J. Dunbar 5/27/69 REV. 1

MIT/IL SOFTWARE ANOMALY REPORT

1.1 ORIGINATOR: J.M. REBER	1.2 ORGANIZATION: MIT/IL	1.3 DATE: 3/27/69	1.4 ORIGINATOR CONTROL NO.	MIT REPORT NO. COM 11 PROGRAM COL 2 and 2A PROGRAM REVISION 45 and 51

1.5 DESCRIPTION OF ANOMALY:

Errors in COLOSSUS 2A fixed constants, viz ω_E, $\dot{B}$, Ω_{IO}, $\dot{\Omega}_{IO}$, F_O, $\dot{F}_O$

CONTINUED ON PAGE

1.6 DESCRIPTION OF RUN:

CONTINUED ON PAGE

- MIT ANALYSIS -

2.1 CAUSE:

Error in MAC generation program.

CONTINUED ON PAGE

2.2 RECOGNITION:

Difficult to assess.

CONTINUED ON PAGE

2.3 MISSION EFFECT:

See attached table (negligible for G).

CONTINUED ON PAGE 2

2.4 AVOIDANCE PROCEDURE:

Absorb errors in lunar constants in libration vector.

CONTINUED ON PAGE

2.5 RECOVERY PROCEDURE:

None

CONTINUED ON PAGE

2.6 PROGRAM CORRECTION:

Use attached values.

CONTINUED ON PAGE 2

2.7 RECOMMENDED DISPOSITION (Fix, Work-around, etc):

None required for 2A; fix for subsequent rope release.

CONTINUED ON PAGE

2.8 RECOMMENDED RE-TESTING:

CONTINUED ON PAGE

2.9 MIT/IL SIGNATURE: [signature] **2.10 DATE:** 4/1/69

3.1 NASA DIRECTION:	4.1 CLOSING ACTION TAKEN:
FIX FOR COLOSSUS 2B	fix in next formal assembly via PCR CLOSED
CONTINUED ON PAGE	CONTINUED ON PAGE

3.2 NASA/MSC SIGNATURE:	3.3 ORGANIZATION	3.4 DATE:	4.2 SIGNATURE:	4.3 ORGANIZATION:	4.4 DATE:
[signature]	NASA/MSC/FSS	4/10/69	[signature]	NASA/MSC/FSS	4/10/69

MSC Form 1409 (Rev May 68)

1.1 ORIGINATOR:	1.2 ORGANIZATION:	1.3 DATE:	1.4 ORIGINATOR CONTROL NO.	MSC REPORT NO. COM 11
J.M. REBER	MIT/IL	3/27/69		PROGRAM: COL2 and 2A PROGRAM REVISION: 45 and 51

2.3 Mission effect, cont'd.

	@July 1969	@July 1970
ω_E error on Earth surface	0	430 m
$\dot{B}$ eroor on Moon surface	0	$22(10)^{-8}$m
Ω_{IO} error on Moon surface	0.02 m	0.02 m
$\dot{\Omega}_{IO}$ error on Moon surface	0	0.03 m
F_0 error on Moon surface	4.1 m	4.1 m
$\dot{F}_0$ error on Moon surface	0	8.2 m

In addition to the above an octal conversion error has caused an additional AGC error to the ω_E term. The total of both errors is as follows:

ω_E error on earth surface on July 15, 1969 = 161 m and on June 15, 1970 = 3760m

2.6 Program correction, cont'd.

ω_E = 7.292 115 147 $(10)^{-5}$ RAD/SEC

$\dot{B}$ = -7.197 573 418 $(10)^{-14}$ RAD/SEC

Ω_{IO} = 6.196 536 640 RAD

$\dot{\Omega}_{IO}$ = -1.070 470 170 $(10)^{-8}$ RAD/SEC

F_0 = 5.209 056 RAD

$\dot{F}_0$ = 2.672 404 256 $(10)^{-6}$ RAD/SEC

(A PCR has been written to make this change in post-Colossus 2A.)