

OCT 29 1969

Addressees:

AA/R. R. Gilruth
 AB/G. S. Trimble
 CA/D. K. Slayton
 CB/A. B. Shepard (48)
 CF/W. J. North
 CF13/D. F. Grimm
 CF212/C. Jacobsen
 CF212/W. Haufler
 CF212/W. Hinton
 CF2/J. Bilodeau
 CF22/C. C. Thomas
 CF22/D. L. Bentley
 CF22/R. L. Hahne
 CF22/M. C. Gremillion
 CF22/W. B. Leverich
 CF22/T. H. Kiser
 CF24/P. Kramer
 CF24/J. Rippey
 CF24/A. G. Nolting
 CF24/M. C. Contella
 CF24/D. W. Lewis
 CF24/D. K. Mosel
 CF3/C. H. Woodling
 CF32/J. J. Van Bockel
 CF32/M. F. Griffin
 CF33/M. Brown
 CF33/C. Nelson
 CF34/T. W. Holloway (6)
 EA/M. A. Faget
 EA2/R. A. Gardiner
 EA4/J. Chamberlin
 EA8/J. B. Lee
 EA8/P. M. Deans
 EB/P. Vavra
 EE/L. Packham
 EE/R. Sawyer
 EE13/M. J. Kingsley
 EE13/R. G. Irvin
 EE3/R. L. Chicoine
 EE6/G. B. Gibson
 EE6/R. G. Fenner
 EE6/J. R. McCown
 EP2/W. R. Hammock
 EG/R. G. Chilton
 EG/D. C. Cheatham
 EG13/W. J. Klinar
 EG2/K. J. Cox
 EG2/E. E. Smith
 EG25/T. V. Chambers
 EG27/W. R. Warrenburg (2)
 EG27/H. E. Smith
 EG7/C. T. Hackler
 EG7/J. Hanaway
 EG8/B. Reina
 EG8/A. R. Turley
 EG44/C. W. Frasier
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 KA/R. F. Thompson
 PA/G. M. Low
 PA/O. G. Morris

PD7/R. H. Kohrs
 PA/K. A. Kleinknecht
 PA/S. H. Simpkinson
 PA/J. A. McDivitt
 PA2/M. S. Henderson
 PB/A. Hobokan
 PC/W. H. Gray
 PD/O. E. Maynard
 PD/R. V. Battey
 PD12/C. D. Perrine (5)
 PD13/A. Cohen
 PD14/R. W. Kubicki
 PD6/H. Byington
 PD7/W. R. Morrison
 PE/D. T. Lockard
 HA/J. P. Loftus
 TJ/J. H. Sasser
 TJ/R. L. Nance
 TH3/J. E. Dornbach
 CO7/J. Nowakowski
 FA/C. A. Kraft, Jr.
 FA/S. A. Sjoberg
 FA/C. C. Critzos
 FA/R. J. Rose
 FA4/C. R. Hicks
 FC/E. F. Kranz
 FC/C. E. Charlesworth
 FC/M. Windler
 FC/J. W. Roach
 FC/G. S. Lunney
 FC/G. D. Griffin
 FC2/C. S. Harlan
 FC2/H. M. Draughon
 FC2/J. H. Temple
 FC25/C. R. Lewis
 FC27/W. E. Platt (3)
 FC3/A. D. Aldrich
 FC3/N. B. Hutchinson
 FC35/B. N. Willoughby (3)
 FC35/R. Fruend
 FC4/J. E. Hannigan
 FC4/4/R. L. Carlton
 FC4/J. Wegner (2)
 FC4/H. Loden (3)
 FC5/J. C. Bostick
 FC5/P. C. Shaffer
 FC54/J. S. Llewellyn
 FC54/C. F. Deiterich
 FC54/J. E. I'Anson
 FC55/E. L. Pavelka (6)
 FC56/C. B. Parker (3)
 FC6/C. B. Shelley (4)
 FL/J. B. Hammack
 FL2/R. L. Brown (2)
 FL6/R. W. Blakley
 FS/L. C. Dunseith
 FS5/J. C. Stokes (11)
 FM/J. P. Mayer
 FM/C. R. Huss
 FM/D. H. Owen
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 FM13/R. P. Parten (11)
 FM2/C. A. Graves (3)
 FM3/C. T. Hyle
 FM4/E. R. Schiesser
 FM4/P. T. Pixley
 FM4/R. T. Savely (3)
 FM4/W. R. Wollenhaupt
 FM5/J. D. Yencharis (4)
 FM5/R. E. Ernull (5)
 FM5/H. D. Beck
 FM5/R. D. Duncan
 FM6/K. A. Young (6)
 FM6/R. W. Becker (3)
 FM7/S. P. Mann
 FM7/D. A. Nelson
 FM7/R. O. Nobles
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 KSC/CFK/M. Walters
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 KSC/CFK/MIT/R. Gilbert
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 TRW/Houston/K. L. Baker
 TRW/Houston/F. A. Evans

OCT 29 1969

UNITED STATES GOVERNMENT

Memorandum

NASA Manned Spacecraft Center

TO : See list attached

DATE: October 20, 1969

69-PA-T-129A

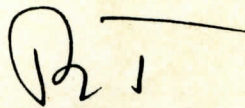
FROM : PA/Chief, Apollo Data Priority Coordination

SUBJECT: What can be done about the AOT?

One of the largest error sources affecting precision landing on the moon is the LM platform alignment accuracy at PDI. The AOT is adequate to fly an Apollo 11 type mission but it is simply not designed to support precise landings; AOT alignments, as currently carried out, leave something to be desired. The result is we must depend more on the LPD to get us where we want to go - that is, to correct the terminal descent trajectory for errors built up during the braking phase. This is undesirable, of course, particularly in the crossrange direction. Another unfortunate fact is that the lousy alignment accuracy obscures inflight IMU drift determination and virtually forces us to depend on the preflight compensation for anything but gross changes. This is good enough for flight safety (i.e., abortability) but can also screw up the precision landing. (Here are some numbers: 0.1° out-of-plane alignment error at PDI causes a 2,000 ft. cross-range error. A 3 sigma PGNC drift will cause this misalignment. AOT alignments experienced in flight haven't been much better than that either.)

Aside from making sure you are aware of the situation, I am writing this snowflake to solicit any ideas you might have to improve this business. Is there some way we can improve the AOT? Or its alignment in the LM? Or the way we get and use the marks in the computer program? Or should we ask the crew to make more marks - (Note: without a DOI burn, the crew timeline is tolerant)? - or something?

If you think of something, do it - or give me a call and I'll put your name in lights, Baby!



Howard W. Tindall, Jr.

PA:HWT:js

