FROM
LUMINARY 1A (099 REV. 1)
APOLLO 11

TO
LUMINARY 1B (116)
APOLLO 12

TO
LUMINARY 1C (131)
APOLLO 13
SUMMARY OF LUMINARY 1B DEVELOPMENT

Establishment of a LUMINARY 1B Assembly 2 June 1969
Release of LUMINARY 1B (Rev. 116) for Rope Manufacture 12 August 1969
Completion of Mission "H" Level 6 Testing 15 October 1969
Total Number of PCR/PCNs Accomplished in the LUMINARY 1B (Rev. 116) Release 40
Total Number of Anomalies Fixed in the LUMINARY 1B (Rev. 116) Release 25
LUMINARY 1B PCR/PCNs IMPLEMENTED

277 Affixed DUMPCNT.
279 Variable Insertion Computation.
284 VGTIGs on C/A Downlist.
773.2 Fix Constants for Planetary Inertial Subroutine.
776.2 Improved R2 Model Timing. 25% time saving
779 Leave Track Enable Set when R29 is Terminated.
780 Provide Pure RR Range, Range Rate and Time Lag during P20, P22, and P25.
781.2 PIPA Bias Compensation Scale.
791.2 Do Not Allow a PROCEED Response to V21, V22 or V23.
798.2 Reset GLOKFAIL in R00.
801.2 Make BAILOUT Alarms Start with 3XXXX and POODDO Alarms with 2XXXX.
802.2 Save Alarm Data after "Error Rest".
805 Don't Allow V66 on the Surface. CM SU = LMSU
807.2 Add Present Time to P21.
812.2 Resetting and Setting of the External V Flag. EXIT BEFORE FINAL COMP
LUMINARY 1B PCR/PCNs IMPLEMENTED (Cont)

814 (Rev.) Reduce Keystrokes Required to Check and Approve LR Data.  
816 MODIFY R03 TO PERMIT SETTING 10 DEADBAND  
817 Eliminate Undesirable LR Position Alarms from R12. (LNY80)  
818 PERMIT V43F V34E AFTER LR POWER ON INCORRECTLY  
820 Eliminate Lighting of ALT Light when Low Scale Discrete is Absent.  
823 Delete P31 from LUMINARY 1B.  
825.2 Display Option 3 in P52/P54.  
826.2 Reverse P76 Display.  
827 Add ZDOTD to Ascent-Descent Downlist.  
830 Supplementary ASTEER Modification. Required to make Lambert work  
831.2 under certain circumstances  
832.2 Lambert Overflow Protection.  
838 Define Actual Restrictions on Running R05.  
839 Prevent RCS Jet on Lunar Surface (LNY 82).  
840 Reduce Oscillation in P64/P65. (LNY 79)  
841 PGNCS Derived Vehicle Attitude Rate on FDI Error Needle.  

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LUMINARY 1B PCR/PCNs IMPLEMENTED (Cont)

842 Modification of Criteria Used to Determine DAP Phase Plan Parabola Intercept. (LNY 78) DEVELOPE SMALL LIMIT CYCLES ABOUT WHENEVER DISTURBING ACCELERATION LIES IN THE REGION 1.30/sec² - 1.70/sec²

844 Deletion of P38/P78 and P39/P79.

845 Do Not Turn on R29 during P70/P71. (CSSP change only)

847 Eliminate Possible Lockout of Pitchover from P12, P70 and P71.

848 Prevent RR ECDU's from Stealing LGC Memory Cycles.

853 Restrict V35 to P00. DISABLES PIPS

854 Provide a Flexible Method for Crew to Modify RLS. N 69

855 Begin Reading LR Velocity as soon as Velocity Data Good Appears.

856 Change 1502/1206 from POODOO's to BAILOUTS.

--- Provide CH13STAL Coding. (By G Low Direction) SPLIT PULSE
ANOMALIES FIXED IN LUMINARY 1B

55 Errors in Fixed Constants (PCR 773.2)  ERROR IN MAC GENERATION NEGIGIBLE FOR 6
58 RDRUSECK Bug R76.  1210 WHEN R12 IS RUNNING WITH R76
61 Restart Protection P20 and P22.  SHAI FOR TRN UPDATE IN ERROR  & G
63 P70 and P71 Select 1° Deadband  LATE P70 54 V97 RESPONSE SETS
65 P40 Recycle.  P ENGINE FAIL TO IGNITE OR BEFORE 26 SEC
67 Restart in P63.  ENTR GHM PRO MAY CAUSE IMMEDIATE THST
68 R04 Erasable Conflict with R65.  17 TO 26 SEC LOC WOULD FAIL TO FTP - CREW
69 Make ATTSTALL 1210 into BAILOUT Instead of POODOO.  IF TWO PROB CALL
71 P57 IMU Compensation Conflict.  KALMANU
72 Coding Error, Downward Jet Firing.  .05 lbs of FUEL
74 P22 Lunar Surface Navigation.  EXP VERBS GIVE WRONG ANGLE
76 Correct Location of V06N61.  TO 623 RR PRE-DESIG STORES INTO ERAS USED
78 Erasable Conflict.  BY ORB INT

10 Non-zero Attitude Errors near Orbit Insertion (PCR 842)

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ANOMALIES FIXED IN LUMINARY 1B (Cont)

79. Crossplane Vertical Oscillations during P64/P65. (PCR 840)
80. V63E with LR Power Off Causes Improper RADMODES BIT 6 (PCR 817)
81. Erasables Shared between Radar Tasks and Jobs.
82. Max DB only when P68 Running (PCR 838).
87. Coding Error in P22. GSCP Conflict
88. Landing Radar Repositioning Routine is Not Restart Protected.
89. Backwards Integration can Occur in P27.
90. V97N63 Display Overwritten by V06N63 Display.
91. CDU Fail Program Alarm in P20 When Not an Alarm Condition

DAP DB OVERSHOOT

APOLLO II V96 TO STOP

PLEASE FILE IN

TP# DATE
<table>
<thead>
<tr>
<th>ANOMALIES REMAINING IN LUMINARY 1B</th>
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<tbody>
<tr>
<td>LNY 12</td>
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<td>LNY 31</td>
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<td>LNY 92</td>
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<td>L-1B-11</td>
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Sample RR Twice Rather Than Go to LR:

59499

Sample RR Twice Rather Than Go to LR

30 Alarm Display

Sample RR Twice Rather Than Go to LR

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SUMMARY OF LUMINARY 1C DEVELOPMENT

ESTABLISHMENT OF A LUMINARY 1C ASSEMBLY. 8-15-69

RELEASE OF LUMINARY 1C (REVISION 130) FOR ROPE MANUFACTURE. 11-5-69

RE-RELEASE OF LUMINARY 1C (REVISION 131) FOR ROPE MANUFACTURE. 12-3-69

TOTAL NUMBER OF PCN/PCR's ACCOMPLISHED IN THE LUMINARY 1C ASSEMBLY. 12

TOTAL NUMBER OF ANOMALIES FIXED IN THE LUMINARY 1C ASSEMBLY. 10
LUMINARY IC PCN/PCR's IMPLEMENTED

285  Remove check of auto throttle discrete.

806.2  Allow N07 to address output channels.

846 (Rev. 1)  More accurate DELTA-T TAIL-OFF for P70.

863.2  P76 set NODO flag.

882  Replace VHORIZ with something better.

893  Abort Flagbit.

895  V59E allow use of LR in position #2 in P63.

936.2  Initialize V90 time to TIG.

943  Velocity reasonability test.

968  LPD Bias. VALUES IN ERASABLE.

971  Change fixed memory constant (APS) DELTA-T TAIL-OFF.

972  Display polarity of sighting angle difference in R-54.

ACB: MARK X Y REJECT

ROD  P66 LOCKOUT
ANOMALIES FIXED IN LUMINARY 1C

LNY 75  Radar Self Test Routine.
LNY 92  V41 and V42 do not Perform CCS NEWJOB Before Final Display.
L-1B-01  Selection of P22 Before CSM is Within RR Coverage.
L-1B-02  R29 will not Achieve RR Lock-on.
L-1B-03  Quantity Coeffr Discrepancy when 1VACCQ and 1JACCR are Equal.
L-1B-04  During Descent Switching RR Mode into LGC and Out Disables Meter.
L-1B-05  R60 Mode II Attitude Errors Placed in FDAI Needles Before Desired Attitude.
L-1B-09  Restart During R12-DETECTOR May be Incorrect.
L-1B-10  Rate and Attitude Overshoot After ACA is Returned to Detent.
L-1C-02  For Early Aborts from PD1, Locations of a VAC Area are Destroyed.
ANOMALIES REMAINING IN LUMINARY 1C

L-1B-11  Terminal Mass Error.
L-1C-01  Delta V May be Subtracted Twice from \( V_g \) Following a Restart.
L-1C-03  If a V59E is Used to Reposition the LR Antenna to Position Z at Anytime Other Than Powered Descent in P63, The Return From Repositioning Will Be Incorrect.