS OPERATING TIME REPRESENTS 6 FRAMES*
  - FILM SAVINGS = 6 FRAMES X NO OF OPERATES
    - 6 x 180 = 1080 STEREO FRAMES FOR TB
    - 6 x 400 = 2400 STEREO FRAMES FOR UTB

* 6 FRAMES IS A CONSTANT NUMBER FOR ALL ALTITUDES; THE 10 SECOND DELAY TIME INCREASES WITH ALTITUDE, BUT THE INSTRUMENT RUNS SLOWER.

WEIGHT INCREASE IF CONTROL GAS IS USED TO COMPENSATE FOR DELAYED STEREO START

- ASSUME
  - UTR FILM
  - 400 OPERATIONS (USING SHIFT REGISTER COMMAND SYSTEM)
  - THE PRESENT AGENA CONTROL SYSTEM HAS NO GAS ALLOWANCE FOR INSTRUMENT ROLL DISTURBANCE
  - .3 POUND OF GAS IS REQUIRED PER DELAYED STEREO OPERATION (FROM PAGE 5)
- CONTROL GAS REQUIRED
  - .3 POUNDS X 400 OPERATIONS = 120 POUNDS
- ADDITIONAL HARDWARE REQUIRED
  - ASSUME APPROXIMATELY 80 POUNDS FOR TANKS, PLUMBING, VALVES, & MOUNTING HARDWARE
- TOTAL INCREASED WEIGHT
  - 120 + 80 = 200 POUNDS FOR GAS AND HARDWARE

[redacted] NO [redacted]

WEIGHT INCREASE IF PIBS IS USED TO COMPENSATE FOR DELAYED STEREO START

- WEIGHT OF PIBS HARDWARE
  - FLYWHEEL — 12 POUNDS
  - MOTOR & GEARHEAD — 3 "
  - CONTROL BOX — 3 "
  - SUPPORT STRUCTURE — 4 "
  - TACH, BRAKE, ETC. — 3 "

  25 POUNDS
- BATTERIES
  - 3 WATT-HR PER OPERATE X 400 OPERATES = 1200 WATT-HRS REQD.
  - ASSUMING 100 WATT-HRS PER POUND OF BATTERY — 12 POUNDS
- CONTROL GAS REQUIRED
  - ASSUMING PIBS TO BE 90% EFFICIENT — 12 "

  ZERO*
- TOTAL WEIGHT — 25 POUNDS

* THE PRESENT AGENA HAS ADEQUATE CONTINGENCIES IN BOTH GAS SUPPLY AND BATTERIES TO COVER THESE ITEMS

SECRET [redacted] NO [redacted]