

November 13, 1958

margin
WHD
11/17/58
55
02

25X1
25X1

CONFIDENTIAL
~~**SECRET**~~



25X1

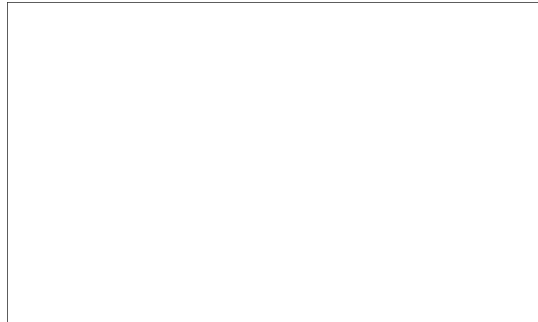
Subject: Contract 112
Task Order II

Dear Sir:

We are attaching our monthly report for subject contract for the month of October.

We consider this task as completed with the exception of the final report, which we hope to be able to complete for forwarding during the early part of December.

Very truly yours



25X1

WHR:kd
Encl.

Monthly reports
April '57 - Dec. '58

CONFIDENTIAL

DOO <i>48</i>	REV DATE <i>030750</i>	BY <i>010956</i>
ORIG COMP <i>056</i>	OPI <i>56</i>	TYPE <i>01</i>
ORIG CLASS <i>5</i>	PAGES <i>55</i>	REV CLASS <i>C</i>
JUST <i>22</i>	NEXT REV <i>2010</i>	AUTH: NR 70-2

November 6, 1958

SECRET

This is a progress report of work done on the Equipment Safeguard project during the period October 1 to October 31, 1958.

On October 28, 1958, a representative of the contracting agency visited [redacted] to witness the Firing of the Safeguard units which were subjected to the various environmental conditions specified. These test sequences were completed prior to October 28 and all units were ready for test firing on that date.

25X1

Tests included firing 14 units which had been subjected to various combinations of Transportation-Vibration, Temperature and Humidity Cycle, Salt Spray, Acceleration, Vibration, and Altitude tests. (Samples from water test were taken by the customer previously for his own testing.) Also tested were four units in the unarmed position. These units had received environmental conditioning along with the other 14 units.

A total of seven of the original 25 units in the group had been taken by the customer previously for examination and tests, so the firing of the 18 units concluded our test work on this contract. All test results were without any failures.

The 15 units made up as per contract have been completed and were shipped on October 31. This completed this phase of the contract.

This will be the final monthly progress report. Remaining to be submitted is the final report which will cover the entire project. The photographs of the 18 units (after tests) will be included in the final report.

SECRET

-2-

SECRET

Sheets at the end of the report show the history of each test unit. Results noted on the bottoms of the sheets were written by the customer on the day of the test.

Very truly yours,

[Redacted Signature]

25X1

MJW/mk

Contributing Engineers:

[Redacted List of Contributing Engineers]

25X1

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 5-9-58

TYPE OF TEST AND COMMENTS:

Unit #1, 2, 3, & 4

SECRET

TEST RESULTS

Removed from test schedule
and tested in presence of
customer

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

Unit #5

28 Oct 58
450F

SECRET

TEST RESULTS

Transportation-Vibration - completed 9-12-58
 Temp and Humidity ——— Completed 10-15-58
 Salt Spray ————— Completed 10-22-58
 Functioning and Time delay - Oct 28, 1958

Time: 35 sec (second booster at \approx 35.5 sec)
 Results: Both boosters fired primacord

SECRET

TYPE DETONATOR: Safeguard

Date Tested: _____

TYPE OF TEST AND COMMENTS:

Unit #6

2024 58
007

TEST RESULTS

SECRET

Transportation - Vibration — Completed 9-12-58
 Temp. and Humidity — Completed 10-15-58
 Salt spray — Completed 10-22-58
 Functioning and Time delay — 10-28-58

36.5 + 50 sec

Time:

Results: Both batteries fired properly

SECRET

TYPE DETONATOR: Safeguard
TYPE OF TEST AND COMMENTS:

Date Tested: 28 Oct 58
45°F

Unit #7

TEST RESULTS

SECRET

Transportation - Vibration - Completed 9-15-58
 Temp. and Humidity ————— Completed 10-1-58
 Salt spray ————— Completed 10-9-58
 Altitude ————— Completed 10-10-58
 Functioning and Time delay - 10-28-58

Time 35.5 + 35.6 sec
 6
 Results: Both Boosters fired primarord

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58
45° F

TYPE OF TEST AND COMMENTS:

Unit #8

TEST RESULTS

SECRET

Transportation - Vibration — Completed 9-1-58

Temp. and Humidity — Completed 10-1-58

Salt spray — Completed 10-9-58

Altitude — Completed 10-10-58

Detonator Safety Test — 10-28-58

Time: 34, 35, 35, + 60+ sec

Results: Unit was safe - Rubber gasket blown out

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #9

TEST RESULTS

SECRET

Transportation - Vibration — Completed 6-13-58

Temp and Humidity ————— Completed 9-17-58

acceleration ————— Completed 9-17-58

Functioning and Time delay — 10-28-58

Time: 33.4435.8 sec.

Results: 1st booster flew 2nd primar and
leg off without detonating it.
(1st primar leg detonated)

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #10

TEST RESULTS

SECRET

Transportation-Vibration - Completed 6-16-58

Temp and Humidity ————— Completed 9-17-58

acceleration ————— Completed 9-17-58

Functioning and Time delay — 10-28-58

~~Time 35.5 + 36.5 sec~~

~~Results: Both boosters fired the primary~~

Time 35.4 + 73.2 sec.

Results: Both boosters fired the primary

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #11

TEST RESULTS

SECRET

Transportation - Vibration - completed 6-18-58

acceleration _____ completed 9-5-58

Vibration _____ completed 10-12-58

Functioning and Time delay - 10-28-58

Time: 35 + 35.7 sec

Results: Both boosters fired the primord leg

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #12

TEST RESULTS

SECRET

Transportation Vibration — Completed 6-19-58

acceleration — Completed 9-5-58

Vibration — Completed 10-12-58

Functioning and Time delay — 10-28-58

Time: 200.20 sec

Results: with bonfire of 1000000 lbs

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 27 Oct 58

TYPE OF TEST AND COMMENTS:

45°

Unit # 13

TEST RESULTS

SECRET

Transportation-Vibration ————— Completed 6-24-58

Acceleration ————— Completed 9-5-58

Vibration ————— Completed 10-17-58

Altitude ————— Completed 10-24-58

Functioning and Time delay — 10-28-58

Time, 35.5 + 36.5

Results: 1st booster knuckled 2nd primed and lit off. Both boosters fired.

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45° F

Unit #14

TEST RESULTS

SECRET

Transportation-Vibration - Completed 7-16-58

acceleration _____ Completed 9-5-58

Vibration _____ Completed 10-17-58

Altitude _____ Completed 10-24-58

Functioning and Time delay - 10-28-58

Time: 35.47.38.8

Results: Both boosters fired primary and legs

SECRET

TYPE DETONATOR: Safeguards

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

4595

Unit #15

TEST RESULTS

SECRET

Transportation - Vibration ----- Completed 8-29-58

Acceleration ----- Completed 9-5-58

Vibration ----- Completed 10-25-58

Altitude ----- Completed 10-27-58

Functioning and Time delay - 10-28-58

Time: 328 + 344 sec.

Results Both boosters fired primary and legs

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 22 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #16

TEST RESULTS

SECRET

Transportation-Vibration - completed 9-16-58

acceleration _____ completed 9-17-58

Vibration _____ completed 10-13-58

Altitude _____ completed 10-27-58

Detonator Safety Test - 10-28-58

Time: 2:45, 3:00, 3:15, 3:30

Results: Unit was safe - by the scope of
document.

SECRET

TYPE DETONATOR: 53-89117.0

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

950F

Unit #17

TEST RESULTS

SECRET

Transportation Vibration - completed 6-10-58

acceleration ----- completed 9-5-58

Vibration ----- completed 10-13-58

~~Amplitude~~ 

Functioning and Time delay - 10.28-58

Time: 35.6 + 36.2

Results: 1st booster blown by off
~~Both~~ Both booster fired.

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45 °F

Unit #18

TEST RESULTS

SECRET

Transportation-Vibration - completed 6-6-58

acceleration ————— completed 9-5-58

Vibration ————— completed 10-13-58

Functioning and time delay- 10-28-58

Time, 35.5 + 36.5 sec.

Results: Both boosters fired the primacord

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #19

TEST RESULTS

SECRET

Transportation & vibration - completed 6-5-58

Water Test ----- completed 6-18-58

acceleration ----- completed 7-5-58

Vibration ----- completed 10-10-58

Functioning and Time delay - 10-28-58

Time: 28 57 35 sec

Remarks: Initial check of function completed

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45°F

Unit #20

TEST RESULTS

SECRET

Transportation - Vibration - completed 5-28-58

Water Test ----- completed 6-17-58

acceleration ----- completed 7-17-58

Vibration ----- completed 10-14-58

Functioning and Time delay - 10-28-58

Time: 349 + 35.2

Results: Both boosters fired in accordance

SECRET

TYPE DETONATOR: Safeguard

Date Tested: _____

TYPE OF TEST AND COMMENTS:

Unit #2:

TEST RESULTS

SECRET

Transportation - Vibration - completed 5-27-58

Water Test - completed 6-13-58

Functioning + time delay

Unit given to
Customer 7-2-58

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 5-9-58

TYPE OF TEST AND COMMENTS:

Unit #22

TEST RESULTS

SECRET

Removed from test schedule
and tested in presence of
customer

SECRET

TYPE DETONATOR: Safeguard

Date Tested: _____

TYPE OF TEST AND COMMENTS:

Unit # 23

TEST RESULTS

SECRET

Transportation-Vibration - completed 6-3-58

Functioning and Time delay

Unit given to
Customer 7-2-58

SECRET

TYPE DETONATOR: Safeguard

Date Tested: 28 Oct 58

TYPE OF TEST AND COMMENTS:

45° F

Unit #24

TEST RESULTS

SECRET

Transportation - Vibration - completed 9-28-58

Detonator Safety Test - 10-28-58

Time: 35 + 36, + 36 sec

Results: Unit was safe - Rubber gasket
was blown out

SECRET

TYPE DETONATOR: Safeguard
TYPE OF TEST AND COMMENTS:

Date Tested: 28 Oct 58
45 °F

Unit #25

TEST RESULTS

SECRET

Transportation - Vibration - completed 9-2-58

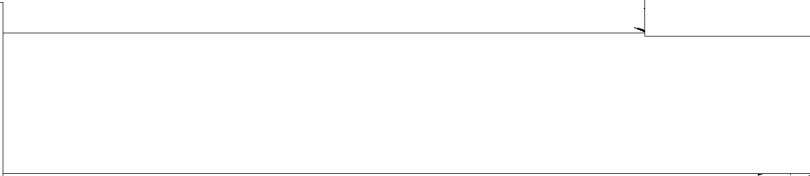
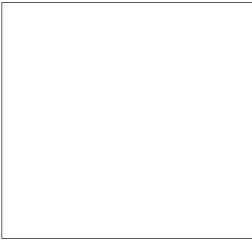
Detonator Safety Test - 10-28-58

Time: 36, 36, 37, 70 sec.

Results: Unit Safe - Rubber gasket blown out

SECRET

SECRET *F. W. DeSmetter Jr.*



E. A. ...
78a

25X1
25X1

October 13, 1953



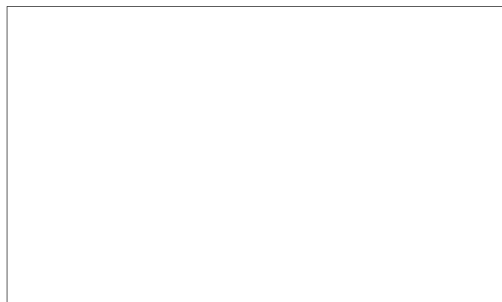
25X1

Subject: Contract 112 - Task II

Dear Sir:

**We are attaching progress report on subject
Task Order for the month of September 1958.**

Very truly yours,



25X1

WHR: jsb

SECRET

SECRET

October 7, 1958

This is a progress report of work done on the Equipment Safeguard Project.

Following the last progress report, dated July 10, funds on the project were depleted and work essentially ceased.

A meeting with the project officer was held at [redacted] during the month of July to discuss the status of the project and various alternate programs which might be adopted. Three alternatives were discussed:

25X1

- 1 - to complete the project with a reduced test program
- 2 - to complete the program as previously intended
- 3 - to terminate the program with no further testing

We were notified during the last week in July that alternate (2) above had been decided upon and that the program would be re-funded. In August we received official notification of this and work was resumed on the project.

The test program agreed upon at a meeting at [redacted] on May 9, 1958 is being carried out. This program consists of:

25X1

MIL-STD-303 - Transportation-Vibration
 MIL-STD-304 - Temperature & Humidity Cycle
 Salt Spray Test from MIL-E-5272A
 Water Test - 12 inches for 24 hours
 Acceleration Test - 5 g's
 Vibration Test Procedure I from MIL-E-5272A
 Altitude Test - 40,000 ft. at -65°F
 3 complete cycles going from ambient Temperature and pressure to 40,000 ft. and -65°F and return

SECRET

SECRET

-2-

1 hour each condition (2 hour cycles)

A revised flow chart is shown on the following page which indicates the tests and sequences followed by each unit. At this time the tests are progressing satisfactorily. The flow chart shows the status of each unit as of the end of September. It is anticipated that the test program will be completed during October.

Production of the 15 units for shipment is underway. All parts are on hand and this phase of the contract should also be completed during October.

Interested personnel will be notified in advance of the completion of the tests so that arrangements may be made for them to witness the firing of the units if they desire to do so.

Very truly yours,

[Redacted Signature]

25X1

MJW/mk

Contributing Engineer:

[Redacted Name]

25X1

SECRET

SECRET

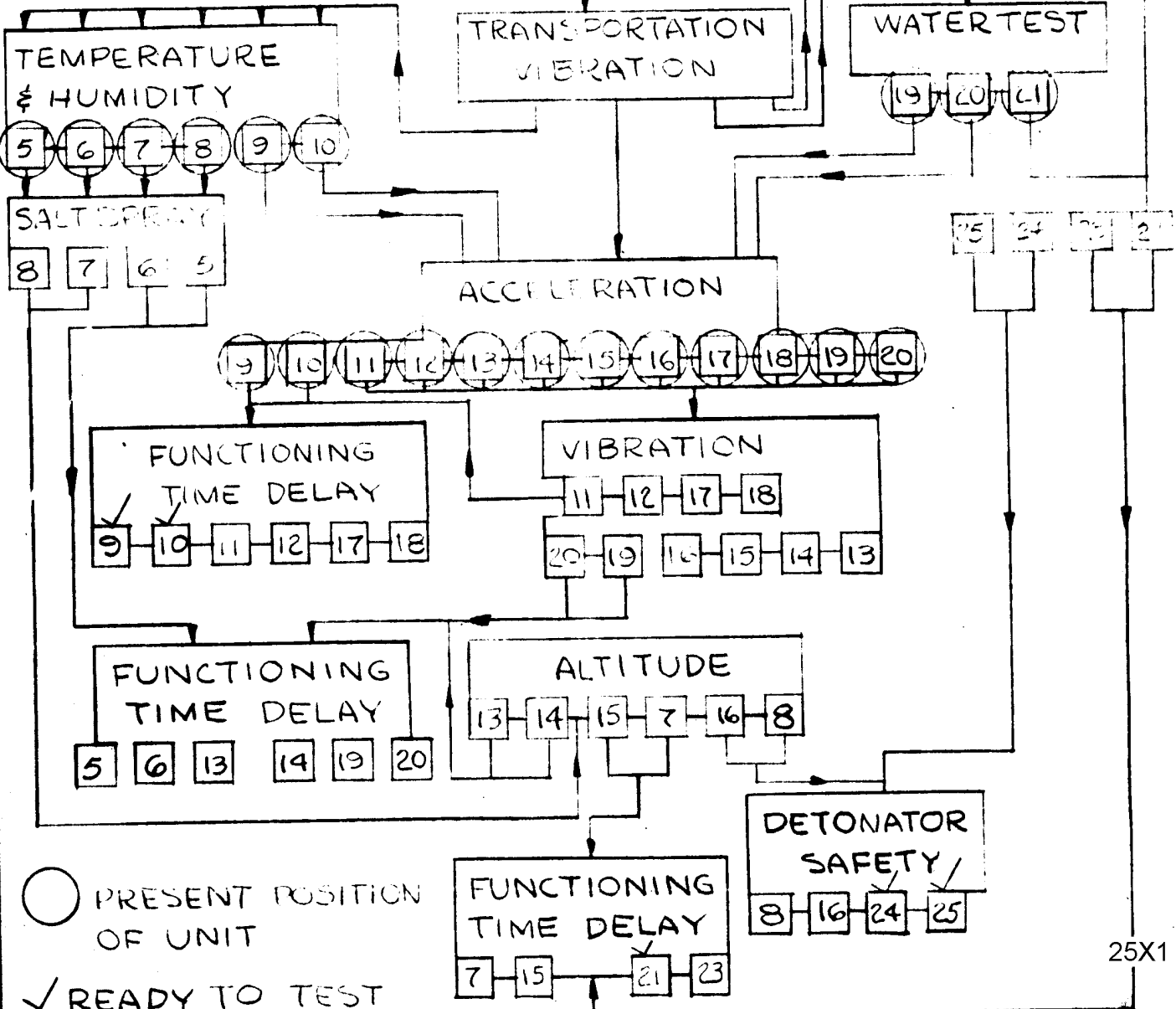
NO.

REVISIONS

DATE

TESTED FIRST

TO BE
OR LUED



○ PRESENT POSITION OF UNIT
 ✓ READY TO TEST FIRE

25X1

<p>MAT'L.</p>	<p>TITLE QUALIFICATION TEST, SAFEGUARD</p>
<p>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ± 1/64 DECIMALS ± .010 ANGLES ± 2° CONCENTRICITY ± .002 FINISH IS IN MICROINCHES</p>	<p>SCALE NONE DATE 10-3 DRAWN JFM CHECKED APP DWG. No.</p>

SECRET

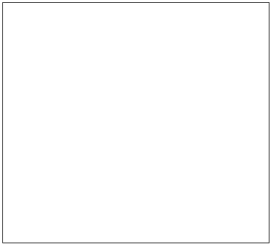
File: test 200.

aircraft 8/14

25X1

25X1

25X1



August 8, 1958

Jacob

For _____

Warren JWD

SECRET

Andy

25X1

Walt

*See'd ED
8/18/58
9:00*



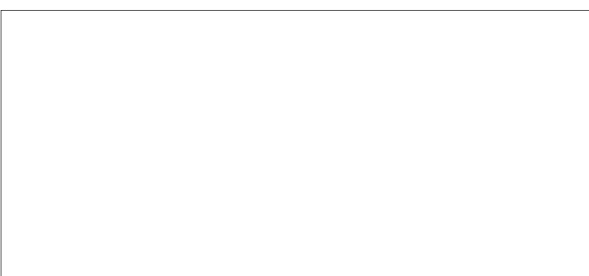
Subject: Contract 112, Task Order II

Dear Sir:

We are enclosing in triplicate, the original only having photographs, prints and test results, of a report prepared by our Project Engineer on the subject task, covering progress on this test for the period December, 1957 through June, 1958.

25X1

Very truly yours

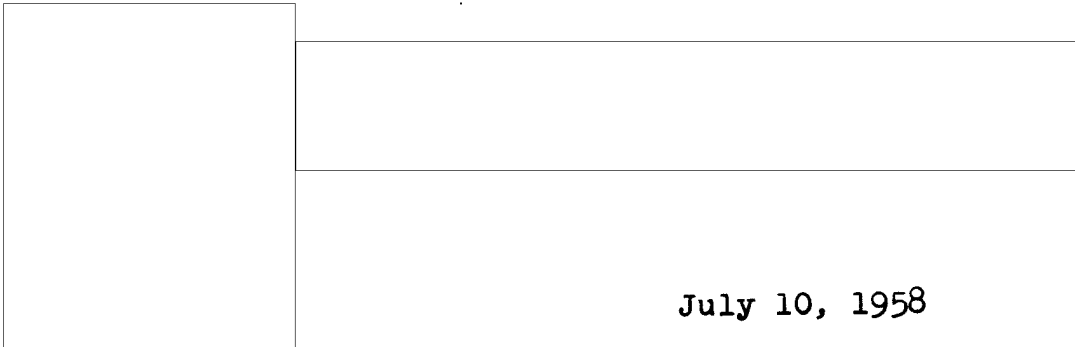


25X1

WHR:kd
Encls.

SECRET
12
12

25X1
25X1



July 10, 1958

This reports progress during the period December, 1957, through June, 1958 on the development of an Equipment Safeguard Unit to meet the following requirements:

1. The unit shall be wholly contained in a weather-tight enclosure of dimensions approximately 6" x 5-3/4" x 4" (dimensions to meet AN rack mounted equipment specifications).
2. The unit shall initiate two strands of Primacord through reliable independent explosive trains.
3. The unit shall be so designed as to prevent accidental initiation by requiring two-handed operation.
4. The unit shall provide a reliable time delay of at least 30 seconds between actuation and initiation.
5. The unit shall pass environmental tests necessary for qualification under Military Specification MIL-E-5272A, titled "Environmental Testing, Aeronautical and Associated Equipment, General Specifications for."
6. The unit shall be so designed as to permit surveillance and replacement of explosive and pyrotechnic components periodically.
7. The unit shall be detonator safe; that is, initiation of the detonators in the safe position shall not initiate the succeeding elements in the explosive train, nor shall such initiation throw fragments or particles from the weather-tight enclosure.

-2-

SECRETPROGRESSDecember

During the month of December, 1957, parts in process were collected, packed, and shipped from the [redacted] plant [redacted]

At this time, responsibility for the project was transferred from [redacted] (who resigned to stay in [redacted] to [redacted]

25X1

25X1

25X1

25X1

January

In January, parts, drawings, tools, and equipment were unpacked and identified at the [redacted] Without contract coverage, work was continued on development of suitable pyro-technic delay columns for use in the unit.

25X1

February

Contract agreement was reached, and notices of contract extensions 2 and 3 were received late in February, 1958, so manufacture of parts for 5 units was resumed. For tests to assure reliability of the side-initiated explosive lead, a "Test Block" to simulate one corner of the Housing which holds the lead and primacord connector was designed (Drawing DD-42) and fabrication of 50 test blocks was started.

Fifty each Split-tee, Elbow, and Long-Union primacord connectors were tested using End Caps containing approximately [redacted] and government furnished primacord. All tests were successful in that high order detonation of the primacord was propagated through the connectors (see attached test data sheets I and II).

25X1

Delay columns were tested and timed at high, low, and room temperatures with good results.

One hundred and twenty Split-tees were molded.

March

In March, molding of Split-Tees, Long Unions, Short Unions, Webbed Unions, and Elbows was completed. Split-Tees, Short Unions, Locking Nuts, and [redacted] were shipped to the Post Ordnance Officer, Ft. Belvoir, Va.

25X1

SECRET

-3-

SECRET

The 50 "Test Blocks" were received and expended in tests as planned. There were no failures, so the desired reliability was proven (see Test Data Sheets III, IV, and V). Photograph #1 shows a Test Block with attached fuze, blasting cap, Webbed Union, Locking Nut, End Cap, and primacord in position on a wooden slat for test. Photo #2 shows the fragments of the Test Block and the shattered slat after test. Photo #3 shows typical Test Block fragments picked up after a series of tests. Photo #4 shows the two Test Blocks that were tested without leads to insure that the blasting caps were not initiating the primacord directly. Note that the End Cap tested with the blasting cap in position B was torn open by the explosion and its [redacted] was scattered, but the primacord was not damaged (primacord lengths were trimmed after test to minimize explosive in photo lab).

25X1

One rotor and one housing were received from the [redacted] Shop and were inspected for compliance with drawings. The parts were acceptable so fabrication of four more of each was started. Also, to expedite parts delivery, a subcontract was placed with the [redacted] for six each Rotors, Bearings (front and rear) and Release Buttons.

25X1

25X1

Following a meeting with the Project Officer and assistants at the [redacted] a program was begun to test fire and time 200 delay columns to gain reliability assurance on this part of the explosive trains.

25X1

April

During April, five complete Units were received and accepted. Waterproofness tests on one unit turned up a weakness in that the neoprene sealing washers used under the Webbed Unions were too soft. Making the washers of harder rubber eliminated the difficulty.

Four of the five Units were used repeatedly in tests of the 200 delay columns. Failures to initiate the primers

25X1

[redacted]
Then the primer ignition mix was changed [redacted]. After the above changes were made, no misfires occurred, and the delay columns functioned satisfactorily giving times between 30 and 40 seconds. Fifty columns were tested at -65°F, fifty at +160°F, and one hundred at room temperature (see Test Data Sheets VI, VII, VIII, IX, and X).

25X1

SECRET

-4-

SECRET

May

Metal parts for thirteen additional units were received during May, and were inspected and loaded, and environmental conditioning tests were begun. A purchase order was placed with Associated Rubber, Inc. [redacted]

25X1
25X1

[redacted]
buttons (the purpose of this change is to reduce the force required to operate the Units).

Final shipment was made of the plastic primacord connectors. With the shipment was sent a complete Unit containing a "Return-Spring" for test by the Project Officer prior to his deciding whether the Return-Spring should be eliminated from the rest of the Units. The spring is necessarily so powerful that operation of the Unit with it in is extremely difficult.

Five Units were test fired (with the Project Officer witnessing) and functioned satisfactorily (see Test Data Sheets XI). Photograph No. 5 shows the Units after firing.

June

In June, environmental tests on completed Units were continued. Eleven Units were subjected to the Transportation-Vibration test and three were subsequently put through the Water Immersion test. Four Units were drilled in preparation for firing in the "Safe" position to test for Detonator Safety, after various environmental conditioning tests.

Toward the end of June, contract funds were nearing depletion, so time and cost estimates for alternative programs of evaluation and delivery of Units were prepared, and a meeting with the Project Officer was scheduled for the first week in July.

Very truly yours,

[redacted]

25X1

BAG/mk

SECRET

TYPE DETONATOR Proj at Safeguard Date tested 2-11-58

TYPE OF TEST AND COMMENTS:

Testing propagation thru straight
connector fitting using 8" lengths
PRIMACORD

(long union)
TEST RESULTS

SECRET

(1) failed to propagate due to primacord being
1/4" from base chg. in cup. This condition being known.

(2) cap failed to ignite primacord
cap sounded weak.

Firing was done using #6 blasting caps.

Total long unions tested - 50

on 2-10-58 50 each elbows and Tees
were tested - all propagated satisfactorily
used scrap lumber taped to primacord
to determine propagation

Purpose: to test propagation thru
plastic fittings

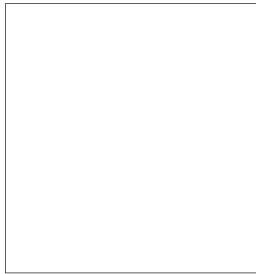
Conclusion: perform satisfactorily
but important to push primer
all the way in cup of cap

SECRET

Page Denied

Next 15 Page(s) In Document Denied

File: Destuctor



25X1

25X1

June 26, 1958

25X1

SECRET

25X1



Subject: Contract 112, Task Order III
Progress Report for May

Gentlemen:

During this period some additional work was done on the problem of waterproofing (or solution proofing) the units.

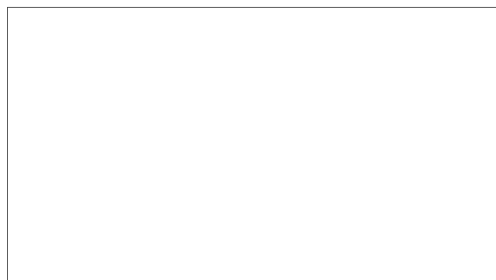
After establishing that the units will not function properly after as short a soaking time the developer as four hours (50% do not fire high order after this exposure), we immersed two units in water for four hours after which they were tested and they both fired high order. This sample is not large enough to yield conclusions though results suggest the possibility that the solution is more harmful to the units than is plain water.

Since the degree of moisture proofing desired has not been spelled out as yet, we do not plan any further tests at this time. Possibly one or two hours immersion would not harm the units. Until this is established as a problem, we will consider the unit satisfactory as it now stands.

All of the end cups are loaded for the entire project and the sticks are being assembled.

Assembly drawings are being made up and will be included in the next progress report.

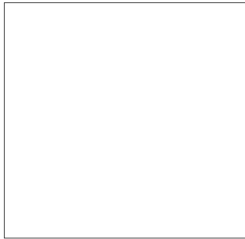
Very truly yours



25X1

WHR:kd

~~SECRET~~



25X1

25X1

June 26, 1958

25X1

SECRET



25X1

Subject: Contract 112, Task Order III
Progress Report for April

Gentlemen:

A preliminary test was conducted to establish compatability of [redacted] developer finished for this purpose. Results indicate that the two are compatible.

25X1

Propagation tests were conducted using the plastic fittings. It was shown that it is important to push the primacord all the way into the end cap. (1/8" gap between the [redacted] produced a failure). If this is done the units propagate. Fifty each elbows, tees, and straight connectors were tested and all propagated.

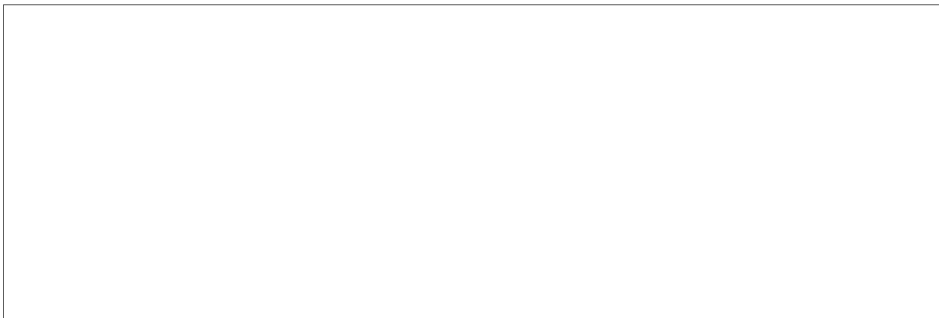
25X1

Ten tests involving approximately 50 individual units were conducted in working out a satisfactory design for the unit. This series of tests was concluded by firing 20 units successfully.

COMPATABILITY:

1)

2)



25X1

SECRET



SECRET

Page 2

June 26, 1958

- a) One fired as control - (0.090" air gap with T-60 detonator) - High order.
 - b) Second unit placed in +165°F oven for five hours. - 1/4" + hole (high order).
- 3) Repeat of two-one unit placed in 165°F oven for 27 hours after soaking for 20 hours at ambient. 5/16" hole (high order).
 - 4) Two lead cups stored for 12 days under 1/2" head of developer - Liquid turned dark brown after several days. 1 - 5/16" holes) Both
1 - 1/4" hole) high order.

CONCLUSION:

[REDACTED]

25X1

PROPAGATION TESTS:

1) Long Unions: 50 of these connectors were tested using flat bottom #6 gilding metal end caps loaded with [REDACTED] pressed in two increments at 360 lbs. (pin pressure). The charge was approximately 1/8" in height. Eight inch lengths (approximately) of primacord were crimped into the end caps and the outside end of one of the lengths was set off with a #6 blasting cap. All 50 assemblies propagated high order as evidenced by markings left on pieces of lumber on which the assemblies were tested.

25X1

25X1

A special test was conducted in which the primacord was not pushed into the end cap all the way, but a 1/8" gap was left between the end of the [REDACTED] This assembly failed to propagate.

25X1

2) Elbows: 50 of these connectors were tested in the same way as were the long unions. All 50 resulted in high order propagation through the union.

3) Tees: 50 of these connectors were tested in the same manner and all propagated high order.

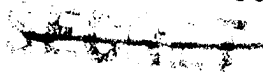
DESTRUCTOR UNITS:

Considerable testing was done in developing a suitable design for this unit. First failures were followed by

CONFIDENTIAL

Page 3

June 26, 1958



[redacted] end cups. These also proved unreliable and after several days it was established that the solution to the problem is rounded bottom end cups. The cups to be used for the project had already been ground flat and are a total loss since they cannot be used.

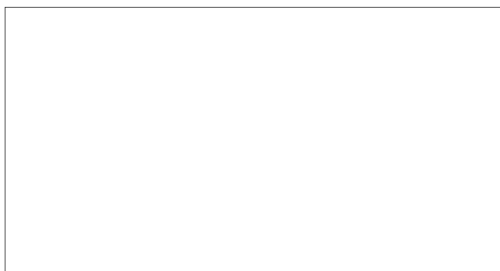
25X1

After establishing the final design 20 units were successfully tested.

Several units were soaked under approximately three inches of the developer solution and low order detonations resulted. The fibre tube warps and allows solution to get into the [redacted]. Possibly water would cause the same damage. We will attempt to determine the cause for these failures during the next period.

25X1

Very truly yours



25X1

WHR:kd

CONFIDENTIAL

