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SC-DR-66-502

MODIFICATION PROPOSAL
FOR
QEST B57

F. A. Ross - 2444

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW

Date: 12/23/97
Authority: W. C. Kraft
Name: W. C. Kraft

Determinations (Circle Numbers):
 1 Classification Changed to UNCL
 2 Contains No DOE Classified Information
 3 Contains UCAT
 4 Comments: Customary

**SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP**

CLASSIFICATION CHANGED TO <u>U</u>	AUTHORITY: <u>W.C. Kraft</u>
<u>Emelda S. Selph</u> 11/5/98	RECORD ID: <u>98501280</u>
PERSON CHANGING MARKING & DATE: <u>William C. Kraft</u> 11/6/98	DATED: <u>12/23/97</u>
PERSON VERIFYING MARKING & DATE	

William C. Kraft
William C. Kraft - 2440
8-22-66

[REDACTED]
[REDACTED]
[REDACTED]
August 1966 [REDACTED]

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[REDACTED]

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Distribution:

R. H. Schultz, 2120

D. S. Dreesen, 2122

W. C. Kraft, 2440

P. W. Callies, 2444

Central Technical Files, 3428-1

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Requested Modification

Memo D. E. Murphy to Distribution, dated May 27, 1966, and memo D. S. Dreesen to P. W. Callies, dated August 2, 1966, concerning modification to QEST B57.

Suggested Method of Modification

As requested, a proposal concerning the new cabling and current supplies for the deployment cameras has been completed and issued. The remaining items will be discussed separately, outlining the existing problems, suggested modification, and cost breakdown.

1. U548

Problem -- Pullout is produced by gating on CR67 which actuates solenoid C1 of the U881 releasing the weight. This solenoid remains actuated through CR67 resulting in a heat problem.

Modification -- The addition of a 300 uf capacitor and a 3K ohm resistor will eliminate this problem.

Estimated Cost

Engineering	\$32.00
Drafting	33.80
Fabrication (Org 2126)	
Material	10.00
Manual (None)	_____
TOTAL	\$80.80

2. U1046

Minor manual change at no cost.

3. U890-6

Problem -- Replacement of R2-1 with a variable resistor for ease of maintenance when a new transducer is installed.

Modification -- Replace R2-1 with a variable 120K ohm resistor.

Estimated Cost

Engineering	\$32.00
Drafting	33.80
Fabrication (Org 2126)	
Material	10.00
Manual (None)	_____
TOTAL	\$80.80

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4&5 U908 and Galvo Monitor

Problem

- A. Isolation of QUEST circuit ground and weapon circuit ground from frame ground. This constitutes isolating the U908 circuitry and pulse monitoring equipment.
- B. Discontinuity in oscillograph calibration reference voltage.
- C. Galvo monitor.

Modification

- A. The galvo monitor is no longer required.
- B. Redesign of the U908.
- C. Replacing the 896 pulse and resistance monitor with a U1187A.
- D. Isolating the oscilloscopes from frame ground.

Estimated Cost

Engineering	\$ 3,840.00
Drafting	1,572.00
Fabrication	1,472.00
Material	16,000.00
Manual	<u>1,300.00</u>

TOTAL \$24,884.00

6. U553

Problem -- Removal of 28VDC from interlock during secondary test.

Modification -- Add a relay to the U553 to remove TP60, TP65, and TP66 from the QUEST interlock during secondary test.

Estimated Cost

Engineering	\$128.00
Drafting	157.20
Fabrication (Org 2126)	
Material	50.00
Manual (None)	<u> </u>

TOTAL \$335.00

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7. U887

Problem -- The portion of the secondary tests which use the U887 programmer is not long enough to perform the required tests.

Modification -- Increase the time to 60 seconds. Requires changing one wire.

Problem -- The U887 stopped during an SSP test as a result of a heat problem. A fan has been installed with no recurrence of the problem.

Modification -- Initiate a COER to incorporate the fan into the drawings.

Problem -- Operation of the U887 programmer.

Modification -- A reliability evaluation has indicated that minor modifications to the PC cards would result in a more reliable unit. These changes will be made. Following these changes, the unit will be operated under environmental conditions which simulate actual use to determine if other modifications are required. Some discussion has been held concerning replacing this programmer with the multi-use programmer being used in the QEST W58. After reviewing this unit, it is similar to the U887 and would not increase the reliability of the QEST.

Also a printed circuit card tester will be designed to aid in maintenance of this unit.

Estimated Cost

Engineering	\$1,056.00
Drafting	1,164.00
Fabrication	1,000.00
Material	500.00
Manual (None)	
	<hr/>
TOTAL	\$3,720.00

8. U1120

Problem -- Isolate the QEST circuit ground from the scope frame ground.

Modification -- This modification has been performed by Org 2126. It is now necessary to change drawings and replace the material used.

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Estimated Cost

Engineering	\$128.00
Drafting	388.00
Fabrication (None)	
Material	150.00
Manual (None)	
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TOTAL	\$666.00

9. U1265

Problem -- Interlock of the U1265 when testing N-1 noses.

Modification -- Add proper interlock.

Estimated Cost

Engineering	\$ 256.00
Drafting	388.00
Fabrication	368.00
Material	150.00
Manual (None)	
	<hr/>
TOTAL	\$1,162.00

10. U1055

Problem -- To adapt the U1055 to be used with a torque wrench.

Modification -- Shorten the handle of the U1055 and make mechanical connection for the torque wrench. This modification has been performed by Org 2126.

Estimated Cost

Engineering	\$128.00
Drafting	167.20
Fabrication (None)	
Material (None)	
Manual (None)	
	<hr/>
TOTAL	\$295.20

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11. U1053

Problem and Modification -- To modify the U1053 to a 12 point adapter rather than 6 for position of wrench. This modification has been performed by Org 2126.

Estimated Cost

Engineering	\$128.00
Drafting	167.20
Fabrication (None)	
Material (None)	
Manual (None)	
TOTAL	\$295.20

12. U900

Problem -- The "ARM" voltage is being applied to the weapon when the U900 clock is disenabled. This clock measures the time required for arming.

Modification -- Modify the U900 so that the clock is started by the same circuitry that applies arming voltage.

Estimated Cost

Engineering	\$256.00
Drafting	77.60
Fabrication (Org 2126)	
Material (None)	
Manual (None)	
TOTAL	\$333.60

13. U879

Problem -- Isolation of the U879 from frame ground.

Modification

- A. Redesign the U879 so that all circuits are isolated from frame ground.
- B. Modify the U901 so that all connectors are isolated from frame ground.
- C. Modify the U880 so that J1 is isolated from frame ground.
- D. Modify all cables so that the shells of the connectors are not at frame ground.

Estimated Cost

Engineering	\$540.00
Drafting	776.00
Fabrication	826.00
Material	500.00
Manuals	<u>425.00</u>

TOTAL \$3,147.00

14. U549

Problem -- The U549 was designed to determine continuity of particular circuits of the weapon. The definition of continuity was 10 ma, which was full scale of the indicating meter. This was not true under all conditions. During some of the tests, bridge wires shunted the measuring circuit. The U549 was modified so that a full scale indication of the meter was 10 ohms. Therefore, the resistance of a bridge wire in parallel with the circuit being measured could be detected. When this modification was made, it was found that the existing switches used had resistances which are greater than the circuits being measured.

Modification

- A. Replace the switches with lower resistance switches. However, this would not guarantee that a particular switch would not have high resistance after continued use.
- B. Redesign the U549 continuity circuit utilizing a four wire bridge detection circuit. This type of circuit eliminates the inaccuracies resulting from resistance in the measuring circuits and measures the resistance at the component.

Estimated Cost

	A	B
Engineering	1,228.00	\$1,280.00
Drafting	77.60	1,164.00
Fabrication	368.00	1,114.00
Material	70.00	140.00
Manual	<u>None</u>	<u>250.00</u>

TOTAL \$636.60 \$3,948.00

In summary, the above problems could be accomplished for the following estimated cost and time.

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Estimated Cost

	ENGINEERING	DRAFTING	FABRICATION	MATERIAL	MANUALS	TOTAL
U548	\$ 32.00	\$ 38.80	Org 2126	\$ 10.00	None	\$ 80.80
U890-6	32.00	38.80	Org 2126	10.00	None	80.80
U908	3,840.00	15.72	\$1,472.00	16,000.00	\$1,300.00	24,184.00
U553	128.00	157.20	Org 2126	50.00	None	335.00
U887	1,056.00	1,164.00	1,000.00	500.00	None	3,720.00
U1120A	128.00	388.00	None	150.00	None	666.00
U1265	256.00	388.00	268.00	150.00	None	1,162.00
U1055	128.00	167.20	None	None	None	295.20
U1053	128.00	167.20	None	None	None	295.20
U900	256.00	77.60	Org 2126	None	None	333.60
U879	640.00	776.00	826.00	500.00	400.00	3,147.00
U549	128.00	77.60	368.00	70.00	None	636.60
U549*	1,280.00	1,164.00	1,114.00	140.00	250.00	3,948.00
TOTAL	\$6,760.00	\$3,456.12	\$4,044.00	\$17,440.00	\$1,725.00	\$34,935.60
TOTAL*	\$7,912.00	\$4,542.52	\$4,790.00	\$17,510.00	\$1,975.00	\$33,246.60

Estimated Availability in Weeks After Receipt of NPO

16 Weeks

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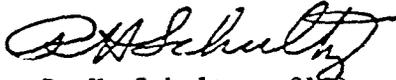
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NOV 17 1966

CENTRAL TECH FILE

November 10, 1966

To: W. C. Kraft - 2440


From: R. H. Schultz - 2120

Re: Modification of QEST B57

Ref: Conf. Document, SC-DR-502, dtd August 1966, Title,
Modification Proposal for QEST B57

The subject document outlines 14 problems which currently exist on QEST B57. The modification necessary for the correction of each item and the associated cost is given.

Division 2122 has reviewed the proposal, and requests that all modifications with the exceptions of items 4, 5 and 13 be performed. An NP order concerning the cost of these modifications has been prepared.

Items 4, 5 and 13 concern the general grounding problem. Correction of this problem will be deferred for the present, in view of the cost involved (\$28,031.00) and the uncertainty of the benefits to be realized.

A brief discussion of each item to be modified follows:

- Item 1. An SCR (CR67) in the U548 System Programmer becomes overheated and requires occasional replacement. The circuit will be modified to protect this element. Cost - \$80.80.
- Item 2. Correction of the calibration procedure for the U1046 Switch Pack Tester. Cost - none.
- Item 3. The transducer which monitors parachute deployment pressure occasionally requires replacement. Difficulty has been encountered in obtaining proper circuit adjustment following replacement. This circuit will be modified to facilitate adjustment. Cost - \$80.80.
- Item 6. The test oscillograms for the secondary test on some options contain extraneous deflections. The U553 Signal Junction Box will be modified to remove the source of these deflections. Cost - \$335.20.

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- Item 7. The U887 Master Programmer failed to operate correctly several times in Phase III, resulting in some lost data. The programmer has been modified by 2444 and is presently being subjected to environmental proof tests. Cost - \$3,720.00.
- Item 8. Difficulties were encountered in the operation of a temporary monitor installed during Phase III. This difficulty was found in part to be caused by the fact that circuit and frame ground were tied together in the U1120A Scope Controller. The necessary modification was performed by Division 2126 at the time, and it is now necessary to change drawings and replace material used. Cost - \$666.00.
- Item 9. The connection of two QEST cables to the weapon nose is not presently interlocked. The tester will be modified to provide this interlock. Cost - \$1,162.00.
- Item 10 and 11. For safety considerations, the installation procedure for the MC1362 Gas Generator was changed. To accommodate this change, the U1053 and U1055 Wrenches had to be redesigned. Cost - \$590.40.
- Item 12. The U900 measures the time required for the MC1352 A/S switch to arm. The U900 will be modified to measure this time in a more accurate manner. Cost - \$333.60.
- Item 14. The ohmmeter circuit in the U549 contains switches which have resistances greater than the resistances of the weapon circuits being checked. The referenced proposal gives two solutions. Modification A is to replace the switches. Modification B is to change the circuit to a four-wire bridge circuit. It is requested that the U549 be changed in accordance with Modification B, even though the cost is considerably higher. This type of circuit will offer a more accurate determination of the condition of the circuit under test. Cost - \$3,948.00.

Total Cost - \$10,916.80.

RL:2122:db

Copy to:

D. S. Dreesen, 2122

P. W. Callies, 2444

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R. H. Schultz, 2120

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