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ATTENTION: (MADDEN)

REFERENCE: MAIN CAMERA INTERFACE SPECIFICATION (9204-SHC64-191)

1: THE PROJECT OFFICE PLANS TO USE THE INTERFACE
SPECIFICATION AS A BASIS FOR PREPARING AN UPDATED PRELIMINARY
SPACECRAFT SPECIFICATION. THE MAIN CAMERA INTERFACE
SPECIFICATION WILL BE AN ATTACHMENT TO THIS DOCUMENT, BUT
THE PERFORMANCE SPECIFICATIONS TO BE MET BY THE SPACECRAFT
CONTRACTOR WILL BE CONTAINED IN THE SPECIFICATION DOCUMENT
PREPARED BY THIS OFFICE. WITH THIS PERSPECTIVE, IT IS IMPORTANT
THAT THE INTERFACE SPECIFICATION PREPARED BY ACORN BE AS
DETAILED AS POSSIBLE, WITH ALL CALCULATIONS BASED ON CURRENT
BEST-ESTIMATE DATA. IN AREAS OF DIRECT CONCERN TO ACORN.

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THE SPACECRAFT SPEC. WILL BE COORDINATED WITH ACORN SO THAT
MEANINGFUL SPACECRAFT PERFORMANCE MARGINS ARE ESTABLISHED
WHERE NECESSARY. IT IS THEREFORE CRITICAL THAT THE FUNDA:
MENTAL ASSUMPTIONS FORMING THE BASIS OF THE PERFORMANCE
REQUIREMENTS BE CLEARLY IDENTIFIED FROM THE OUTSET:

- 2. A REVIEW OF 9204-SHC64-191 HAS PRODUCED THE FOLLOWING QUESTIONS:
- (a) PARAGRAPH 2.2: WHAT IS THE BASIS FOR THE **

 1.5 TO 2.5 HOURS OPERATING TIME ESTIMATE? 30-60 MINUTES PER

 CAMERA SEEMS CLOSER.
- (b) PARAGRAPH 2.3: HOW DOES THE 6 HOURS TOTAL OPERATING TIME BREAKDOWN?
- (c) PARAGRAPH 3.2: PACKAGING TRADEOFF INFORMATION
 SHOULD BE INCLUDED. THE CASES OF INTEREST ARE: (1) MINIMUM
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LENGTH PACKAGING, (2) MINIMUM DIAMETER PACKAGING, (3) MINIMUM WINDOW SIZE PACKAGING.

- (d) PARAGRAPH 4.1: IS 2200 LBS, THE CURRENT BEST WEIGHT ESTIMATE?
- (e) PARAGRAPH 4.2: THE ACCURACY OF INITIAL CENTER OF GRAVITY LOCATION DETERMINATION AND C.G. TRAVEL DURING OPERATION ARE OF IMPORTANCE FOR PROPULSION SYSTEM DESIGN.

 PLOTS OF C.G. MOTION SHOULD BE INCLUDED WITH EMPHASIS ON THE EXTREME CASES, EVERY EFFORT SHOULD BE MADE TO MINIMIZE C.G. SHIFT.
- (f) PARAGRAPH 4.3: ARE THESE NUMBERS INDEPENDENT
 OF FILM TRAVEL? ARE THE CROSS PRODUCTS OF INERTIA IN FACT
 ZERO? (CROSS PRODUCTS DETERMINE ATTITUDE CONTROL SYSTEM
 INTERAXIAL COUPLING AND DIRECTLY INFLUENCE SYSTEM DESIGN.)
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(g) PARAGRAPH 4.4: PROJECT OFFICE UNABLE TO
RECONSTRUCT THESE NUMBERS. A PRELIMINARY CALCULATION GIVES
MAXIMUM ANGULAR MOMENTUM PER CAMERA OF 165 SLUG FT.
SQUARED PER SECOND (ONE SPOOL FULL, V/H OF 0.05 RAD./SEC.)
THIS RESULTS IN A YAW AXIS PROJECTION OF ABOUT 43 PER CAMERA.
NO CONDITION COULD BE FOUND WHICH RESULTED IN THE RESIDUAL
YAW MOMENTUM CHANGING SIGN. WITH SINGLE CAMERA OPERATION
THE RESIDUAL ROLL AXIS MOMENTUM FOR THESE ASSUMPTIONS IS
ABOUT 160 AND CAN BE EITHER PLUS OR MINUS. REQUIRED: DATA
UNDERLYING CALCULATIONS ALONG WITH PLOTS OF CAMERA ANGULAR
MOMENTUM VS. FILM STATUS WITH V/H AS A PARAMETER. ALSO,
THE STARTUP AND SHUTDOWN TORQUE PROFILES ARE REQUIRED FOR
ATTITUDE CONTROL SYSTEM DESIGN.

(h) PARAGRAPH 5.4: WHAT IS MEANT BY "PLUME COORDINATING OFFICERS

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- (i) PARAGRAPH 6.3: WHY IS 1900 WATTS FOR 60 SECONDS REQUIRED FOR SHUTDOWN IF 1900 WATTS FOR 20 SECONDS IS SUFFICIENT FOR STARTUP? WHAT ASSUMPTIONS LEAD TO 6000 WATT-HOURS TOTAL? (FYI CURRENT PROJECT OFFICE THINKING CALLS FOR THE CAPABILITY TO EXPEND ALL FILM IN SINGLE CAMERA OPERATION.)
- (j) PARAGRAPH 7.0: DISCUSSED IN PREVIOUS COMMUNI-CATION.
- (k) PARAGRAPH 8.0: TO WHAT EXTENT CAN INCREASED ATTITUDE ERROR BE TRADED AGAINST IMPROVED RATE STABILITY?
- (1) PARAGRAPH 10: THE ASCENT TEMPERATURE
 REQUIREMENT DOES NOT APPEAR CONSISTENT WITH THE ON-ORBIT
 REQUIREMENT.
 - 3. ACTION: PLEASE SUBMIT A REVISED AND EXPANDED COORDINATING OFFICERS

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INTERFACE SPEC. AS SOON AS PRACTICAL. AS PRELIMINARY INTERFACE
MEETINGS WILL OCCUR EARLY IN DECEMBER, THE PROJECT OFFICE
NEEDS THIS SPEC, BY NO LATER THAN 5 DECEMBER, PLEASE ADVISE
IF FURTHER CONSULTATIONS ARE NECESSARY PRIOR TO THE 5TH.

END OF MESSAGE

JOHN F. BLAKE EXEC. OFFICER COORDINATING OFFICERS

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