**Tester Status Report:
October-December 1978**

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operated by

MONSANTO RESEARCH CORPORATION
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for the

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A. MOUND MAKE ITEMS

I. Tester/ testing support of timers, actuators, detonators, firing sets, transducers, isolators, and pyrospacers.

PT1347 - Functional Testing of Explosive Timers

The PT1347 is a destructive-test system used to support the bulk of timer programs at Mound. These timer programs include the MC1984, MC2361, MC2453, MC2562, MC2991, MC3038, MC3050, MC3155, MC3319, MC3348, MC3359, and MC3414.

Status. Modifications to the existing PT1347 timer tester were completed in October 1978. Two new R-7903 Tektronix oscilloscopes were installed to replace an old and obsolete 551 Series, dual beam Tektronix oscilloscope in order to significantly improve the current and voltage waveform writing capabilities. The control chassis wiring was modified to accommodate the change of oscilloscopes. A Qualification Evaluation Release (QER) was received from SLA on December 1, 1978, indicating a Re-EQ (Engineering Qualification) for the PT1347 timer tester was not required as a result of the above modifications. The method of testing applicable components was not changed or affected by the modifications. The QER released the tester to test and accept the MC2453, MC3038, MC3050, MC3155, MC3319, MC3348, MC3359, and MC3414 timers.

PT3047 - Functional Testing of Explosive Timers

The PT3047 is to be a replacement for the PT1347 timer tester which currently supports the bulk of destructive testing of timers at Mound. These

timer programs include the MC1984, MC2361, MC2453, MC2562, MC2991, MC3038, MC3050, MC3155, MC3319, MC3348, and the MC3359. This new tester, PT3047, will be significantly better than the old system by virtue of newer equipment and improved data acquisition and control.

Status. Technical interchanges between Mound and SLA tester personnel have resulted in agreement on the PT3047's data acquisition configuration, the ongoing fireset design improvements, and the transducer circuit design. The Final Design Review Meeting for the PT3047 is scheduled at Mound Facility on January 23-24, 1979. Software programming for the HP9845 Programmable Calculator will begin immediately after the final design review. The initial programming work will begin from a system level flow chart. This tester is scheduled for delivery and QER by October 1, 1979.

PT3217 - Destructive Tester for Isolators

The PT3217 is a destructive-test acceptance system which is used to qualify the MC3347 and MC3352 isolators at Mound.

Status. A Qualification Evaluation Release was received on August 11, 1978, to release the Engineering Qualification status of the PT3217 destructive-tester as acceptable for testing the MC3347 explosive isolator, P/N 317138, at Mound. The system is shown in Figure 1.

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FIGURE 1 - PT3217, a three-bay tester, provides acceptance data in the form of an oscillograph of current through a load. Current is monitored by a current viewing transformer installed in the load. Backup data is acquired from a current viewing transformer internal to the item under test.

MA2017 - High Voltage Test Set

The MA2017 is a replacement for the original MA2017 high-potential voltage tester, and will be used to evaluate the MC3347 and MC3352 explosive isolators. The new tester will use a 743 KSR (Keyboard Send Receive) for manual data entry and data print out. A Texas Instruments 990/4 microprocessor will be used for process control and data acquisition.

Status. The preliminary engineering design was completed, and a Design Review Meeting was held on October 5, 1978, with appropriate Mound personnel. All major equipment has been ordered, and a comprehensive flow diagram of the process has been generated. System software writing will begin early in CY1979. Delivery of this new and improved tester is scheduled for April 30, 1979.

PT3117 - Laser Tester

The PT3117 is the destructive-test system used to qualify a pyrotechnic spacer (P/N 302486). It uses a CO₂ laser to initiate the spacer and is a go/no-go acceptance test.

Status. The PT3117 received a QER as acceptable for qualification testing of the pyrotechnic spacer in June 1977. Because of several testing incidents, SLA requested a proposal for a new design in October 1977. A formal proposal was submitted to SLA, Org. 2514, on November 16, 1977, and following some further discussions and a meeting at Mound agreement was reached for a two-phase study and redesign of the laser tester. The instability and degradation of the PT3117 CO₂ laser output was corrected by replacing the damaged optical components and proper adjustment of the laser parameters. Phase One of this two-phase study was accomplished in time to support the June 12, 1978, pyrotechnic spacer TMS (Tool Made Sample) schedule. Phase Two

of this study was concerned with monitoring the output of the laser on every test. Developmental work done by Dr. Brannon, SLA Org. 2514, indicated a real-time detector was inadvisable in our application. An alternative was to monitor pulse width and total energy in the pulse. An oscilloscope was installed in the tester to monitor pulse width by intercepting an electrical signal from the laser. Pulse energy will be monitored by sampling the laser beam and directing the sample to a ballistic thermopile. Fabrication of hardware to perform this function was completed on December 19, 1978. Check-out of this concept is scheduled for February, 1979. Further discussions were held with Drs. Van Domelen and Brannon of SLA, Org. 2514, on December 6, 1978, pertaining to continued developmental work on laser output testing at SLA.

PT3118 - Destructive Tester

The PT3118 is the destructive-test system used to qualify a number of pyrotechnic devices including the MC3004, MC2949, and MC3095. It uses three Biomation digitizers to digitize electrothermal response (ETR) data, output pressure, and firing voltage and current. Data are collected and analyzed by an HP9830 calculator that also serves as an integral control for the entire tester.

Status. A special fireset was designed, built, and temporarily adapted to the PT3118 tester to complete the developmental destructive-testing requirements for ten SA2834 valve actuators. The ten units were successfully tested in

November, 1978. The PT3118 was returned to its controlled configuration, and a "rejected" MC3004 actuator was destructive-tested to prove out its normal firing operation. The modifications to hardware and software for support of the MC2949 and MC3095 programs remain on hold; however, work in support of the MC3095 detonator program is scheduled to begin in late February 1979, and will take an estimated eight weeks to complete. Initiation of this work is being restrained by the test firing schedule for the MC3004 actuator program. During the MC3095 modifications, several anomalies inherent in the original tester design, such as "noisy" ETR circuitry and varying contact resistance in the fireset circuitry, will be corrected.

PT3122 - Electrothermal Response Tester

The PT3122 was planned as an electrothermal response tester to qualify a number of pyrotechnic devices including the MC3004, MC2949, and MC3095 components. Pre-loads, as well as loaded assemblies, were to be processed through ETR as a part of 100% qualification testing. This ETR was to be essentially the same as the ETR included as part of the PT3118 tester located at Test Fire. It was to rely on the same Biomation digitizer and HP9830 calculator for data acquisition and analysis.

Status. The production testing, originally planned for the PT3122, will continue to be done on the MT1035/MA2016 tester as it has been in the past. Previously planned developmental ETR testing will now be done using the MT1042 which is presently being fabri-

cated. The need for PT3122 is no longer valid, thus the tester will not be built.

PT4025 - MCCS Fire Set Level Tester

The PT4025 is a PDP-8/e computer-based automated tester used in the functional testing of the multiple code coded switch (MCCS) and the output switch in the MC3048 fire set.

Status. The tester was moved to Test Fire, Bldg. 3, in November in order to prepare it to test the WR firing set subassembly(ies) and final MC3048 firing set as requested by Sandia Reimbursable Purchase Order No. 92-7358. A Visicorder has been ordered and will be adapted to PT4025 to support diagnostic investigations in the event of a testing failure. Check-out of the PT4025 electrical inspection tester for the MC3048 multiple code coded switch will consist of checking the tester against the operation and calibration programs. This process will enable tester personnel to become familiar with PT4025. The projected need date for testing these assemblies is the end of February 1979.

PT4031 - Flux, Hi-Pot, and Pulse Tester

The PT4031 is a flux, high-potential and high-voltage pulse tester designed to evaluate the MC3106 transducer in accordance with Sandia Product Specification PS211585.

Status. This tester currently exists as the PT2163, which was obtained from Bendix/Kansas City. Cosmetic and technical changes will be made, and a new drawing package will redefine the tester

as PT4031. A drawing package was received from Bendix in September 1977. The work activity on this tester remains on hold, but planning sessions to review the tester design and to establish a fabrication timetable are scheduled for the first quarter of CY1979. Cabling for the PT2163/PT4031 flux tester was modified in December so that the test fixturing associated with this tester could be installed inside a test cell.

PT4034 - Destructive Functional Test While Spinning

The PT4034 is a destructive-test system that provides functional testing for the MC3106 transducer in accordance with Sandia Product Specification PS211585 and for the MC3048 fire set in accordance with Sandia Product Specification PS211575. All tests will take place in a spin environment provided by a Trio Tech spinner.

Status. The PT4034 destructive-test system consists of the basic PT4034 test instrumentation system, fixtures which adapt the MC3106 transducer and the MC3048 firing set to the Trio Tech spinner, the UB0478 waveform digitizer, and the UB0466 Trio Tech spinner (see Figure 2). The two-bay control, power-supply, and fire-pulse console which makes up the PT4034 test instrumentation system has been fabricated at SLL and is presently being refined by David M. Pierce of SLL, Org. 8166. The system will be upgraded by adding two Tektronix Model 7903 oscilloscopes to serve as the backup data acquisition capability. The present dual-beam oscilloscope built into the system does not have enough resolution to accurately serve as the

backup data gathering method. The two-bay, UB0478 waveform digitizer was an additional capability deemed necessary by SLL Component Personnel in order to obtain the output resolution to be designed in the product specifications. Keith L. Burris of SLL, Org. 8166, is the Project Engineer for this subsystem, which will use a PDP-11/34 computer for control. The fixtures for adapting the MC3106 and MC3048 components to the Trio Tech spinner are being developed by Mr. Pierce. The UB0466 Trio Tech spinner was purchased in FY1977 on purchase order number 12603, and is now at SLL. Mound will generate a purchase order to cover the cost of the PT4034 destructive-test system with the exception of the UB0466.

FIGURE 2 - The PT4034 destructive-test system consists of the basic PT4034 controller, a digitizing subsystem, and a spinner.

PT4035 - Polarity and Resistance Tester

The PT4035 is a polarity and resistance tester designed to evaluate the MC3106 transducer in accordance with Sandia Product Specification PS211585.

Status. Prototype equipment was in use for several months before the W79 Weapons Program was placed on hold. No design work was accomplished on the final version. The work activity on this tester remains on hold, but planning sessions to review the tester design and to establish a fabrication timetable are scheduled in the first quarter of CY1979.

PT4038 - High-Potential Voltage Tester

The PT4038 is a high-potential tester designed to evaluate the MC3048 fire set in accordance with Sandia Product Specification PS211575. To meet this specification, the tester will provide test voltage ranging from 500 to 4000 volts. Two of these testers will be required.

Status. The work activity on this tester remains on hold, but planning sessions to review the tester design and to establish a fabrication timetable are scheduled in the first quarter of CY1979.

PT4039, MT1043 - Resistance Testers

The PT4039 is a resistance tester for the MC3048 fire set. It provides the capability to measure and record a number of continuity and resistance readings up to 20 megohms. The MT1043 is a development version of the PT4039.

STATUS. The work activity on PT4039 remains on hold, but planning sessions to review the tester design and to establish a fabrication timetable are scheduled for the first quarter of CY-1979. An Engineering Verification (EV) was conducted on the hardware portion of the MT1043 tester in November, 1978, and the tester was released for use for developmental testing. A Calibration Manual and a Mound Manual have not yet been written.

PT4042 - Switch Change Device

The PT4042 was designed to effect the MC2907 MCCS status changes required to accomplish MC3048 fire set functional tests. Two of these testers are to be supplied by SLL.

STATUS. Because of the hold on this program, neither of the PT4042 testers has been received from SLL. In a telephone conversation on December 8, 1978, Keith L. Burris, the Tester Engineer in SLL, Org. 8166, for these testers, stated that the two testers are in the fabrication shop awaiting parts from Intel. The testers use an Intel 880 microcomputer system for control. Tester delivery is not expected before April 1979. The \$16K in Mound Purchase Order #12601 is still considered sufficient to cover the cost of these testers.

MT1040 - Circuit Boards Switching Test

The MT1040 is an in-process tester designed to perform switching tests on the printed circuit boards incorporated into the MC3048 fire set. The boards are tested in accordance with Sandia

Product Specification (PS211578) requirements.

STATUS. A prototype system was built in mid-CY1976 for developmental testing. Design work has not begun on the final version.

W79 Test System

The W79 Test System is an open setup test facility for the static destructive-testing of the MC3106 transducer.

STATUS. Essentially 90% of the equipment required in the W79 test system already exists at Test Fire. There may be a need to improve some of the equipment in "C" Tank. Planning and design work will begin in the first quarter of CY1979.

MT1035/MA2016 - Electrothermal Response Tester

The MT1035 is a single-bay electrothermal response tester originally placed into service in August 1976, for evaluation of bridged headers at the bridgewire welding station. Data acquisition is by memory oscilloscope rather than the more elaborate digitizer and calculator used on other ETR testers. The MA2016 is a single-bay, self-contained data acquisition center consisting of a Biomation digitizer and a Hewlett-Packard calculator (HP9830). The MT1035 can be used by itself or the two systems can be used in tandem to provide automated ETR data acquisition.

STATUS. These combined testers are functioning properly and are in current use on the MC3004 actuator program.

They will also be used on the MC3095 detonator program in lieu of designing and building the PT3122 as previously discussed in this report.

PT3165 - High-Voltage Pulse Tester

The PT3165 is a high-voltage pulse tester used for acceptance testing of the MC3041 and MC2990 detonators.

STATUS. R. J. Burnett, SLA Org. 2513, is preparing documentation that will eliminate the High Voltage Impulse Testing Specification for the MC2990 detonator program. Engineering Change Notice (ECN) 780450 has been generated to eliminate this testing requirement from the MC3041 detonator product specification, PS315620.

PT3180 - Electrostatic Sensitivity Tester

The PT3180 is a general purpose electrostatic sensitivity tester designed to meet the requirements of the Sandia Electrostatic Sensitivity Testing Specification (SS-302365), i.e., 20 kV, 500 Ω , 600 pF.

STATUS. A second copy of this tester was released to the MC2990 Manufacturing Engineer on October 20, 1978, in time to support testing of WR Lot 004 units. This same tester is expected to support electrostatic sensitivity testing for the MC3041 detonator program at Mound.

MT1018A - Remanent Charge Tester

The MT1018A is a remanent charge tester used for the MC3027 transducer program.

STATUS. The present MT1018A has a bias in the remanent charge readings. This bias appears to add between 1.2 and 3.2 microcoulombs to the final reading.

Available evidence indicates that a bias of this magnitude has existed for at least two years. It was not a problem in the past because the actual remanent charge plus the bias gave a final reading that still met the product specification. A recent shift in remanent charge value of the product caused the sum of actual charge plus the bias to exceed the product specification value in some cases. Subtraction of the bias from the final reading is not possible due to the variable nature of the bias. An Specification Exception Release (SXR) was issued in August 1978, to permit the continued use of the existing tester for acceptance testing of the MC3027 transducer. The Mound Tester Section is presently modifying an on-hand "spare" tester in an effort to minimize the bias. Anticipated completion date for this revised tester is March 1, 1979.

MT1042 - Development Electrothermal Response Tester

The MT1042 is an additional ETR tester required by the Advanced Component Development Section at Mound to serve as a general purpose ETR tester for a number of development activities. It will be similar to the MT1035/MA2016, but will use an HP9825 calculator rather than the HP9830 calculator. It will also have the capability of accepting ETR pulses of various amplitudes and lengths generated from commercial or specially designed pulsers.

STATUS. The decision to copy the basic design of the PT3219 ETR tester was made in late October, 1978. Manpower to fabricate the MT1042 became available in early December, and the tester is now about 50% completed. This new tester will not be an exact copy of PT3219 in that it will incorporate several design improvements over the PT3219.

II. Tester support of the LLL Ceramic Header.

Testing Requirements for LLL Ceramic Header

There are three testing requirements; they are: 1) high-potential voltage testing of the unbridged head between the cermet inserts; 2) resistance measuring of the bridge circuit at three locations; and 3) destructive bridge acceptance testing. The system for the destructive bridge acceptance testing requires equipment to digitize the current and voltage data and uses a two channel oscilloscope for backup data documentation. Drawings of GEND's test equipment are available at Mound.

STATUS. Appropriate Mound Facility personnel visited GEND, Pinellas, Florida on November 14, 1978, to transfer the necessary testing/tester technology to Mound to support LLL ceramic header development and production. Three new Mound testers have been proposed as a result of this visit. They are:

MT1044 - High Potential Tester

The MT1044 is a high-potential tester for the ceramic head on the MAD1049 project. This test will be conducted at 8 kV. In order to detect faster leakage current pulses, a "Magsense" device

has been employed which will detect pulses as short as 10 milliseconds. A testing fixture designed by GEND will be adapted to Mound's use.

STATUS. A preliminary design has been completed, and all major components are on order. Input from the LLL Product Engineer is being sought, and then a design review will be scheduled. The machine shop has begun fabrication of the testing fixture. Delivery of this tester is scheduled for April 1, 1979.

MT1045 - Resistance Tester

The MT1045 is a resistance tester designed to evaluate the ceramic header on the MAD1049 project.

STATUS. The GEND version of this tester was too complex, so it was decided to redesign the tester. Mound personnel are evaluating prints of the GEND testing fixture to determine its practicality for Mound's use. An interim system must be provided by April 1, 1979. Delivery of the MT1045 is scheduled for about October 1, 1979.

MT1046 - Functional Tester

The MT1046 is designed to demonstrate, through destructive testing, the performance characteristics of the bridge element on the ceramic header used in the MAD1049 project. Through the use of a waveform digitizer and a computer, all the pertinent data from an exploding bridgewire can be determined automatically.

STATUS. The GEND functional testing system was too complex for Mound's

purpose, therefore a new system will be designed. Preliminary design will begin in January 1979. An interim testing system is being furnished by Mound's Advanced Component Development Group. The delivery date for the MT1046 is scheduled for about October 1, 1979.

III. Tester support of the Nuclear Component Evaluation Organization

LCTS

The Laboratory Component Test System (LCTS) is a computer based (PDP-11/40) test system which supports surveillance activities at Mound Facility. It relies upon a distributed modular microprocessor system for control and data acquisition. It will have the capability to support old as well as the newest weapon system components and will eventually replace the LCT-1 and LCT-2.

STATUS. The software for the three microprocessor systems was completed, and has successfully passed the initial portion of the preliminary testing phase.

A major problem in the shared Random Access Memory (RAM) buffer memory system has been resolved. Current limiting and terminating resistors were added to the data lines of the data microprocessor and the communications microprocessor. This modification has eliminated cross talk between the data lines and cleaned up some of the "ringing" experienced on the data bus. Previous tests of this shared RAM produced a transmission error rate of approximately two words out of 1/2 million words. After the modifica-

tions, no errors associated with the shared RAM subsystem were experienced.

An abort switch, connected to the non-maskable interrupt (NMI) line of the master microprocessor, is being installed on the front panel of the master microprocessor. This switch can halt the sequence of events of a test run if the operator detects a problem or malfunction in the LCTS system. A system reset switch will also be installed on the same panel.

Enough hardware presently exists in the Weapons Programmable Read-Only Memory (PROM) System to support four weapons test systems. The sequence code for the PROMs, which will be installed in the Weapons PROM boards, is being developed.

The Sandia AC fireset was installed and calibrated. A minor problem was encountered with this fireset. If it is necessary to use the manual fire mode, a four-volt output is developed at the bridgewire interface. We are presently looking into this anomaly. A simplified method for calibrating the current viewing transformer (CVT), used for determining bridgewire current demand, was developed.

On December 7, 1978, the entire Datel 256 Data Acquisition System and its associated ancillary interface was removed from the LCTS and returned to Datel for redesign and reworking. Close coordination with Ron Petrelli and George Bryant of Datel was maintained to assure an expedient and successful turnaround of the subject system.

(NOTE: This system was received at Mound and reinstalled by January 12,

1979).

MA2010 - Interface Process Control

The MA2010 is a microprocessor-based high-speed data-acquisition system. The MA2010 is being used for general studies and experiments.

STATUS. A minor modification was incorporated into the 28-volt fireset. Since this modification was made, six experiments have been run under MA2010 control with no problems encountered.

B. MOUND BUY ITEMS

I. Tester/testing support of products at Unidynamics/Phoenix, Inc.

PT3102 - Bridgewire and Insulation Resistance Tester

The PT3102 is a tester capable of making bridgewire resistance measurements between 0 to 10 ohms, and insulation resistance measurements at 100 and 500 volt levels.

STATUS. An Engineering Qualification (EQ) was successfully completed for the PT3102 tester for the MC3196 detonator program on June 5-9, 1978. A Qualification Evaluation Release (QER) was subsequently received from SLA on October 30, 1978, to release the PT3102 non-destructive tester as acceptable for testing the MC3196 explosive assembly, P/N 316232, at Unidynamics/Phoenix.

Six 3E1 detonator/cable assemblies were successfully tested on the PT3102 bridge-wire resistance and high-potential tester at Unidynamics/Phoenix. A "Letter of Approval" dated December 4, 1978, was received from LASL approving the PT3102 as acceptable for the acceptance testing of 3E1 assemblies at Unidynamics/Phoenix.

PT3237 - Bridgewire and Insulation Resistance Tester

The PT3237 is a tester capable of bridgewire resistance, insulation resistance, and continuity loop measurements. This tester is similar to the PT3102 tester currently at Unidynamics and will be used as a backup or an alternate.

STATUS. A Design Review Meeting was held September 25, 1978, with appropriate Mound personnel. The proposed PT-3237 design concepts were agreeable to all participants of the review meeting. Fabrication of this tester began in October, and is now approximately 75 percent completed. System verification for this tester is scheduled for late January, 1979. The anticipated delivery date is April, 1979. The MC2949A actuator, the MC2848 marker, and the MC3112 torch are the first components scheduled to use this tester.

PT3104 - Low Level-All Fire Tester

The PT3104 is a low-energy destructive tester used on a number of B-items fabricated by Unidynamics/Phoenix.

The PT3104 has the following capabilities: bridgewire resistance measurement; no fire testing at 125 milliamperes to 500 milliamperes levels for pulse durations of 600 milliseconds to 5 minutes; no fire degradation testing at 900 milliamperes or 1 amperes for a duration of 5 minutes; constant current fire testing at 3.5 amperes for 200 milliseconds or 4.9 amperes for 7.5 milliseconds; and capacitor discharge (CDU) fire pulse for the MC3002 program.

STATUS. Operating procedures were completed for the PT3104 to support the 3.5 amperes fire pulse requirement on the 3E1 detonator/cable assembly program. These procedures will be written into Unidynamics/Phoenix Product Processing and Testing Procedures. This test is being considered for Lot 1 only at this time.

Six 3E1 assemblies were successfully tested on the PT3104 low-energy all-fire tester. A "Letter of Approval" dated December 4, 1978, was received from LASL approving the use of the PT3104 as acceptable for the testing of 3E1 assemblies.

UA1596 - Pressure Time Module

The UA1596 is a pressure time module used in conjunction with the PT3104 tester to measure the pressure output of the MC3002 gas generator.

STATUS. This pressure time module was successfully Engineering Qualified (EQ) in February and received a QER in April 1978, in support of testing requirements for the MC3002 program.

There have been no changes to necessitate reporting since the first quarter of CY1977. This pressure time module is not scheduled to support any other product at this time.

PT3240 - Low Level-All Fire Tester

The PT3240 is a low-energy destructive-tester used on a number of B-items fabricated at Unidynamics/Phoenix. The PT3240 is a second generation version of the PT3104 with the following capabilities: bridgewire resistance measurement; no-fire testing; no-fire degradation testing; and constant current fire testing.

STATUS. The initial design of PT3240 began in September, 1978, and a Design Review Meeting was held on November 8, 1978, with appropriate Mound personnel attending. Tester fabrication is now under way. The anticipated completion date for this tester is August, 1979. The MC2949A actuator, the MC2848 marker, the MC3332 indicator, the MC3112 torch, the MC3423 detonator, and the MC3450 detonator are the first components scheduled to use this tester.

PT3105 - High Level-All Fire Tester

The PT3105 is a high-energy all-fire destructive-tester used on a number of B-items fabricated by Unidynamics/Phoenix. The PT3105 is a tester providing a 70-amperes, 2.5-microsecond pulse for all-fire testing. The tester also provides low amplitudes and shorter pulses for no-fire testing.

STATUS. An EQ was successfully completed for the PT3105 for the MC3196

detonator program on June 5-9, 1978, A Qualification Evaluation Release was subsequently received from SLA on October 30, 1978, to release the PT3105 destructive-tester as acceptable for testing the MC3196 explosive assembly, P/N 316232, at Unidynamics/Phoenix.

UA1044 - Test Module

The UA1044 is a test module containing three time-interval counters which can be used in conjunction with PT3104 or PT3105 testers to qualify MC2987 and MC3112 torches and the MC3133 reefing line cutter.

STATUS. This tester is currently in use at Unidynamics/Phoenix, Inc., and supports the MC2987 torch program and the MC3133 reefing line cutter program. The MC3112 torch program will be added to the UA1044 in time to support program testing schedules.

MA2019 - Destructive Tester

The MA2019 is a destructive-test and no-fire tester used to support the 3E1 detonator/cable assembly program at Unidynamics/Phoenix, Inc.

STATUS. The tester was delivered to LASL on September 1, 1978. It was used to destructively-test 30 3E1 assemblies. The tester was subsequently shipped to Unidynamics/Phoenix, and six assemblies were tested on the MA2019 in November in order to verify that the tester was not damaged in transit from LASL. A "Letter of Approval" dated December 4, 1978, was received from LASL approving the use of the MA2019 no-fire and CDU tester as acceptable for the acceptance testing of the 3E1 detonator/

cable assemblies at Unidynamics/Phoenix.

PT3180 - Electrostatic Sensitivity Tester

The PT3180 is a general purpose electrostatic sensitivity tester designed to meet the requirements of the Sandia Electrostatic Sensitivity Testing Specification (SS-302365), i.e., 20 kV, 500 Ω , 600 pF.

STATUS. The PT3180 at Unidynamics/Phoenix was approved by LASL to test the 3E1 detonator/cable assemblies.

PT3219 - Electrothermal Response Tester

The PT3219 electrothermal response tester was delivered to support MC3196 and MC2949A testing at Unidynamics/Phoenix. This ETR tester is capable of remote operation when coupled with the UA1538 calculator controlled data system. This tester utilizes a Motorola M6800 microprocessor system to control all the timing and data transfer activities to the UA1538 system.

STATUS. The PT3219 has been used to ETR test MC3196 detonator assemblies at Unidynamics/Phoenix, Inc. for information only. The results of these tests have been erratic; it is questionable if useful ETR data can be gathered for this product. Similar erratic data were obtained previously from the Sandia-built SE1172 ETR tester in development testing activities for the MC3196 program. A five-day Accuracy and Precision Study, using the Unidynamics ETR simulator, produced a standard deviation in the order of one to two percent. A revised EQ plan will be required to EQ the PT3219 to qualify the

tester to test a variety of products being built at Unidynamics. This EQ is likely to take place in the first quarter of CY1979.

UA1538 - Calculator Controlled Data Acquisition System

The UA1538 is a calculator controlled data acquisition and processing system used in conjunction with the PT3104 and PT3105 testers to digitize and analyze resistance after firing (RAF) data on the MC2987 torch. The UA1538 will also be used in conjunction with the PT3219 tester for electrothermal response testing of the MC2949A actuator and possibly of the MC3196 detonator.

STATUS. An EQ is expected for the PT3219/UA1538 tester combination in support of the MC2949A program. The date for this EQ has not been determined. It is uncertain at this time if the PT3219/UA1538 tester combination will receive an EQ for the MC3196 detonator program.

PT3211 - Spin Tester

The PT3211 provides for electrothermal response testing and destructive testing of the MC2949 actuator under spin environment. The spin environment is accomplished by mounting the component in a Trio Tech spinner.

STATUS. The work activity on this tester remains on hold, but planning sessions to review the tester design and to establish a fabrication timetable are scheduled in the first quarter of CY1979. This tester might be replaced with a copy of the PT3219 ETR tester. The development work on

spin-test fixtures and techniques in support of this system is continuing under Mound contract with SLA, Attention: James R. Kannolt, Org. 2533. A spare spindle and a spare slip ring assembly were ordered to support this system and the PT4034 spin-testing system. The Trio Tech spinner for this testing requirement was received in FY-1977, and is now located at SLA.

II. Tester/testing support of products at Veler, Inc.

UA1595 - Dead Load Test Fixture

The UA1595 is a dead load test fixture, located at Veler, Inc., designed to measure header strength. This fixture supports production of header part numbers 304921, 303115, and 306486.

STATUS. The fixture was delivered to Veler and is in use. Operating procedures were written for use with all headers being tested. Veler had only one load cell which was being used in both the UA0524 and UA1595 stress fixtures. Depending upon which fixture was being used, it was sometimes necessary for Veler to tear down a system. A second load cell was installed in the UA0524 stress fixture eliminating the need to tear down either the UA0524 or the UA1595 test fixture to use the other. The load cells and associated voltmeters in the UA0524 and UA1595 stress fixtures were calibrated on October 9, 1978.

TESTER STATUS REPORT DISTRIBUTION

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