



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

RECEIVED
AUG 11 1970
R. A. LARSON

IN REPLY REFER TO: 70-FS55-135

AUG 19 1970

MEMORANDUM TO: See list attached

FROM : FS/Chief, Flight Support Division

SUBJECT : Minutes of ZERLINA design review meeting

1. A design review meeting for the ZERLINA Program (a variable servicer version of the LUMINARY Program) was held at NASA MSC, Houston, Texas, on August 5, 1970 in building 2, room 716, at 9:00 a.m. A list of attendees is contained in the enclosure.

2. Mr. R. Larson gave the introduction for the MIT/SDL presentation and briefly defined the agenda as follows:

WHAT VARIABLE SERVICER IS, by D. Eyles
EFFECT ON THE TELEMETRY, by R. Covelli
EFFECT ON DAP, by P. Weissman
TESTING COMPLETED, by S. Albert

3. Mr. Eyles described the implementation of the ZERLINA variable servicer program. If the reader desires details of the implementation, copies of the slides presented are available from the LUMINARY Program Engineer, Mr. T. G. Price, at extension 2308. Any questions or comments should also be directed to Mr. Price. The essential point of the implementation consists of a servicer cycle that only when it is complete calls itself again. There is a lower limit placed on the servicer cycle, so that if the cycle is less than the minimum (set to 2 seconds to be consistent with the current fixed servicer and telemetry cycles) then it "goes to sleep" and calls itself at the end of the minimum time. Also, a maximum cycle exists above which an alarm is issued, although no computational limits are engaged. The uniqueness of the ZERLINA implementation is that the servicer cycle, by calling itself when it is complete, cannot interrupt itself causing "lurkers" (commands that are stacked up and executed at a later time, causing erratic control behavior). The present implementation in LUMINARY (but for P66 only) is to drop commands if the computer is sufficiently overloaded. Therefore, the difference between LUMINARY and ZERLINA can be said to be one of "dropping" in LUMINARY (which might be extended to programs other than P66) and "stretching" in ZERLINA.

4. During his presentation Mr. Covelli showed how telemetry data can become static in the current LUMINARY Program because of the way the computations are synchronized. Then, because the ZERLINA Program may result

in a stretching of the servicer cycle, he pointed out that static data from ZERLINA is more probable.

5. Mr. Weissman then gave the areas of the Digital Auto Pilot (DAP) that may have difficulty with the variable servicer program. The attendees agreed that these areas required further investigation.

6. Miss S. Albert then discussed the testing of the ZERLINA Program that has been completed to date. Many of these tests and the results are included in LUMINARY memo #153. This presentation showed testing of the program to be adequate with the exception of the DAP area mentioned in paragraph 5.



Lynwood C. Dunseith

Enclosure

FS55:TGPrice:beb

List of Attendees

<u>Name</u>	<u>Organization</u>	<u>Phone</u>
C. Tillman	GAC/BPA	1306
W. G. Heffron	Bellcomm	202-484-7970
T. B. Hoekstra	Bellcomm	202-484-7959
J. L. Norton	TRW	2803
F. E. Gerth, III	TRW	2971
D. W. McClendon	TRW	2971
O. H. Cerbins	TRW	2972
F. Pearson	TRW	2891
S. C. Jankowski	TRW	2981
R. R. Covelli	MIT/SDL	
S. Albert	MIT/SDL	
P. Weissman	MIT/SDL	
R. A. Larson	MIT/SDL	109
B. McCoy	MIT/SDL	821-384
A. Cook	EG/MIT	4807
T. H. Kaiser	CF221	3048
C. O. Lewis	CF43	3436
R. W. Force	CF821	3606
C. T. Hackler	EG7	3991
D. Thorson	FC442	4707
W. F. Haldeman	FM2	6347
J. H. Alphin	FM2	4751
R. O. Nobles	FM7	4491
C. D. Sykes	FS5	2308
T. G. Price	FS5	2308
J. R. Garman	FS5	2308

Addressees:

NASA Hqs./L. Casey, MAT
 G. Roth, MAP-6
 Bellcomm/W. G. Heffron
 KSC/J. J. Tadich, LS-ENG-62
 R. D. McCafferty, CFK
 MIT/KSC/R. O'Donnell
 NR/Downey/B. Schoen
 MIT/SDL/D. G. Hoag
 R. H. Battin
 K. W. Greene
 A. Klumpp
 R. Larson
 B. McCoy
 R. Covelli
 GAC/Bethpage/C. Tillman
 GS/R. C. Croston, 724
 Link/D. L. Klingbeil (3)
 TRW/Technical Library (15)
 R. Charters
 J. Norton
 W. F. Harwood
 CA/D. K. Slayton
 CB/G. Cernan
 V. Brand
 CF/W. J. North
 CF21/C. A. Jacobson
 CF23/R. W. Lindemuth
 CF41/P. C. Kramer
 D. K. Warren
 A. G. Nolting
 CF2/C. C. Thomas
 M. E. Dement
 CF3/C. H. Woodling
 H. A. Kuehnel
 CF32/J. J. Van Bockel
 S. Faber
 CF44/D. Mosel
 CF6/T. Holloway
 EA/M. A. Faget
 EA2/R. A. Gardiner
 ED3/I. Shead
 EG/AC/K. G. Korth
 EG/D. C. Cheatham
 C. W. Frasier
 EG/MIT/T. J. Lawton
 EG2/K. J. Cox
 J. W. Van Artsdalen
 E. A. Lee
 W. L. Wyrick
 EG4/G. T. Rice
 EG5/W. L. Swingle
 EG6/D. W. Gilbert
 EG7/C. Wasson

EG7/J. F. Hanaway
 C. T. Hackler
 EG8/R. E. Wilson
 PA/O. G. Morris
 PD/O. E. Maynard
 R. J. Ward
 PD5/J. F. Goree
 PDL41/H. Byington
 PD8/W. B. Goeckler
 PE7/D. T. Lockard
 PF/A. Cohen
 PP7/J. L. Vyner
 TE/B. G. Jackson
 FA/H. W. Tindall, Jr.
 R. G. Rose
 FC/Flight Directors (5)
 FC2/C. S. Harlan
 FC3/A. D. Aldrich
 G. Coen
 FC4/R. A. Thorson
 FC5/J. C. Bostick (3)
 C. B. Parker
 FC6/C. B. Shelley (3)
 FM/J. P. Mayer
 C. R. Huss
 FM2/J. H. Alphin
 FML3/R. P. Parten
 FML3/GAC/G. Michos
 FM2/F. V. Bennett
 FM3/R. H. Brown
 FM4/J. C. McPherson
 FM5/R. L. Berry
 FM6/E. C. Lineberry
 R. R. Regelbrugge
 FM7/R. O. Nobles
 FS/L. C. Dunseith
 FS2/J. D. Watkins
 T. A. Stuart
 R. W. Cole
 J. E. Broadfoot
 FS6/J. R. Gilbert
 J. A. Miller
 FS5/J. C. Stokes, Jr.
 T. F. Gibson, Jr.
 L. J. Dungan
 J. R. Roundtree
 J. E. Williams, Jr.
 T. G. Price
 G. R. Sabionski
 J. A. Martin, Jr.
 T. D. Keeton
 J. R. Garman
 J. W. Jurgensen
 C. D. Sykes