

April 5, 1962

MEMO TO: Mr. W. S. Schaffer
SUBJECT: 7641-1401 Service Delays

The following is a description of the delays in the Service Request-Response-Test Overrun loop between the 1401 and the 7641. The DDTL delay calculations were derived from the "Preliminary Application Document for DDTL Circuits". A rise and fall transition time of 60 Nsec was used in all cases.

1. WRITE OPERATION - All Times in Nanoseconds

A. Time Required

	<u>Worst Case</u>	<u>Best Case</u>	<u>Measured</u>
1. Rise of Clock 1 till Service Request DL is conditioned.	431	126	210
2. Service Request DL plus 50 feet of cable.	290	70	190
3. 1401 Delay	15,028 13,578	9,204	-----
4. 50 feet of cable plus Service Response DT.	290	70	190
5. 7641 delay turning OFF Overrun Test latch.	201	85	130
6. Total Time Required	14,790	10,555	12,900

1,003

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B. Time Allowed

	<u>Worst Case</u>	<u>Best Case</u>	<u>Measured</u>
1. Rise of Clock 1 till rise of Overrun Test sample.	275	97	170
2. Complete Write cycle.	14,710	14,700	14,700
3. Total Time Allowed	14,985	14,797	14,870

C. Write Calculations

	<u>Theoretical</u>	<u>Measured</u>
Time Allowed	14,797	14,870
Time Required	14,790 <i>16,293</i>	12,900
Difference	007 Nsec	1,970 Nsec

14.7
10.1
4.2

II. READ OPERATIONA. Time Required

	<u>Worst Case</u>	<u>Best Case</u>	<u>Measured</u>
1. Rise of MC-6 till Service Request DL is conditioned.	258	76	195
2. Service Request DL plus 50 feet of cable.	290	70	-----
3. 1401 Delay	<i>10,701</i> <i>4,246</i>	4,872	-----
4. 50 feet of cable plus Service Response DT.	290	70	-----
5. 7641 delay turning OFF Overrun Test latch.	201	85	130
6. Total Time Required	10,285	5,173	8,600

72,573

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B. Time Allowed

	<u>Worst Case</u>	<u>Best Case</u>	<u>Measured</u>
1. Master Clock Delay	9,045	8,955	9,000
2. Rise of MC-4 till rise of Overrun Test sample.	1,984	1,345	1,620
3. Total Time Allowed	10,929	10,290	10,620

C. Read Calculations

	<u>Theoretical</u>	<u>Measured</u>
Time Allowed	10,290	10,620
Time Required	10,285 <i>12,373</i>	8,600
Difference	005 Nsec	2,020 Nsec

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7641 Project

HJZ:rls

cc: Mr. R. A. Kuchenbecker
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Mr. G. D. Mentzer