

HW-19A ELECTRONIC START-STOP TELETYPE SIGNAL MIXER 1459

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HW-19A

Trip Report of Mr. Varney R. Wolcott

K

DIR/CSEC

ENG

28 DEC 1959

Wolcott/ENG-132/2354/ab

1. Inclosed is the report of a trip to the U. S. Army Signal School, Fort Monmouth, New Jersey, by Mr. Varney R. Wolcott, COMSEC Equipment Engineering Division (ENG-1), 7-9 Dec 59.
2. The purpose of the trip was to exchange information with Army training personnel related to maintenance training on TSEC/SM-22, Electronic Teletypewriter Multiplex Security Equipment.
3. Actions as recommended in paragraph 7 of the trip report will be taken by ENG.
4. This correspondence may be declassified upon removal of the inclosure.

WILLIAM M. COLE
Acting Chief, Office of
Communications Security Engineering

Incl:

Trip Report

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CRM-322

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CSEC-05

ENG

ENG-011

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ENG-132



Declassified by D. Janosek,
Deputy Associate Director for Policy and Records
on 2/7/2019 and by RFS

17 December 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Department of Specialist Training
U. S. Army Signal School

b. Address

Ft. Monmouth, New Jersey

c. Date of Trip

7 - 9 Dec 59

2. EQUIPMENT:

TSEC/M-25, Electronic Teletypewriter Multiplex Security Equipment.

3. REPRESENTATIVES:

a. NSA

Mr. Varney R. Wolcott EEC-1

b. U. S. Army Signal School

Mr. Donald Eiliery	Department of Specialized Training
Mr. Paul Welch	Curriculum Division
Mr. Hasalwood	Wire Division
Mr. H. Ruffoff	Electronic Cryptographic Equipment
	Repair Branch
LT Hensure	" " "
Mr. MacDonald, MS-22 Instructor	" " "
Mr. Patrick, MS-25	" " "
Mr. Simpson, RT-1	" " "
Mr. Blaziska, MS-6A	" " "
CWO V. Fatchett	Electro-Mechanical Cryptographic
	Equipment Repair Branch
Mr. L. J. Erit	" " "
Mr. E. Morris	" " "

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17 December 1959

4. PURPOSE OF TRIP:

To exchange information with Army training personnel related to maintenance training on KW-22 equipment.

5. CONFERENCE BRIEFS:

a. After introductions Mr. Rugoff and the undersigned toured the classrooms assigned to the Electronic Cryptographic Equipment Repair Branch. This Branch is responsible for maintenance training on TSEC/KO-6A, Electronic Speech Facsimile or Multi-Channel Teletypewriter Security Equipment, TSEC/KW-22, TSEC/KW-26, Electronic Synchronous Teletypewriter Security Equipment, and TSEC/KY-1, Half-Duplex, Wide-Band Speech Security Equipment. Although not a part of the purpose of the trip, there was some discussion on COMSEC equipments, other than the KW-22, which are taught by the Signal School.

b. Before entering a KW-22 class all students receive 25 weeks of training which includes fundamentals, telephone termination equipment, single sideband carrier and radio equipment and the AN/FGG-5 Multiplex. Each KW-22 class normally consists of 12 students.

(1) Mr. MacDonald asked what was being done about the list of corrections to the KW-22 maintenance manual which he had turned over to NSA. It was explained that the list was being evaluated and all valid corrections and suggestions would be included in the next change to the KW-22 maintenance manual KAM-53/TSEC which will be distributed in Jul 60.

(2) Mr. MacDonald stated that the School has only two major problems with their KW-22 training program. The undersigned pointed out that they were both internal Army matters and no action would be taken by NSA.

(a) They do not have and seem to be unable to get spare cables for the equipment drawers.

(b) They have only 24 KAM-53/TSEC maintenance manuals for 48 students. Although they have requested additional manuals, they have not been forthcoming. Mr. Rugoff stated that Col. Buser, Chief, Signal Corps COMSEC Agency, had visited the school recently and was aware of the problem.

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17 December 1959

- (3) School personnel were highly appreciative of the KM-22 written course of instruction furnished to them by NSA. With only slight changes, the course is still being used two years after the last KM-22 course conducted by NSA.
- c. Mr. Kiaschka presented for discussion a troubleshooting procedure for KM-6A equipment which had been worked up by the school. With only a cursory examination the procedure appeared to be superior to that contained in the KM-6A maintenance manual KAM-27/TSEB.
- d. After discussions with personnel in the Electronic Cryptographic Equipment Repair Branch the undersigned was invited to tour the classrooms assigned to the Electro-Mechanical Cryptographic Equipment Repair Branch. This Branch is responsible for maintenance training on TSEC/EM-6B, Co-Line Synchronizer and Mixer, TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer, TSEC/EM-7, Electromechanical Literal Cipher Machine, TSEC/EM-29, Electromechanical Literal Cipher Machine, TSEC/EM-2, Electromechanical Start-Stop Teletypewriter Security Equipment, TSEC/EM-9, Electromechanical Start-Stop Teletypewriter Security Equipment, TSEC/EM-10, Electromechanical One-Time Tape Reader, and AN/FGC-1, Teletypewriter Set 131 B-2, equipment.
- e. Mr. Brit stated that the Army is planning to use AN/FGC-25 Kleinschmidt Teletypewriters with the EM-19A. However, KAM-40/TSEC does not contain modification instructions for operation of EM-19A with teletypewriter AN/FGC-25. Mr. Brit explained that the school has prepared modification instructions for classroom use only, since they had some of the Kleinschmidt teletypewriters.
- f. School personnel made four suggestions which they felt would improve their overall training effort. These suggestions were discussed but no commitments were made on any of them. The suggestions are as follows:
- (1) All COMSEC equipment maintenance manuals should contain a definite statement of ventilation or air conditioning requirements. Mr. Ruffoff explained that the school had considerable damage to KM-6A equipment because they could not justify air conditioning.

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17 December 1959

- (2) Schools should be periodically provided with a compilation of equipment failure reports.
- (3) Schools should receive all printed circuit boards and components which are discarded during the assembly of the equipments. Broken or defective printed circuit boards could be used to give students more practice soldering. Defective components could be used for troubleshooting rather than destroy good components for this purpose.
- (4) There should be meetings between instructors from the three Services and NSA on specific equipments to discuss common training problems and to compare training methods.

6. CONCLUSIONS:

- a. The EW-22 instructors at Ft. Monmouth appeared to be very competent and conscientious in their attitude toward the EW-22.
- b. The ED-6A troubleshooting procedure that is being used at Ft. Monmouth should be obtained from the Signal School and included in the next change to KAM-27/TSEC if it is found to be superior to the procedure now in the manual.
- c. Modification instructions for operation of EW-19A with Kleinschmidt Teletypewriter AM/VOC-25 should be included in KAM-40/TSEC.
- d. The Technical Publications Section has recently begun to give RTU ratings and maximum and minimum equipment operating temperatures in maintenance manuals when known. This information should be sufficient to justify air conditioning if warranted.
- e. Equipment failure reports would not be of too much value to the schools and might even be detrimental since what a maintenance man does to repair an equipment is not always what should have been done. The main purpose of these reports is to assist Project Engineers in studying certain areas of an equipment which might require redesign.
- f. Providing Service Schools with defective printed circuit boards and components is an excellent suggestion. Service Schools must give their students practice in soldering and repairing printed circuit boards so defective or broken boards should be made available to them whenever possible.

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17 December 1959

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- g. Meetings of Service and NSA instructors to discuss specific equipments has some merit and should be discussed by the COMSEC Training Conference.

7. RECOMMENDATIONS:

It is recommended that:

- a. A copy of the troubleshooting procedure on TSEC/KO-6A prepared by the Signal School be obtained and evaluated for inclusion in the next change to KAM-27/TSEC.
- b. Modification instructions for operation of TSEC/HW-19A with Klein-schmidt Teletypewriter AN/FGC-25 be included in the next change to KAM-40/TSEC.
- c. NSA contractors be asked through CSEC-05 to save broken or defective printed circuit boards and components that are discarded during the assembly of COMSEC equipments and that these items be turned over to Service Schools for their use.
- d. The feasibility of meetings between instructors from the three Services and NSA on specific equipments to study common training problems and compare training methods be discussed as an agenda item of the COMSEC Training Conference.

8. ACTION TAKEN ON RECOMMENDATIONS:

A copy of this trip report with a request for necessary action will be furnished ENG-13 and the Executive Secretary of the COMSEC Training Conference by office memorandum. This action will accomplish all recommendations.

Varney R. Wolcott
VARNEY R. WOLCOTT
ENG-132

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17 December 1959

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HW-19A

Trip Report of Mr. Norman A. Stead

DIR/CHEC

ENG

21 DEC 1959
N.A. Stead/ENG-312/60474/dlg

1. Inclosed is the report of a trip to Magnavox Corporation (MGC), Urbana, Illinois, 7 through 9 December 1959, by Mr. Norman A. Stead, Engineering Services Division (ENG-3).
2. The purpose of the trip was to review the Contractor's and the Resident Government Inspector's (RGI) inspection procedures, to assure that adequate Quality Assurance is being maintained on the TSEC/HW-19A program.
3. ENG will take action on recommendations stated in paragraph 7 of this report.

WILLIAM M. COLE
Acting Chief, Office of
Communications Security Engineering

Incl:
Trip Report

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ENG-312

15 December 1979

TRIP REPORT

1. IDENTIFICATION OF TRIP:

- a. Name of Organization
Nagman Corporation (NSC)
- b. Address
Urbana, Illinois
- c. Dates of Trip
7 through 9 December 1979

2. EQUIPMENT:

NSC/NS-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

- a. NSA
Mr. Roman A. Stod, Quality Assurance Representative (QAR),
NSA-3
- b. Signal Corps Inspection Agency
Mr. Stuart Quilley, Resident Government Inspector (RGI)
- c. Nagman Corporation
Mr. G. Wain, Assistant Quality Control Manager

4. PURPOSE OF TRIP:

To review the Contractor's and the Resident Government Inspector's (RGI) inspection procedures, to assure that adequate Quality Assurance is being maintained on the NSC/NS-19A program.

5. COMPLETION STATUS:

a. Marking of EI Current Return

Forty-seven TMC/MS-12A equipments submitted by NRI for government inspection and acceptance have passed all requirements, with the exception of the requirement for marking of the front panel Meter Face Plate. NRI has submitted a Technical Action Request (TAR) for a waiver of this requirement. The NRI will not accept these, or any other equipments submitted with this defect, until he is informed as to NIA's decision on the TAR concerning this requirement.

b. Back Mount Channels and Liners

The NRI completed inspection and acceptance of the final 438 Back Mount Channels and Liners on 4 December 1979.

c. Completion of Equipment

One hundred seventeen equipments are left on this contract for government inspection and acceptance. These equipments are in various production and inspection stages and upon completion, acceptance, and shipment (approximately 1 Feb 80), a total of 511 equipments will have been accepted by the NRI. This will complete the equipment portion of the contract.

6. CONCLUSIONS:

- a. TMC/MS-12A equipments remaining on this contract will not be accepted by the NRI until NIA informs him of the decision on pending TAR, relative to descriptive nomenclature on Meter Face Plate.
- b. The NRI has completed acceptance of all Back Mount Channels and Liners on this contract.
- c. One hundred seventeen equipments are left on the contract for final government inspection and acceptance.

d. The quality of workmanship for the TMS/MS-12A is satisfactory.

7. RECOMMENDATIONS:

It is recommended that:

- a. Immediate action be initiated to notify the Contractor and NRC of NEA's decision on Technical Action Request concerning marking of DC Meter Face Plates.
- b. The OIA schedule a final trip to NRC, as necessary, for the purpose of completing the Quality Assurance activities of this contract.

8. ACTION TAKEN ON RECOMMENDATIONS:

- a. O/M from NRC-3 to NRC-1, Subj: Technical Action Request (TMS/MS-12A), requests action as stated in paragraph 7.a.
- b. O/M from NRC-3 to NRC-312, Subj: Request for Continued Monitoring of TMS/MS-12A Quality Assurance Program, requests action recommended in paragraph 7.b.

Norman A. Stead

NORMAN A. STEAD
Quality Assurance Representative, NRC-312

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HW-19A

V

Trip Report of Mr. Norman A. Stead

15 OCT 1959

DIR/CSHC

ENG

NA Stead/ENG-312/60474/nls

1. Inclosed is the report of a trip to Magnavox Corporation (MFC), Urbana, Illinois, 28 through 30 September 1959, by Mr. Norman A. Stead, Engineering Services Division (ENG-3).

2. The purposes of the trip were to:

a. Review with the Resident Government Inspector, Rack Mount drawings relative to acceptance of the TRSC/HW-19A equipment.

b. Review and maintain surveillance over all aspects of the Resident Government Inspector's Quality Assurance activities relative to inspection and acceptance of TRSC/HW-19A equipment.

3. ENG will take action as recommended in Paragraph 7 of this trip report.

HOWARD AYERS
Chief, Office of
Communications Security Engineering

Incl:
Trip Report

DISSEMINATION:
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CSHC-322
SIGPO
CSHC-05
ENG-01A
ENG-02 ←
ENG-1
ENG-312

TRIP REPORT

8 October 1959

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Magnavox Corporation (MOC)

b. Address

Urbana, Illinois

c. Dates of Trip

28 through 30 September 1959

2. EQUIPMENT:

TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Norman A. Stead, Quality Assurance Representative (QAR), EM-3

b. Signal Corps Inspection Agency

Mr. Edward Quilter, Resident Government Inspector (RGI)

c. Magnavox

Mr. Gene Nelson, Project Engineer

4. PURPOSE OF TRIP:

a. Review with the Resident Government Inspector, Rack Mount drawings relative to acceptance of the TSEC/EM-19A equipment.

b. Review and maintain surveillance over all aspects of the Resident Government Inspector's Quality Assurance activities relative to inspection and acceptance of TSEC/EM-19A equipment.

5. CONFERENCE BRIEFS:

a. TSEC/EM-19A equipment is now being shipped with Rack Mount Channels

and Liners, less trim strips. Drawings for trim strips have been forwarded by MKC to NSA for review and approval. Upon receipt of approval from NSA, MKC will initiate action to supply trim strips for all equipments on this contract.

- b. The RFI informed the QAR, that in September 1959, approximately eight hours operational test time per week had been lost because of teletype equipment failures. Upon notification of this condition, by the QAR, MKC stated that contractor personnel had been performing maintenance on all Government Furnished Equipment as required by the Purchase Description, and that particular attention would be given to this maintenance for the remainder of the contract.
- c. Samples of TSEC/HW-19A equipment, currently in production, were given a visual-mechanical inspection by the QAR. Quality of workmanship was found to be satisfactory.
- d. The RFI is utilizing NSA Standard of Acceptance No. 10B as inspection and testing criteria for final acceptance of the TSEC/HW-19A equipment. Of a total of 661 equipments accepted by the RFI under this criteria, 641 equipments were accepted on first submission; 20 equipments were rejected for minor defects. The 20 rejected equipments were accepted by the RFI on second submission, after correction of defects by MKC. This indicates that an acceptable quality level is being maintained by MKC on the TSEC/HW-19A equipment.
- e. MKC's packaging and the RFI's inspection procedures for overseas shipment of TSEC/HW-19A equipment were reviewed by the QAR. The equipment is adequately packaged and inspected prior to shipment.

6. CONCLUSIONS:

- a. Upon approval of trim strip drawings by NSA, MKC will initiate action to supply trim strips for all equipments.
- b. MKC will institute stricter maintenance procedures on Government Furnished Equipment.
- c. The quality of workmanship for the TSEC/HW-19A is satisfactory.

6. **ENG's packaging and the HII's inspection procedures are acceptable to the QAR.**

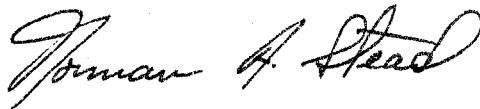
7. **RECOMMENDATION:**

It is recommended that:

The QAR continue to schedule trips to ENG for the purpose of monitoring the quality assurance activities of the contractor and the HII.

8. **ACTION TAKEN ON RECOMMENDATION:**

A trip to the contractor's plant will be scheduled as required.



NORMAN A. STEAD

Quality Assurance Representative, ENG-312

DISTRIBUTION:

CSEC

AS Central File

CRFP-322

SINPO

CSEC-05

ENG-011

ENG-02 ←

ENG-1

ENG-312

31 August 1959

TRIP REPORT

K
HW/19A

1. IDENTIFICATION OF TRIP:

a. Organizations

- (1) The Magnavox Company
- (2) U.S. Naval Avionics Facility (NAFI)

b. Addresses

- (1) 1505 South Main Street, Urgana, Illinois
- (2) 21st and Arlington Streets, Indianapolis 18, Indiana

c. Date of Trip

26 August 1959

2. EQUIPMENT:

TSEC/HW-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Raymond R. Rozanski, Project Engineer

b. Signal Corps

Mr. Edward Qualter, Resident Government Inspector in Charge (RGIC)

c. Magnavox

Mr. Lawrence Anderson, Mechanical Engineer
Mr. Gene Nelson, TSEC/HW-19A Project Engineer

d. NAFI

Mr. Charles E. Graves

4. PURPOSE OF TRIP:

The purposes of this trip were as follows:

- a. Observe operational tests (mechanical operation) of Production Model TSEC/HW-19A rack mount channels and liners with replacement drawer slides.

b. Observe shock tests of the Production Model rack mount channels and liners.

5. CONFERENCE BRIEFS:

a. New Drawings Returned for Completion - On 26 Aug 59 Mr. Rozanski returned three new drawings which Magnavox agreed to complete by adding information to the drawings, checking them and then re-submitting them to the Government.

b. Unfinished Spare Parts Ordered - Samples of six different unique spare parts were inspected and found to be unfinished (not primed and painted). The parts met the specifications of the drawings according to which they were ordered (by the consumer). Mr. Nelson stated that Magnavox would review all spare parts which have been ordered to ascertain if other unfinished parts have been ordered. Magnavox will discuss its findings with the Resident Government Inspector in Charge (RGIC) and include his views in Magnavox's letter to the Government. This letter will contain recommended changes in ordering spare parts.

c. Wire Harness Drawings Require Revisions - Spare parts, consisting of wire harness subassemblies, did not contain lacing, breakouts, and wire ends tinned to the length specified in the drawings for the subassemblies. (This resulted after the Government directed Magnavox to improve workmanship and appearance of the harnesses.) Magnavox was directed to submit to the Government revision requests which will reflect the harnesses as they are being accepted by the Government.

d. Main Wire Harness Leads to be Tinned - Some of the leads were not stripped or tinned in spare parts consisting of main wire harness assemblies. Mr. Rozanski stated that all leads must be stripped and tinned in order for the harnesses to be acceptable to the Government as spare parts.

e. Replacement Drawer Slides Function Satisfactorily - Grant Pulley and Hardware Company (Flushing, Long Island) drawer slides, type 393AG2Y, were used in conjunction with production model rack mount channels and liners to mount a TSEC/HW-19A equipment. With these, the TSEC/HW-19A operated satisfactorily as a relay-rack mounted drawer unit.

f. Trim Strips Must Be Modified to Use Replacement Slides - In order to use the 393AG2Y slides (which replace the 393E2 slides that were discontinued by Grant) Magnavox had to relocate one hole in each of the two trim strips. The relocated holes were required to allow the drawer slide release rods to protrude from the front of the drawer. Magnavox agreed to furnish the Government with exact written costs for furnishing new trim strips (about \$600) and for reworking all of the existing trim strips which Magnavox has on hand. Mr. Nelson promised to mail the costs to the Government by 2 Sep 59. Magnavox's opinion is that new trim strips are less costly.

g. Production Model Rack Mount Channels and Liners Pass Shock Tests -

The NSA and Maguvox representatives hand-carried a set of Production Model rack mount channels and liners to NAFI for shock tests. The channels and liners were attached to a TSEC/IN-19A equipment and subjected to shock tests according to MIL-E-16400. During the tests, the maximum acceleration of the equipment was measured as 60 times that of gravity in one axis and about 35 times that of gravity in the other two axes for hammer blows of the same magnitude. Since there were no excessive structural deformations after the tests, Mr. Szanski told the Maguvox representatives that the channels and liners had passed the shock tests.

6. CONCLUSIONS:

a. Maguvox will recommend changes in some spare parts in order to preclude parts that are unpinned and unpainted.

b. The 393452Y replacement drawer slides operate satisfactorily. However, these slides require different trim strip hole locations for the drawer slide release rods. Maguvox estimates that it will be less costly to obtain new trim strips (for \$600) rather than to drill new holes in the existing trim strips. The NAF machine shop estimates 30 hours (\$240) for drilling holes. At least the same amount of time will be required to refinish the holes (with no guarantee of rust-proofing). The strips are intended to improve the appearance of the TSEC/IN-19A; they perform no vital operational or mechanical function.

c. The Production Model rack mount channels and liners passed shock tests. The tests were performed according to MIL-E-16400. However, the equipment did not receive the same measured acceleration in all three principal axes when subjected to hammer blows of the same magnitude. Acceleration of equipments during shock tests is apparently a function of the frame construction which is used to hold the equipment to the shock-test machine, and it is a function of the direction in which the hammer blows are applied. Therefore, all equipments of a given class are not necessarily subjected to uniform tests when subjected to shocks according to MIL-E-16400.

7. RECOMMENDATIONS:

It is recommended that:

a. After receiving Maguvox's recommendations on changing spare parts orders, CSEK-05 initiate action to notify Army and Navy of changes that should be made in ordering spare parts (see para. 5.b. of this trip report).


b. CSEK-05 obtain concurrence from Army to ship TSEC/IN-19A equipments through November 1959 without trim strips, and then initiate action to furnish the contractor and the NSIC with appropriate instructions for shipping equipments to Army and Navy.

6. ACTIONS TAKEN ON RECOMMENDATIONS:

The recommendations contained in paragraphs 7.a. and 7.b. were coordinated with Mr. Frost, CSEC-05, during a 31 August 1959 telephone conversation. As a follow-up, CSEC-05 has been formally requested to initiate action in a D/P from ENG.

Raymond R. Rozanski
RAYMOND R. ROZANSKI
ENG-121

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ENEC-04
CSEC-05
ENG-01
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ENG-12
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30 July 1979

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Magnum Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

14 through 17 July 1979

2. EQUIPMENT:

TRUC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. IDA

Mr. Norman A. Stand, Quality Assurance Representative (QAR), EEC-3

b. Signal Corps Inspection Agency

Mr. William Bohart, Resident Government Inspector (RGI)

c. Magnum Corporation

Mr. Harold Kappel, Quality Control Manager

4. PURPOSE OF TRIP:

The purposes of the trip were to:

- a. Review and maintain surveillance over all aspects of the Resident Government Inspector's (RGI) Quality Assurance activities relative to the TRUC/EM-19A equipment.

- b. Assist the RGI during final evaluation of TSEC/EM-19A equipment submitted by the Contractor.
- c. Review the results of Magnavox Corporation's corrective action concerning the cabling and lacing problem of the TSEC/EM-19A.

5. CONFERENCE BRIEFS:

- a. A meeting was held with the RGI to review the status of the TSEC/EM-19A. Three TSEC/EM-19A Preproduction Model equipments have been returned to Magnavox from NSA for rework. The following are major Quality Control defects found on the equipments:

- (1) Corrosion on all three equipments.
- (2) Line-break restorer switch broken.
- (3) Bolts missing which sheared off during shock and vibration testing.
- (4) Broken terminal plug in rear of one equipment.

The RGI was instructed to inform Magnavox that all discrepancies on the equipment must be corrected in accordance with Standard of Acceptance No. 10B, prior to government approval. A review of Magnavox's corrective action relative to the cabling and lacing problem was discussed. This discrepancy resulted in malfunction of equipment by users in the field. The information was made known to the NSC-3 Q&A by the NSC-1 Project Engineer. Magnavox has satisfactorily corrected this problem by lacing loose shielded wires to an adjacent cable. The RGI inspection records for the TSEC/EM-19A equipment were reviewed. From these records it was ascertained that the quality of the equipment was satisfactory and that Magnavox was utilizing tightened inspection procedures. The RGI has accepted 120 equipments during June and July 1959. Eighty-five percent of these equipments was accepted on first submission. The inspection results on 120 equipments approved by the RGI will be recorded on the NSC-3 "Equipment Quality Status Chart" maintained.

- b. The NSC-3 Q&A assisted the RGI in performing operational tests on submitted equipments. The equipments conformed to NSA Standard of Acceptance No. 10B. Approximately 310 TSEC/EM-19A equipments have been accepted by the RGI to date.
- c. A "Quality Assurance and Control Chart" for the TSEC/EM-19A contract was submitted by Magnavox. Upon review, it was resolved that this did not adequately reflect NSA's Quality Assurance requirements for inspection stations, operational test stations, etc. Magnavox will revise the chart to comply with NSA requirements.

6. CONCLUSIONS:

- a. The three TSEC/EM-19A Preproduction Model equipments returned for rework will be inspected by the RCI in accordance with NSA Standard of Acceptance No. 10B.
- b. Loose shielded wires will be laced to a cable to prevent "shorting" on the TSEC/EM-19A equipment.
- c. The RCI has accepted 120 equipments in June and July 1959.
- d. Approximately 310 TSEC/EM-19A equipments have been accepted by the RCI to date.
- e. Magnox will revise the "Inspection Procedure" flow chart and submit to the ENG-3 QIR for review and comments on next scheduled trip.

7. RECOMMENDATION:

It is recommended that:

ENG-3 QIR continue to periodically visit the Contractor's plant to maintain close liaison with the RCI and Magnox. This is an ENG action.

8. ACTION TAKEN ON RECOMMENDATION:

Travel arrangements to Magnox will be accomplished by the ENG-3 QIR for August 1959.

Norman A. Stead
NORMAN A. STEAD
ENG-3 QIR

DISTRIBUTION:

OSHC
AS Control File
OSCP-302
OSCC-05
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ENG-011
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ENG-312

TRIP REPORT

27 July 1959

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Burroughs Corporation

b. Address

Great Valley Plant
Pott, Pennsylvania

c. Dates of Trip

21-23 July 1959

2. EQUIPMENT:

a. TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

b. TSEC/EM-10, Electromechanical One-Time Tape Reader

c. TF-7/FG, Teletypewriter

d. EMX-1/TSEC, Automatic Shunt Device

3. REPRESENTATIVES:

a. NSA

Mr. J. A. Neale, EMT-1

Mr. Stephens, DCC

Lt. Jensen, Resident Representative, EECR-3

Mr. W. Raper, TCOM

b. Burroughs Corporation

Mr. Gluck

4. PURPOSE OF TRIP:

The purpose of this trip was to install a TSEC/EM-19A and TSEC/EM-10 equipment, terminal installation, at the Burroughs Corporation, Great Valley Plant. This installation was made, at the request of DCC, to complete a communications link between the Burroughs Corporation and EECR-3 at Ft. Meade, Maryland. A communication link between these two points was established in June 1959 and at that time an EMI representative made a EM-19 and EM-10 terminal installation at the Great Valley Plant.

However, because of security complications and a change of the communications link from a TRK service line to a private service line, DOC requested that an EMI representative return to the Great Valley Plant to make a re-installation of the terminal equipment. The terminal equipment was changed from an EM-19 arrangement to an EM-19A arrangement. The changing of the equipments was made because the EM-19A equipment will provide a more reliable communications link than the EM-19 equipment.

5. CONFERENCE BRIEFS:

- a. On 21 July 1959 Mr. Keala, EMI-111, and Mr. Stephens, DOC, delivered an EM-19A equipment, Serial No. 256, and an EMK-1/TEEC (Automatic Shunt Device), Serial No. 3, to the Burroughs Corporation. A TR-7/FG Teletype, provided by DCOM, was already at Burroughs.
- b. Mr. Keala and Mr. Paper made the necessary modifications and inter-connections to the TR-7/FG, the EM-19A (modified with the EMK-1/TEEC) and the EM-10 equipments. At 1700 hours on 21 July the terminal equipment was ready for connection to the signal line, furnished by the Bell Telephone Company.
- c. The signal line current was measured and only 20 milliamperes were available. Mr. Keala contacted the Wire Chief at the local teletype test board and informed him that the signal line assigned to the Burroughs Corporation should be a 60 milliampere line and requested that he check the line current. The Wire Chief said that he would have the line checked on the following day, 22 July 1959. The Wire Chief called at 0900 on 22 July, and said that he had measured 6.9K ohms resistance across the line and requested that the EM-19A be removed from the line to determine if it was causing the high resistance. Removal of the EM-19A from the line only reduced the resistance to 6.6K ohms. At about 1635 hours the Telephone Company cleared the lines of the high resistance by paralleling another pair of wires with the signal line.
- d. Communication was established with Ft. Meade at 1640 hours on 22 July 1959. Ft. Meade could transmit from its monitor printer in their Facilities Control Office, but could not transmit from the operators stations in the Traffic Room. At 1800 the trouble was cleared at Ft. Meade and both S/S send and receive communications were established.
- e. Difficulty was encountered with the EM-19A when it switched from the send to the receive condition in the automatic mode of operation. It takes approximately three seconds for the EM-19A to automatically switch from send to receive. If a station transmits before the

other station has automatically switched from the send condition to the receive condition the HW-10 at the receiving station will go out of set. This automatic switching trouble was eliminated by requesting that Ft. Meade not transmit within three seconds after they had received the last character of a message.

6. CONCLUSIONS:

- a. The installation of a TREC/HW-19A (modified with an RMX-1/ESHC) terminal arrangement at the Burroughs Corporation, Great Valley Plant was successfully accomplished. The major difficulty in making the installation was caused by a high resistance (6.9K ohms) across the signal line furnished by the Bell Telephone Company. After this high resistance was cleared communications were satisfactorily established between the Burroughs Corporation's Great Valley Plant and ENGR-3 at Ft. Meade, Maryland. The establishing of satisfactory communications should fulfill DOC's request for ENR's assistance on this task.
- b. Some difficulty was encountered due to the time required for the HW-19A to switch automatically from the send to the receive condition. This difficulty was eliminated by requesting that Ft. Meade not transmit within three seconds after receiving the last character of a message.

7. RECOMMENDATIONS:

It is recommended that the HW-19A Project Engineer review the possibility of reducing the amount of time that it takes for the HW-19A to automatically switch from send to receive condition. This could possibly be accomplished by changing the RC time constant established by C41-4, C94-4 and R163-4 in the HW-19A.

8. ACTION TAKEN ON RECOMMENDATION:

An O/M has been prepared for signature of Chief, ENR requesting the HW-19A Project Engineer to accomplish the recommendation contained in paragraph 7. above.

W. L. Reeves
for JAMES A. KEELS
ENR-111

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TRIP REPORT

2 July 1959

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Naval Avionics Facility Indianapolis (NAFI)

b. Address

Indianapolis, Indiana

c. Dates of Trip

30 June to 2 July 1959

2. EQUIPMENT:

TSEC/IM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Don R. Moore, ENG-111

b. NAFI

Mr. Charles Graves, Branch Chief
Mr. Harry Stone, Project Engineer

4. PURPOSE OF TRIP:

The purpose of this trip were:

- a. To install a TSEC/IM-19A and associated teletypewriter equipment in a manner suitable for operationally testing Sigma relays in the TSEC/IM-19A. The relays are being tested to determine remedial measures to reduce relay failures due to high humidity.
- b. To brief NAFI personnel on the operation and functions of the IM-19A system in regards to a Test Plan for testing the Sigma relays after exposure to humidity.

5. CONFERENCE RESULTS:

- a. Upon arriving at NAFI, the undersigned met with Mr. Stone, the NAFI Project Engineer. Mr. Stone said that NAFI had not received, from NSA, the Test Plan for conducting the humidity

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tests of the Sigma relays. He continued that the TT-7/FG teletypewriter (associated teletypewriter for the HM-19A) was received, from NSA, in a very poor condition and it had a printer range of only 10 points (the normal range is 70 points). Also, that soap and water had to be used to clean the exterior of the TT-7/FG to remove a heavy layer of dirt.

- b. NAFI personnel were queried to determine if the equipment had been damaged in shipment. NAFI personnel said that to their knowledge the equipment was not damaged during shipment as the shipping crate was not damaged and the equipment had been securely packed.
- c. The undersigned made mechanical adjustments and repairs on the TT-7/FG printer until the printer operated with a range of 60 points. This was the maximum range obtainable on the printer.
- d. The Test Plan for the humidity test was reviewed with Mr. Stone. (This copy of the Test Plan was hand-carried, by the undersigned, to NAFI for reference in making the HM-19A installation.) The test installation was set-up in accordance with the Appendix of the Test Plan. However, the installation was unsuccessful because the TT-7/FG table contained numerous wiring changes, evidently made to it prior to shipment to NAFI. It was necessary to rewire the TT-7/FG table in accordance with the wiring diagrams in the TM-11-2216 (Repair and Maintenance Manual for TT-7/FG). After rewiring the table the installation for conducting the relay tests was completed without further difficulty. Some of the discrepancies, that were noted and repaired on the TT-7/FG teletypewriter, are listed as follows:

- (1) Page Printer window missing.
- (2) Signal Bell Spring missing.
- (3) Carriage Return maladjusted.
- (4) Ribbon Mechanism on Typing Carriage out of adjustment.
- (5) Reperforator operating improperly. Components in Reperforator needed adjusting and tightening.
- (6) Tape Back-up Lever on Reperforator missing.
- (7) Selector Vanes on Printer out of adjustment.
- (8) Armature Locking Wedge on Printer maladjusted.

6. CONCLUSIONS:

- a. The major installation trouble was due to the poor condition of the TT-7/FG teletypewriter. The trouble was remedied by making adjustments to the printer and by restoring the wiring of the TT-7/FG in

accordance with TI-11-2216. All the other teletypewriter equipment, sent in connection with the TSEC/WM-19A Sigma relay tests, were in satisfactory condition.

- b. The TI-7/7G teletypewriter at NAFI, due to its poor condition, will be a continuous source of trouble during testing operations.
- c. NAFI personnel were briefed on the operation of the WM-19A equipment, and the test installation as outlined in the Test Plan, was satisfactorily installed.

7. RECOMMENDATIONS:

- a. That another TI-7/7G teletypewriter be sent to NAFI to replace the present one there.
- b. Prior to equipments being shipped as Government Furnished Equipment (GFE) that it be inspected by ENG-1 personnel to assure that it is satisfactory in operation and condition.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

The recommendations in paragraph 7. of this trip report have been coordinated with the TSEC/WM-19A Project Engineer.

William L. Reeves for
DON H. MOORE
ENG-111

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23 June 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Magnavox Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

8 through 12 June 1959

2. EQUIPMENT:

TSRU/EN-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Norman A. Stead, Contracting Officer's Technical Representative
(COTR), ENG-3

Mr. Raymond Ronanski, Project Engineer, ENG-1

Mr. William M. Cole, Jr., Deputy Chief, ENG-A

b. Signal Corps Inspection Agency

Mr. Edward Qualter, Resident Government Inspector (RGI)

c. Magnavox Corporation

Mr. Harold Ruppel, Quality Control Manager

4. PURPOSE OF TRIP:

The purposes of the trip were:

- a. To maintain surveillance over all aspects of the Resident Government Inspector's (RGI) Quality Assurance activities.
- b. To resolve any Quality Assurance problems between the RGI and the Contractor.
- c. To coordinate Amendment No. 1 to NSA Standard of Acceptance No. 108 with the RGI.

Messrs. Cole's and Rosenzweig's portion of this trip will be covered under a separate trip report.

5. CONFERENCE RESULTS:

- a. A review of the RGI's inspection records, operational and transport testing procedures was made during this trip. The following is a summary of the review:

(1) Inspection Records:

Inspection records for the TSEC/EM-19A equipment were reviewed and from these records it was ascertained that the quality of EM-19A equipment is satisfactory. Approximately 190 TSEC/EM-19A equipments have been accepted by the RGI.

(2) Re-evaluation of Wiring Harness:

Cabling harnesses and lacing were re-evaluated by the EHS-3 OTR. On a previous trip Mr. Stead told the RGI and Magnavox inspection personnel that the ferrules at the end of the shielded cables were shorting against socket terminals. Magnavox was requested to tie all the loose shielded wiring to the cabling harness, to eliminate this condition. It was noted that Magnavox has not complied with this request. Therefore, the matter was once again brought to the attention of the RGI and Magnavox for corrective action. The EHS-3 OTR was assured that corrective action would be taken and a tighter inspection would be instituted. HIS personnel were informed that if corrective action was not taken, the equipment would be rejected by the RGI.

(3) Operational and Tempest Test Procedures:

ENG-3 CDR performed a surveillance of Magnavox's test procedures to observe if Magnavox personnel were still experiencing difficulty in obtaining correct voltage and waveform measurements. Magnavox has re-trained their test personnel and this difficulty has been eliminated. Operational and tempest testing were performed in accordance with Standard of Acceptance No. 10B with satisfactory results.

- b. Forty-five to 66 cycle operational test previously set up for one unit out of five was modified by the ENG-1 Project Engineer during this trip. Magnavox will operationally test one unit out of every hundred or one a month, whichever occurs first. This has been coordinated with the RCI.

c. Voltage and Waveform Discrepancies:

Twenty-eight TSEC/M-19A's are being withheld from submission to the RCI by Magnavox, as waveform and voltage measurements do not meet test specifications. The RCI informed Magnavox that all equipments not conforming to Standard of Acceptance No. 10B should not be submitted for government acceptance. Mr. Rosanski, ENG-1 Project Engineer, investigated the problems relative to the 25 M-19's during this visit and informed Magnavox to submit a waiver request for test specification changes that are necessary.

- d. Amendment No. 1 to Standard of Acceptance No. 10B was coordinated with the RCI and Magnavox personnel.

6. CONCLUSIONS:

- a. As a result of the review of the RCI's inspection and testing records, it appears that the quality of the 190 TSEC/M-19A equipments which were accepted and shipped by the RCI is satisfactory.
- b. Magnavox will correct wiring harness and labeling discrepancies and the RCI will institute a tighter inspection.
- c. Operational and tempest testing were performed in accordance with Standard of Acceptance No. 10B. No difficulties were encountered and results were satisfactory.

16 June 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Names of Organizations

U. S. Naval Avionics Facility (NAVI)

The Magnavox Company

b. Addresses

21st and Arlington Streets
Indianapolis 18, Indiana

1905 South Main Street
Urbana, Illinois

c. Dates of Trip

10 - 11 June 1959

2. EQUIPMENT:

TRAC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

NSA

Mr. William H. Cole, Jr., EMD-A

Mr. Raymond S. A. Rosenzki, EMD Contracting Officer's Technical
Representative (COTR)

Mr. Norman A. Stead, EMD Contracting Officer's Technical Representative

NAVI

Mr. Charles E. Graves, D-440

Mr. Edward L. Fusell, D-440

Mr. Harry R. Stone, D-440

Signal Corps

Mr. Edward Qualter, Resident Government Inspector in Charge

Declassified by D. Janosek,
Deputy Associate Director for Policy and Records
on 2/7/2011 and by RFJ

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Magnavox

Mr. J. W. Anderson, General Manager
Mr. L. Anderson, Engineer
Mr. J. Dinond, Chief Engineer
Mr. Dinuit, Production Control
Mr. H. Hest, Engineering Services
Mr. H. Ruppie, Quality Assurance

b. PURPOSES OF TRIP:

The purposes of this trip were as follows:

- a. At NAFI, supply Magnavox with all available information on the Sigma relay contact corrosion problem and to discuss plans for testing of the rack mount adapter for Magnavox.
- b. To determine Magnavox's proposed schedule for producing TNSU/EM-19A rack mount channels and liners and to review the current status of other work.

3. CONFERENCE BRIEFS:

a. NAFI Visit

- (1) On 10 Jun 59, the NSA representatives visited NAFI concurrently with Messrs. L. Anderson and H. Ruppie, of Magnavox. Magnavox was given all available information regarding efforts to overcome the Sigma relay contact corrosion problem in EM-19A Preproduction Model equipments. This included a description of efforts by Sigma Instruments Incorporated.
- (2) Preliminary Tests of Relay Humidity Seal - In NAFI's opinion, the rubber boots for the Sigma relay will not provide an effective humidity seal, but the screw-on dust cover will. This was based on air pressure and vacuum tests during which the boots would not maintain pressure or vacuum differentials. The screw-on dust cover maintained 12 pounds per square inch pressure and vacuum after the Teflon gasket was replaced by Dow-Corning High Vacuum grease.
- (3) Actions Agreed Upon at NAFI
 - (a) NAFI will complete the originally planned chemical tests and the humidity tests on the protection afforded by the rubber boot and screw-on dust cover. The Teflon gasket for the screw-on dust cover will be replaced by a gasket composed of more suitable material if practical.

- (b) NSA will follow up the shipment of teletypewriter equipments which were shipped 4 Jun 59 and scheduled to reach NAFI 12 Jun 59.
- (c) NAFI will construct a test jig for EW-12A shock tests after NAFI receives an equipment.
- (d) A Magnavox representative will hand carry a set of Magnavox model-shop rack mounts to NAFI no later than 17 Jun 59 for fabrication of the test jig.
- (e) A Magnavox representative will observe shock tests of their model-shop rack mounts.
- (f) At a later date (approximately four weeks) an NSA representative will observe tests of Production Model rack mounts.

b. Magnavox Visit

- (1) The NSA, Signal Corps and Magnavox representatives held a conference on 11 Jun 59. The essentials of this meeting are recorded below.
- (2) TSRC/EW-12A Rack Mount Production - Magnavox proposes the following schedule for production of rack mount channels and liners:
 - (a) On 22 Jun 59, NAFI will check test Magnavox's model-shop rack mounts.
 - (b) On 22 Jul 59, NSA will observe shock tests of production rack mounts.
 - (c) By 31 Aug 59, rack mounts will be available for 50% units (i.e., for all units produced by 31 Aug 59). All equipments will be shipped with rack mounts after this date.
- (3) Relay Corrosion Deficiency - Within two days, NSA will give Magnavox instructions as to what actions to take relative to elimination of the Signal relay contact corrosion.
- (4) Dust Cover Rust - Magnavox received the three EW-12A Preproduction Model equipments which NSA returned for correction of corrosion conditions. Magnavox stated that it was not practical to eliminate completely the conditions which cause rust on the dust-cover-door hinges and weldments. NSA directed Magnavox to submit possible corrective measures for NSA approval.

Further, Magnavox was directed to submit additional specific proof that the cause of the dust cover rust blisters was eliminated. Also, Mr. Rozanski requested that paint be applied to the heads of the screws which secure the dust cover latch assembly. Finally, as a result of Mr. Rozanski's examination of Magnavox records and material handling, NSA is satisfied that the other corrosion problems (except for the Sigma relay) were abated or acceptably minimized.

- (5) TOP SECRET Classification - According to Magnavox, the Armed Forces Courier Service telephoned Magnavox and requested Magnavox to come to Chicago and pick up three boxes classified TOP SECRET. The boxes contained three HW-19A equipments (paragraph 5.2.(4) above). Mr. Rozanski stated that the classification was undoubtedly an error; to his knowledge they were unclassified. Mr. Rozanski telephoned Mr. Sood, CSRC-05, and requested that action be taken to supply Magnavox with a clarifying statement regarding the TOP SECRET classification (according to Mr. Sood, Mr. Bagle of SIGPO supplied the statement on the morning of 12 Jun 59).
- (6) YBHC/HW-19A Equipment to NAFI - Magnavox agreed to hand carry a HW-19A equipment (including Magnavox's motel-shop channels and liners) to NAFI on 12 Jun 59 for NAFI's use in fabricating a test fixture (paragraph 5.2.(3)(c)).
- (7) Item 13 of Contract R449-170-02-2465 - Magnavox was told that Item 13 (lists of latest applicable specifications and drawings) had been returned as unsatisfactory because clarifying statements were omitted and because a specification review had obviously not been conducted according to paragraph 5.2.1.3 of Purchase Description NSA No. 10. Such a review is necessary to assure minimum quality components in any future production of equipments. Magnavox claimed that the statements and review were omitted as a result of the interpretation of paragraph 5.2.1.3 which was given to Magnavox by Mr. Zigler (former NSA representative on this program). Under the circumstances, Magnavox was told that final instructions for Item 13 would be forthcoming after Mr. Rozanski's return to NSA.
- (8) Variable Frequency Tests - Messrs. Cole and Rozanski read an advanced copy of a Magnavox letter to SIGPO. In the letter, Magnavox proposed a different test rate for the tests conducted with 45 and 66 cycle per second power sources. The suggested test rate was one per month or one per 100 units, whichever occurs first. This letter is intended to formalize a previous agreement. At NSA's request, the Resident Government Inspector and Magnavox agreed to immediately use the suggested test rate.

(9) Mr. Anderson indicated that Magnavox would probably be interested in increasing production of the EM-19A to 300 per month beginning in September 1959. This would be to absorb trained technicians being released from another NSA contract. It was said that this possibility would be considered and its acceptability would depend on whether or not all deficiencies had been eliminated, whether or not it would cost the government additional money, and whether or not the Users could absorb them at the higher rate.

6. CONCLUSIONS:

- a. Sigm Instruments Incorporated is voluntarily working on the most desirable answer to the relay contact corrosion problem (i.e., contact materials that will not corrode so easily). If Sigm's quest is successful, the contacts in existing Sigm relays could be replaced during routine maintenance, with maintenance expenditures. Further, equipments would not have to be modified nor would additional components have to be stocked.
- b. NAFI is testing the less desirable answers; that is, a relay with unglazed rubber boot and a relay with a modified dust cover. Of the two, the boot is more desirable from logistics, cost and time viewpoints. Adaptation of either of these methods of eliminating contact corrosion will result in added cost. NAFI's tests should be completed by 30 Jun 59. NAFI's opinion is that the boot will not be successful but the screw-on dust cover will. If the screw-on dust cover is used, then costs and delivery dates will have to be determined.
- c. Completion of scheduled humidity and shock tests at NAFI will depend on NAFI receiving the shipment of teletypewriter equipments (shipped from HHC on 4 Jun 59) by 17 Jun 59.
- d. Magnavox presented their schedule for testing and producing rack mount channels and liners. According to this schedule NSA will observe shock tests of Production Model channels and liners by 27 Jul 59. After this NSA will probably either unconditionally accept or reject the Preproduction Model equipments. Magnavox is scheduled to produce channels and liners in a quantity sufficient for all equipments which are produced by 31 Aug 59 (i.e., for 563 equipments).
- e. Magnavox should be given shipping instructions for the month of July 1959. In this manner pressure will be maintained on Magnavox to hasten elimination of deficiencies and initiate production of rack mount channels and liners without interrupting equipment deliveries.

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- f. Maguvox was told that within ten days they would be instructed which line of action to pursue regarding the Sigma relay conversion deficiency in the HW-19A Production Model equipment.
- g. Maguvox is interested in the possibility of increasing the production rate to 500 per month beginning in September 1959.

7. RECOMMENDATIONS:

It is recommended that:

- a. ENS inform AFM, Inc., 252 Hawthorne Ave., Yonkers, N. Y., that preliminary tests of his rubber boot indicate that the boot will probably not function successfully as a humidity seal. *See m/r dtd 16 June 59*
- b. ENS contact Mr. Billings, District Sales Manager, Sigma Instruments, Inc., South Braintree 05, Massachusetts, telephone Victor 3-5000 to obtain costs and delivery for Sigma relays (type 72A04-16018-NEP with special screw-on dust cover) in quantities of 500, 1,000, 2,000 and 3,000. These should be obtained by 30 Jun 59. *See m/r 14 23 June 59*
- c. ENS determine the specific location of the teletypewriter equipments which were shipped to NAFI, Rlat and Arlington Sts., Indianapolis 18, Indiana, Attn: Mr. C. H. Graves, D-440, from ENS on 4 Jun 59. If the equipments are not yet at NAFI, use every means available to have the shipment at NAFI by 17 Jun 59. *Left NSA 16 June 59*
- d. By 17 Jun 59, NSA (ENS) obtain the concurrence of the Department of Army to ship the scheduled July and August 1959 production of HW-19A equipments to Army without rack mounts and with the presently used Sigma relay. *See MSG 14 16 June 59*
- e. After NSA receives Army's concurrence (paragraph 7.d. above) CSEC-05 initiate the necessary action to give the Maguvox Company, Urbana, Illinois, instructions to ship HW-19A equipments through July 1959 according to schedule under Contract DA43-170-ac-2265.
- f. That CSEC-05 determine if it would be advisable from the User and contractual viewpoints to accelerate the HW-19A production rate but that no authorization be given for the acceleration until a satisfactory rack mount adapter is in production.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

- a. Regarding the recommendation contained in paragraph 7.a., Mr. Rozanski, ENS, informed the vendor of preliminary test results on the rubber boot. The vendor has volunteered to conduct his own tests, redesign the boot and supply samples to NAFI at no additional cost to the government.

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- b. NSI has initiated action on recommendations contained in paragraphs 7.b. and c. above.
- c. CSEC-05 has agreed to take action on the recommendations contained in paragraphs 7.d., e., and f.

WILLIAM H. COLE
NSC-A

Raymond R. A. Dolan
RAYMOND R. A. DOLAN
NSC-121

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TRIP REPORT

15 June 1959

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Burroughs Corporation

b. Address

Great Valley Plant
Paoli, Pennsylvania

c. Dates of Trip

11-12 June 1959

2. EQUIPMENT:

a. TSEC/EM-19, Electronic Start-Stop Teletypewriter Signal Mixer

b. TSEC/EM-10, Electro-mechanical One-Time Tape Reader

c. EM-1/TSEC, Automatic Shut Device

3. REPRESENTATIVES:

a. NSA

Mr. Robert Bernofsky, EM-1
Lt. Jansen, EM-3

b. Burroughs Corporation

Mr. Gluck

c. Bell Telephone Company of Pennsylvania

Mr. Paul Stafford

4. PURPOSE OF TRIP:

The purpose of this trip was to check the TSEC/EM-19 and TSEC/EM-10 terminal installation at the Burroughs Corporation, Paoli, Pennsylvania, in order to determine and correct the cause of the trouble being experienced on the communications link between Burroughs and EM-3, Fort George G. Meade, Maryland.

Declassified by D. Janosek,
Deputy Associate Director for Policy and Records

on 2/7/2011 and by RFB

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5. CONFORMANCE BRIEFS:

- a. The problems being encountered with the terminal equipments (EM-19/EM-10) were discussed with Mr. Stafford and Lt. Jenson. They stated that the circuit to Fort Meade was satisfactory for sending but unsatisfactory for receiving. Also, that the terminal equipment (EM-19/EM-10) was "hot" to ground by a potential of about 60 VAC. Mr. Stafford explained that normally the Bell Telephone Company provides a 75 VDC, 20 ma, signal line to a TTX teletypewriter, which employs a holding type coil magnet shunted with a 5K resistor. He said this is the standard operating procedure for a TTX circuit. However, with the insertion of the EM-19 equipment into the line he had to modify the standard operating procedure so as to supply 60 ma to the EM-19 equipment (the EM-19 was designed to operate on a 60 ma line current). It was also necessary to make wiring modifications to the TTX printer so it would operate as the local printer for the EM-19 equipment.
- b. The EM-19 and associated terminal equipments were examined to determine the source of the troubles being encountered. The major source of trouble was found to be caused by the 5K resistor shunting the holding magnets of the local teletypewriter. This trouble was corrected by removing the 5K resistor and replacing it with a 1.5K resistor. The teletypewriter chassis was grounded to eliminate the spurious A.C. potential.
- c. Mr. Stafford said that he plans to install, in about two weeks, a 12SC3 repeater set and a switch for bypassing the EM-19 equipment in order to facilitate the TTX requirements for the circuit. This is necessary, he said, to provide reliable TTX service for the Burroughs Corporation. Mr. Stafford stated that he had received no coordination from NSA people regarding the EM-19 installation and he feels that prior planning and discussion would have afforded better installation results.
- d. The EM-1/TEEC, Automatic Shunt Device, was not installed on the EM-19 at this time. The repair and line testing of the terminal equipment was not completed until the plant's closing time on Friday, 12 June 1979, and the plant is not open during the weekend. It would have required approximately one day to install and check out the shunt device. It was considered more practical to return to Paoli at a later date to install the EM-1.

6. CONCLUSIONS:

- a. The major installation trouble was caused by the holding magnet, shunted by a 5K resistor in the associated teletypewriter used with the EM-19 equipment. The trouble was remedied by replacing the 5K resistor with a 1.5K resistor.

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- b. The problems involved in this installation and in the proposed changes in the installation should be discussed with the Telephone Company. Mr. Stafford is desirous of discussing, with NSA personnel, the circuit changes he plans on the present NI-19 installation.

7. RECOMMENDATIONS:

- a. That DGC take action to confer with Bell Telephone Company representatives to discuss the installation requirements for the NI-19 equipment and to review installation circuit changes planned by the Bell Telephone Company. Both of these items may adversely affect the security of the NI-19/NI-10 equipment.
- b. That after the final method of installation for the NI-19/NI-10 is determined that ESI send a representative to the Burroughs Corporation to install the ESI-1/ESB on the NI-19 equipment.
- c. In view of the difficulties being encountered on this particular installation it appears that the use of a ESB/NI-19A in place of a ESB/NI-19 would result in far less installation problems and produce a better communication link. It is recommended that DGC consider using a ESB/NI-19A equipment in place of the NI-19.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

- a. The recommendations contained in paragraphs 7.a. and 7.c. of this report have been discussed with Mr. Stevens, of DGC, during a telephone conversation. A D/T is being forwarded, to DGC, to confirm these requests.
- b. ESI is taking action on the recommendation contained in paragraph 7.b. of this report.

Robert Bersofsky

ROBERT BERSOFSKY
ESI-111

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19 May 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Automatic and Precision Manufacturing Company, Inc. (APM Inc.)

b. Address

252 Hawthorne Avenue
Yonkers, New York

c. Date of Trip

13 May 1959

2. EQUIPMENT:

TSEC/HM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NRA

Mr. Raymond E. A. Rozanski, Project Engineer, ESK-121

b. U. S. Naval Avionics Facility, Indianapolis, Indiana (NAFI)

Mr. Charles E. Graves, Section Chief, Test and Evaluation

c. APM Inc.

Mr. Milton Morse, Chief Engineer
Miss Niva Solins, Sales Manager

4. PURPOSE OF TRIP:

Mr. Rozanski made the trip in order to:

- a. Brief a NAFI representative on the TSEC/HM-19A Sigma Relay deficiency (corrosion) and arrange to have NAFI conduct tests on a special moisture and humidity seal (boot) after the boot has been obtained from the vendor.
- b. Supply the vendor with a sample of the relay and then determine the cost for 10 sample boots.

5. CONFERENCE BRIEFS:

- a. Prior to leaving HSS for Automatic and Precision Manufacturing Co., Inc. (APM Inc.) Mr. Rozanski briefed Mr. Graves on the THEC/AM-19A Sigma Relay corrosion problem and the related tests which NAFI will conduct under Project Number AVFI-NSA-SMI-11000. Mr. Graves stated that NAFI will conduct prompt, thorough tests upon receipt of the parts to be tested.
- b. At APM Inc., a Sigma Relay was given to Mr. Morse. Mr. Morse was asked if APM Inc. could furnish a moisture and humidity seal (boot) for the relay that would meet the following minimum specifications:
- (1) It must be easily applied and removed without the use of any tools or other special items, except the human hand.
 - (2) The seal must not be permanent in nature. That is, no damage should result to the seal or to the relay when the seal is applied or removed at various temperatures.
 - (3) The seal must prevent breathing by the relay as a result of temperature changes. The breathing should be prevented over the operating temperature range of the relay (-55°C to +35°C). Regarding the breathing, the desirability of the seal will depend in part on its successful application during humidity tests conducted according to paragraph 4.5.3 of MIL-B-16400.
 - (4) The seal must be composed of a non-nutrient material that does not support fungus growth. Material which is used to make other types of boots according to military specifications should be used.
 - (5) A heat dissipation of 1.2 watts by the relay should not cause excessive relay temperature rise (i.e. approximately 40°C maximum).
 - (6) If the cost is acceptable, samples of the boots will be "required yesterday."
- c. Mr. Rozanski also agreed to the following:
- (1) There are no altitude-change requirements for the boot.
 - (2) The boot is permitted to "belch" (i.e. exhale but not intake air with temperature changes).

- d. Mr. Morse stated that AFM Inc. could fabricate a boot to meet the specifications listed above. No price quotations were obtained at this time. Miss Soline stated that she would telephone prices to Mr. Rozanski.

6. CONCLUSIONS:

NAFI will test a moisture and humidity seal for the Sigma Relay in the TSEC/HW-19A. Although NAFI will conduct tests promptly, it is the Project Engineer's opinion that at least one month will elapse before decisive results are obtained by NSA. This time will elapse as a result of having the boot made, shipping the boot to NAFI and conducting tests.

7. RECOMMENDATIONS:

- a. It is recommended that a sample of 10 boots for Sigma Relay Type 72A042-160 TS be obtained from AFM Inc. and applied to the relay; the relay with the boot should be tested according to paragraph 4.5.8 of MIL-E-16400. Further, if the boots cause the relays to pass the test, it is recommended that ENS consider the boots as the means of overcoming the TSEC/HW-19A Preproduction Model equipment deficiency.
- b. It is recommended that ENS-1 initiate action to forward to NAFI any necessary paperwork and equipment for this test program.

8. ACTION TAKEN ON RECOMMENDATIONS:

- a. Mr. Rozanski received the following estimated costs from AFM Inc.:
- (1) For a sample of 10 boots, the cost would be \$245, if AFM Inc. retains ownership of the molds.
 - (2) For a sample of 10 boots, the cost would be \$425 if NSA buys the molds.
 - (3) An order of 1000 boots would cost \$1,050 (\$1.05 each).
 - (4) An order of 2000 boots would cost \$1,980 (\$0.99 each).
 - (5) An order of 5000 boots would cost \$3,450 (\$0.69 each).

ENS-A was then briefed. Subsequently Mr. Rozanski relayed the price information to Mr. Graves of NAFI. NAFI was then requested to obtain a sample of 10 boots for \$245 (including at least two prints each of manufacturing drawings) provided delivery could be made to NAFI in approximately two weeks. Mr. Graves stated

that NAFI would purchase the parts as requested and complete the testing program.

- b. ENG-32 (Mr. Guy Wright) was requested to check and prepare teletypewriter equipment for shipment to NAFI. This equipment was sent to ENG-32 on 18 May 1959.

Raymond R. A. Rozanski
RAYMOND R. A. ROZANSKI
ENG-121

DISTRIBUTION:

CSEC
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CREF-322
ENG-01
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ENG-12
ENG-121
ENG-3

5 May 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Magnavox Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

7 through 24 April 1959

2. EQUIPMENT:

TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. National Security Agency (NSA)

Mr. Norman A. Stead, Contracting Officer's Technical Representative (COTR), ENE-3

b. Signal Corps Inspection Agency

Mr. Edward Qualter, Resident Government Inspector (RGI)

c. Magnavox Corporation

Mr. William Tanguo, Contract Assistant
Mr. Harold Ruppel, Quality Control Manager
Mr. Gene Nelson, Project Engineer

4. PURPOSE OF TRIP:

The purposes of the trip were to:

a. Assist the Resident Government Inspector (RGI) in expediting the evaluation and acceptance of 75 TSEC/EM-19A equipments.

b. Perform evaluation of packaging of spare parts kits, modification kits and TSEC/EM-19A equipment.

3 May 1959

5. CONFERENCE RESULTS:

- a. On 10 April 1959, a conference was held with the RFI and Magnavox personnel to resolve the necessary course of action to be taken to expedite shipment of 75 TSEC/EM-19A equipments in the month of April. The following items were discussed:

(1) Rack Mount Channels and Liners:

The RFI and Magnavox had not received a revision directive from NSA, authorizing shipment of EM-19A equipment without "Rack Mount Channels and Liners". A telegram NSAW71825Z was received by the RFI and Magnavox, from NSA, waiving shock and vibration tests for subject Channels and Liners. However, no reference was made in telegram relative to shipment of Channels and Liners for 365 production equipment. Magnavox requested clarification of the telegram. Mr. Szwanski, NSU-1 Project Engineer on the EM-19A, was contacted by telephone on 20 April 1959, by the NSU-3 CDR. As a result of this conversation, the NSU-3 CDR clarified the contents of the telegram, resulting in Magnavox shipping equipments without Channels and Liners. Magnavox was informed that the NSU-1 Project Engineer will expedite transmittal of a (revision directive) to the RFI and Magnavox.

(2) Magnavox:

Action taken in D/F to CSEC-05 from ENG, Comment 2 dtel 17 May 59 KC
clarifying letter

Magnavox stated that 22 EM-19A equipments did not meet the requirements of NSA Standard of Acceptance No. 10B, specifically, test points J39 and J35 through J39. Upon investigation of these equipments by both the NSU-3 CDR and the RFI, it was found that Magnavox test personnel were not reading exact peak-to-peak voltages of waveforms. Magnavox cautioned the test personnel to henceforth exercise greater diligence in reading and recording operational test data. Magnavox agreed to retest all EM-19A equipments. The RFI and the NSU-3 CDR visually, mechanically and operationally tested the selected equipment.

(3) Submission of TSEC/EM-19A Equipment for Governmental Acceptance:

The RFI has informed Magnavox Corporation that EM-19A equipment will not be conditionally accepted after the April shipment of 75 units. All equipments submitted after April 1959 must meet the requirements of NSA Standard of Acceptance No. 10B. Any equipments failing to meet this standard will be rejected.

5 May 1959

As of 24 April 1959, Magnum retained a total of 14 equipments which did not meet acceptance requirements. This has been coordinated with the HSI-1 Project Engineer, by the HSI-3 COER, 27 April 1959.

- b. Seventy-five HSI-19A equipments were inspected and accepted by the HSI during the period 1 through 20 April 1959. Thirty equipments, with modification kits, spare parts kits No. 2A and ten additional packing crates and spares, were shipped to the Navy, 15 April 1959. The remainder of 45 HSI-19A equipments, with modification kits and spare parts kits No. 1A, were shipped to the Army on 22 April 1959.
- c. On 13 April 1959, an additional government inspector was assigned to Mr. Quilter (HAI), by the Chicago Regional Office. Mr. Quilter requested that the undersigned train and familiarize the new inspector with the test equipment and test procedures used in acceptance of the HSI-19A. The HSI-3 COER trained the new government inspector in the operation of the HSI-19A equipment.

6. CONCLUSIONS:

- a. The HSI and Magnum have not received a waiver for shipping HSI-19A equipment without Channels and Lenses.
- b. Fourteen HSI-19A equipments do not meet NSA Standard of Acceptance No. 10B.
- c. Seventy-five HSI-19A equipments, with spares and modification kits, have been accepted and shipped from Magnum.

7. RECOMMENDATIONS:

It is recommended that:

- a. The HSI-1 Project Engineer take necessary action to transmit a revision directive relative to shipment of HSI-19A equipment without Rack Mount Channels and Lenses. This is an HSI action.
- b. The HSI-3 COER continue to periodically visit the Contractor's plant to continue close liaison with the HSI and Magnum. This is an HSI action.

5 May 1959

8. ACTION TAKEN ON RECOMMENDATIONS:

- a. Coordination relative to implementation of recommendation 7.a. of this report was accomplished with Mr. R. Nowinski, ENG-121.
- b. A trip to the Contractor's plant is tentatively scheduled for 9 June 1959.

Norman A. Stead

NORMAN A. STEAD
CWR, ENG-312

DISSEMINATION:

CSOC
AD Central File
ENG-302
ENG-35
SIGPO
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ENG-011
ENG-02 ←
ENG-1
ENG-312

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2 April 1979

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization:

The Signalman Company

b. Address:

1505 East Main Street
Urbana, Illinois

c. Dates of Trip:

25 and 26 March 1979

2. DESCRIPTION:

TRAC/SM-10A, Electronic Start-Stop Telegraphic Signal Motor

3. PERSONNEL:

a. USA:

Mr. Edward R. A. Munkel, SSG-121
Mr. Carl Munkel, CSMC-05
Mr. William A. Munkel, SSG-512

b. Signal Corps:

Mr. Edward Galloway, Resident Government Inspector in Charge

c. Signalman:

Mr. Carl Munkel, Chief Engineer
Mr. Steve Hume, Price Manager
Mr. James P. Smith, Factory Manager
Mr. Gene Wilson, Project Engineer
Mr. Harold E. Rappin, Quality Control

4. PURPOSE OF TRIP:

The purpose of the trip was to discuss TRAC/SM-10A Production Model equipment deficiencies with the contractor, and to observe 47 and 66 copies per second gear source operation of a TRAC/SM-10A equipment. In the event that the contractor demonstrated that the deficiencies could readily be overcome, this was proposed to conditionally accept the Production Model Equipment in order to permit shipment of equipments to the Services.

Declassified by D. Janosek,
Deputy Associate Director for Policy and Records
on 27/2011 and by BEO

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2. DEFECTIVE WORK:

a. Upon entering Hagson's plant, Mr. Suzuki was given a set type of Hagson badge that contained the following information: MIA Tech. Div., R.R.A. Suzuki, Contract 245.

b. The following discussions presented discussions of Preproduction Model equipment deficiencies:

- (1) A C163593 relay was found to be inoperable in the ten equipments sent to MIA for testing and was returned to Hagson for investigation. Hagson opened the case of this relay. The relay contacts had been welded shut in a manner similar to that which results from accidental grounding during operational tests of TSEC/EM-10A production units.
- (2) Hagson stated that the MIA memo in drawing title blocks was blocked out according to oral SHEPC-5 directions which were given during a previous contract. A telephone call to Mr. Regie, SHEPC-5, confirmed this. Also, according to Mr. Regie, MIA does not have a written directive concerning this.
- (3) Mr. Suzuki stated that reproducible manufacturing drawings are government property, and as such are not to be changed without government authorization. When submitting revision requests for drawings, Hagson was told that the requested changes could be marked on prints with colored pencil, or else the reproducible could be changed by means of temporary overlays. In the latter case, the prints with temporary overlays are to be stamped with a legend similar to FOR INFORMATION ONLY.
- (4) Hagson was told that in making an unauthorized drawing change, Hagson had inadvertently deleted the relay requirements in drawing C163591. A search of Hagson records indicated that prints with the unauthorized deletions had not been sent to the vendor. A telephone call to the vendor on 21 March 1959 confirmed this and the fact that the vendor had not changed the relay requirements.

c. The paragraphs which follow contain conference notes regarding the Preproduction Model TSEC/EM-10A equipments which MIA rejected. (On 20 March 59, Mr. Suzuki telephoned Messrs. Brown and Nelson to notify them of the items to be discussed.)

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d. Hagerson was directed to fabricate a moisture seal for Signs Belays E-1 and E-2 (21165518) which failed during humidity tests according to MIL-E-16400. Hagerson will attempt to design a moisture seal for single installation in the field. Hagerson will conduct a humidity check on their design at Urbana, Illinois. On Thursday, 2 April 1959, Hagerson will telephone NSA (Mr. Snow) a schedule of testing, availability, and contractual effects of fabricating the moisture seal.

e. Hagerson had no suggestions regarding a means of overcoming the failure of covers to withstand shock tests according to MIL-E-16400. On 25 March 1959, Mr. Kuzinski requested that Hagerson work on a redesign. It is necessary that the redesign pass shock tests. It is desirable that the redesign be interchangeable and be easily installed on existing equipments. Hagerson stated that NSA would be notified on Thursday, 2 April 1959, as to the schedule for vibration and shock testing of a Hagerson redesign. Information regarding the contractual effects of the redesign would also be furnished at that time.

f. On 25 March 1959 it was agreed that Messrs. Quiller and Eggle would arrange for representatives from the Signal Corps and Hagerson to visit vendors' plants in order to determine that components are being properly primed and painted according to MIL-E-16472. It is necessary to determine that components are being properly primed and painted since the following components showed evidences of corrosion during humidity and fungus tests: top cover hinges, edges of top cover, top cover latch mounting screws, locking latch assembly, filter door and hinges, edges of dust cover, power transformer mounting hardware, top and bottom of power transformer, buzzer alarm, front access latch, line filter case, filter holder and motor mounting screws. Hagerson will notify NSA of the date for the scheduled visit by telephone on 2 April 1959. Hagerson has started their own humidity check of these components (including line filters and buzzers).

g. The Preproduction Model equipments had the following deficiencies according to NSA System Test Specification SB. 13:

- (1) The motor needle governor. Paragraphs 2.1.2 and 2.1.4 specify that it should not.
- (2) Voltage readings were higher than specified in paragraphs 2.12.9 and 2.12.17.

Hagerson will eliminate the deficiencies after they receive the Preproduction Model equipments. Hagerson was told that these deficiencies are not acceptable in production units.

h. Beginning with the first production unit, Hagerson has used screws with the proper thread for engaging the handle (217503) to the dust cover. Screws with the proper thread will be added to the Preproduction Model equipments after Hagerson receives them.

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1. Nagaven was directed to use fuse holders equivalent to those used on the Government Furnished Equipment. Nagaven will telephone MA on 2 April 1959 with information concerning possible schedule slippage and contract price increase as a result of this change. Mr. Rowan stated that this was Nagaven's burden for two reasons: 1) the fuse holders are not equivalent to those on the Government Furnished Equipment, 2) Nagaven was confused by the drawing for the fuse holders but did not seek Government clarification.

1. It was pointed out that Nagaven had stripped the outer insulation of modification kit cables 1 inch instead of $3/8$ inch as specified in drawings. Further, this resulted in an insecure mechanical connection and was a potential source of electrical short circuits. Nagaven was told that no cables will be acceptable unless they are stripped according to drawings. Nagaven had not yet initiated the correction to cables already fabricated.

2. Wire number CE7506 was omitted from cable #303. Nagaven was told that all cables must be checked according to drawings in order to be acceptable.

1. Nagaven was told that after 25 March 1959 the screws that secure relay clamp plate assembly CE7572 must be shortened 1 inch or else they would not be acceptable. Mr. Rowan inspected units on the assembly line in order to determine that the change had, in fact, been initiated.

a. Mr. Rowan observed a satisfactory operational test of a 7500/21-12A equipment using a 44 cycle - 120 volt, a 55 cycle - 115 volt, and a 66 cycle - 90 volt power source (Purchase Description MA No. 10 requires that the equipment operate between the two power source extremes).

a. After discussions on 25 March 1959, Nagaven was given approval to rubber stamp, instead of stencil, the following items in all units: tube shield, air filter, motor case, banner, line filter and fan. Sign relays may be rubber stamped in the first 100 equipments (Serial Number 300 to 400 inclusive), including spare relays. All relays will be stenciled after the first 100 units. Nagaven will submit a TDR for this. It was pointed out that Nagaven had produced this stenciling information (and TDR) by 14 November 1958.

c. Nagaven will submit a TDR for eliminating moisture fungus proof requirements for soldered joints on all equipments to be produced under this contract. The TDR will include a statement of any monetary benefits to accrue to the government. Regarding this, Mr. Rowan signed a statement extending Nagaven's present waiver from 15 March 1959 to 15 May 1959 in order to permit the Inspector to accept equipments while the TDR was processed.

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p. Mr. Thoms stated that Hughes would have to hold up production because of difficulty in meeting the requirements of Test Specification No. 13. Mr. Bennett began a review of the trouble areas with Mr. Wilson. This review was stopped after it was determined that Hughes had not experienced equipment rejections over these test points which were being reviewed. Mr. Bennett directed that suggested loosening of specifications be processed through normal channels.

6. RECOMMENDATIONS:

a. SIBCO-3 gave oral instructions to Hughes to block out EIA's name in the title block of all drawings. According to Mr. Regie, SIBCO-3, there is no written regulation covering this. In order to clarify this situation, IIS should obtain opinions from SIBCO, DCS and SDC regarding the necessity of blocking out EIA's name in the title blocks of drawings. Depending on these opinions, IIS should either promulgate a new regulation or else initiate action to have SIBCO withdraw their oral instructions.

b. The SIBCO/MI-19A Preproduction Model Equipments were rejected. If the shock requirement, according to MIL-E-10000, can be met, then the equipments could be conditionally accepted and shipments of equipments to the Services could be initiated. The condition for acceptance would be that production units would not have the deficiencies noted in this trip report (except for the relay moisture seal which could be installed in the field).

c. A satisfactory operation of a SIBCO/MI-19A equipment was observed using first a 45 cycle - 120 volt AC and then a 60 cycle - 90 volt AC power source.

7. RECOMMENDATIONS:

a. It is recommended that IIS obtain opinions from SIBCO, DCS and SDC regarding the necessity of having contractors block out EIA's name in the title block of all manufacturing drawings. Using these opinions as a basis, it is further recommended that IIS initiate action to either promulgate a directive or to have SIBCO withdraw their oral instructions pertaining to blocking out EIA's name.

b. It is recommended that prompt follow-up action, including a trip to the contractor, if necessary, be taken to eliminate the deficiencies in the Preproduction Model equipments in order that they can be accepted and in order to permit shipments of equipments to the Services. This is an IIS action.

8. ACTION TAKEN ON RECOMMENDATIONS:

a. The recommendation contained in paragraph 7.a. was coordinated with Messrs. Hightower, SIBCO-1, and Regie, SIBCO-3, by telephone on 31 March 1959.

b. IIS will take action on the recommendation contained in paragraph 7.b. after the contractor calls EIA on 2 April 1959.

Raymond R. Reynolds
RAYMOND R. REYNOLDS
IIS-121

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2 April 1979

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Hegewox Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

23 through 27 March 1979

2. EQUIPMENT:

TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Norman A. Stead, Contracting Officers Technical Representative (COTR), HHC-3

Mr. Raymond Rozanski, Project Engineer, HHC-1

Mr. Carl Sneed, Project Manager, CHHC-05

b. Signal Corps

Mr. Edward Quilter, Resident Government Inspector (RGI)

c. Hegewox Corporation

Mr. A. E. Thomas, Sales Manager

Mr. J. E. Heath, Production Manager

Mr. J. Simons, Project Manager

Mr. H. E. Buppel, Quality Control Manager

Mr. G. L. Nelson, Project Engineer

000237

2 April 1959

4. PURPOSE OF TRIP:

The purposes of the trip were to:

- a. Investigate all problems which have occurred during fabrication of the TSSC/BI-19A equipment.
- b. Assist the Resident Government Inspector (RGI) in conditional acceptance of all TSSC/BI-19A equipments which are ready for evaluation.
- c. Investigate changes requested by Magnavox and resolve any differences between the RGI and Magnavox that may result from these changes.

5. CONCERNING MATTERS:

a. Background

A telephone call was placed to the RGI by Mr. Stead, OSEA, 12 March 1959. Purpose of the call was to obtain status of the TSSC/BI-19A contract. Mr. Quilter, RGI, had conditionally accepted 41 BI-19A Production Model equipments prior to 12 March 1959. The 41 equipments were being detained by the RGI pending approval of pilot Production Model and receipt of waivers from NSA on waveforms for test points J-21, J-22, J-23 and J-34. The RGI stated that Magnavox was submitting four Production Model equipments for government final acceptance per day.

- b. Upon arriving at Magnavox on 23 March 1959, the RGI informed the undersigned that Magnavox had stopped submitting equipment to the RGI on 19 March 1959. The reason for discontinuance of submission to the RGI was that waveforms at test points J-35 and J-37 were not meeting requirements of Standard of Acceptance No. 10B. However, the RGI had six equipments which were backlogged awaiting final evaluation. One unit of the six was inspected visually, mechanically and tested operationally. This unit was accepted conditionally by the undersigned on 24 March 59. The remaining five units were inspected by the RGI and accepted. Therefore, a total of 47 equipments had been conditionally accepted by 24 March 1959.

- c. Magnavox was notified by the NSG-1 Project Engineer, Mr. Rosenzki, that the BI-19A pilot Production Model equipments were rejected. These equipments failed to pass environmental testing. The rejection and reasons will be covered in detail in Mr. Rosenzki's trip report.

2 April 1959

- d. Mr. Rosenthal observed the power input cycle requirement of 50-60 cycle \pm 10% test to determine whether the equipment would operate satisfactorily. Tests were conducted at 45, 55 and 65 cycles.
- e. Magnavox requested a waiver on moisture fungus proofing of solder joints and was told to submit a Technical Action Request to HIA.
- f. Mr. J. E. Thomas, Sales Manager for Magnavox, was informed that prior to pilot Production Model equipment approval, the AC line fuseholders must be replaced with a fuseholder the same as that used on the BR-19A Government Furnished Equipment. The new fuseholders will be installed on all equipments conditionally accepted by the RGI. After installation of the new fuseholders, a short operational test for "plain and cipher" position will be performed by Magnavox, with surveillance by the RGI for acceptance. Magnavox will determine the effect on production rate as a result of rework and additional testing.
- g. On a previous trip, Magnavox was informed that the mounting handles on the BR-19A were insecure. It was requested that longer screws be used to secure these handles. Magnavox complied with the HIA request and replaced the short screws.
- h. Magnavox has changed the long hold-down screws used on the relay clamp plate for R-2, R-3 and R-4 relays. Change over point from the long screw was made at equipment Serial No. 412 and as of 26 March 1959, drawings and provisioning documents will be corrected to reflect this change.

6. CONCLUSIONS:

- a. Forty-seven units have been conditionally accepted by the RGI.
- b. The RGI will continue to inspect and conditionally accept BR-19A equipments, pending action by HIA relative to acceptance of pilot Production Model equipment.
- c. The RGI will continue tightened inspection on the modification cable kits.
- d. Magnavox was informed by the BR-1 Project Engineer that the pilot Production Model equipments have been rejected by HIA.
Will not be approved until all defects stated in n/r by Rozynski dtd 6 Apr 59 are corrected. K
- e. The power input cycle operational test has been accepted by the BR-1 Project Engineer.

2 April 1959

- f. A request for a waiver on moisture fungus proofing will be submitted by Hagnorox.
- g. Hagnorox will change AC line fuseholders and perform a short operational test on units after rework.
- h. Screws securing mounting handles will be changed as requested by NSI.
- i. Screws on hold-down relay clamp plate have been changed by Hagnorox. Drawings will be changed to reflect this change.

It was submitted & approved by NSA in D/F to SIGPO thru CSEC-05 dtd 22 May 59

7. RECOMMENDATIONS:

It is recommended that:

- a. The HEC-1 Project Engineer take the necessary action to resolve problems that are delaying final acceptance of pilot production Model equipments. This is an HEC action.
- b. Upon notification, from the HEC-1 Project Engineer, that pilot production Model equipments have been accepted and the first lot of units are ready for shipment to the Services, the HEC-3 CTR make a trip to Hagnorox to assist the HEC in acceptance of units. This is an HEC action.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

- a. HEC-1 Project Engineer has been requested to take necessary action on the recommendation contained in paragraph 7.a.
- b. HEC-3 CTR will take the necessary action contained in paragraph 7.b. to plan a trip to Hagnorox, upon notification of pilot production Model equipment acceptance.

Norman A. Stead

NORMAN A. STEAD
CTR

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- SIGPO
- HEC-01
- HEC-02 ←
- HEC-1
- HEC-121
- HEC-310

000237

23 March 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

U. S. Testing Laboratories, Inc.

b. Address

1415 Park Avenue
Bobocon, New Jersey

c. Date of Trip

20 March 1959

2. EQUIPMENT:

TSEC/HM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. James A. Euels, Test Engineer, ENG-111

b. U. S. Testing Laboratories, Inc.

Mr. T. Books, Project Engineer
Mr. William Kruss, Assistant Project Engineer

4. PURPOSE OF TRIP:

The purposes of this trip were:

- a. To discuss the final results of the environmental testing of the HM-19A equipments with the U. S. Testing Project Engineer.
- b. To obtain a copy of the environmental test report of the HM-19A.
- c. To return to ENG-121 one each model of two different relay rack mount designs for mounting HM-19A equipments in 19 inch relay racks. The expeditious return of these rack mounts was requested by ENG-121 to fulfill a commitment for delivery of these mounts to the Magnavox Company by 23 March 1959.

5. GENERAL:

On 11 December 1958, the U. S. Testing Laboratories, Inc. conducted environmental testing of three pilot production TSEC/HM-19A equipments. Vibration and shock tests were discontinued in January 1959

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due to the failure of the rack mounts. The vibration and shock testing was resumed on 26 February 1959 at which time models of two new rack mounts were furnished U. S. Testing by NSA. A description of each rack mount design is as follows:

- a. Double Formed - Same as that originally furnished but fabricated from heavier gauge sheet metal, i.e. #13 gauge in lieu of #16 gauge.
- b. Single Formed - New design suggested by Messrs. Hooks and Lockard of NSA-III using the lighter #16 gauge sheet metal. This design eliminates the tooling complications of previous designs and results in a more simplified installation.

On 19 March 1959, U. S. Testing completed environmental testing of the TRNG/BN-19A equipments including vibration and shock testing of both relay rack mounts furnished them on 26 February 1959. Both relay rack mounts were then returned to NSA and delivered to the Project Engineer for inspection on 20 March 1959.

6. CONFERENCE BRIEFS:

- a. A copy of the environmental test report was received from Mr. Hooks of U. S. Testing. This report is complete except for the results of the shock tests. The NSA Test Engineer was informed by Mr. Hooks that the results of the shock test could not be included in the report by 20 March 1959, but would be forwarded to NSA on or about 30 March 1959 in a form suitable for insertion in the final environmental test report.
- b. U. S. Testing reported that the double formed rack mounts were unsatisfactory during the shock tests. The mounts became deformed and started to fracture due to the cut-out section of the rack mount liner.
- c. U. S. Testing reported satisfactory results from the single formed rack mounts. The "U" shaped channel on one of the single formed rack mounts became distorted; however, it is the opinion of the NSA Test Engineer and Mr. Hooks of U. S. Testing that this distortion was caused by the absence of the two end screws that secure the "U" channel to the relay rack liner. U. S. Testing was unable to insert these two screws due to the heavy channel of the mounting test fixture. Six of the fourteen 6-32 screws, that secure the rack mounts to the BN-19A, sheared off during the shock tests using the single formed rack mounts. The double formed rack mounts were installed on another BN-19A equipment for shock tests and ten 6-32 screws sheared off using these mounts.

7. CONCLUSIONS:

- a. Environmental testing of the TSEC/EM-19A pilot production equipments was completed on 19 March 1959.
- b. A copy of the Environmental Test Report was obtained from U. S. Testing and is being forwarded to the EM-19A Project Engineer.
- c. U. S. Testing reported that the double formed relay rack mounts did not satisfactorily pass the shock tests. The rack relay mounts became deformed and started to fracture.
- d. The single formed relay rack mounts satisfactorily passed the shock tests.
- e. The 6-32 screws that secure the relay rack mounts to the EM-19A are too small to properly support the equipment during shock.

8. RECOMMENDATIONS:

- a. It is recommended that the Project Engineer submit the single formed relay rack mounts to the Magnavox Company to be reviewed for fabrication.
- b. It is recommended that the fourteen 6-32 screws that secure the relay rack mounts to the EM-19A be increased to 8-32 screws or 10-32 screws if the Grant Pulley slides, which are optional with the EM-19A, will accommodate this size screw.

9. ACTION TAKEN ON RECOMMENDATIONS:

The recommendations in paragraph 8. of this report have been coordinated with the EM-19A Project Engineer.

James A. Keels
JAMES A. KEELS
ENG-111

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9 March 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

U. S. Testing Laboratories, Inc.

b. Address

1415 Park Avenue
Hoboken, New Jersey

c. Dates of Trip

26 through 27 February 1959

2. EQUIPMENT:

TSEC/EM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. James A. Kauls, Test Engineer, ENH-111

b. U. S. Testing Laboratories, Inc.

Mr. T. Books, Project Engineer
Mr. Joseph Solerano, Test Technician
Mr. William Willard, Test Technician

4. PURPOSE OF TRIP:

The purposes of this trip were:

- a. To deliver to the U. S. Testing Laboratories spare parts to replace those which failed during humidity tests.
- b. To deliver and install a set of redesigned relay rack mounts to be vibration and shock tested on the EM-19A and to observe a portion of the vibration testing. The original relay rack mounts for the equipment had failed during earlier vibration tests.
- c. To make repairs on two TSEC/EM-19A equipments and the associated teletypewriter equipment.

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- d. To obtain all available data on all environmental testing performed to date.

2. CONFERENCE BRIEFS:

a. Background:

The U. S. Testing Laboratories are conducting environmental tests on three pilot production TSMC/EN-19A equipments. These tests are being conducted in accordance with MIL-E-16400B. The relay rack mounts for the EN-19A equipments fractured during vibration testing and it was determined that a redesign of the mounts would be required in order for them to withstand the vibration requirements. Vibration tests were delayed until redesign of the mounts was accomplished. Two re-design ideas were used to fabricate two rack mounts; one was the increase in the gauge of material used for the original mounts from 16 gauge to 13 gauge material; the other was a completely new design eliminating the cut-out in the rack mounts. The U. S. Testing Laboratories Inc. are going to test each of the redesigned relay rack mounts under shock and vibration.

b. Repair of Equipment

An inspection was made on the EN-19A equipment undergoing humidity tests. Occasional errors occurred on the print out copies of the remote printer. This was due to maladjusted brushes on the special transmitter distributor. The brushes were readjusted and a good print out copy was obtained. An inspection was also made on the equipment undergoing vibration tests. The brushes on the special transmitter distributor for this unit were also maladjusted. More tension was applied to the brushes and the equipment performed satisfactorily.

c. Vibration Tests

Both of the redesigned rack mounts were subjected to preliminary vibration to determine their suitability. It was decided that if no difficulties were encountered during the preliminary tests that complete vibration and shock tests would be performed on both re-designed rack mounts.

- (1) Two planes of vibration, front-to-back and side-to-side, were conducted on the heavier gauge relay rack mounts. No difficulties were encountered during these two planes of vibration.
- (2) The vertical plane of vibration was conducted on the completely redesigned rack mounts. No difficulties were experienced during this plane of vibration. Due to the satisfactory results during the preliminary tests both rack mounts will be subjected to complete vibration and shock tests. These tests are scheduled for completion on 16 March 1959.

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d. Component Failure During Testing

Two Sigma relays had failed during humidity tests. The failures were due to moisture entering the relay covers causing corrosion of the relay contacts. These relays have been returned to EEC for inspection. The line break switch (2-5) on one equipment became defective during humidity tests, however, when the equipment was dried the switch performed satisfactorily.

e. Completion Schedule of All Tests

The environmental testing of the TSEC/EM-19A equipments is completed with the exception of shock and approximately 50% of the vibration tests. However, a thorough evaluation has not been completed on the units used for humidity and fungus tests. These evaluations were scheduled for completion by 4 March 1959. Mr. Books informed the undersigned that a target date of 16 March 1959 has been established for the completion of all environmental tests and that a final report on the tests would be available on approximately 27 March 1959.

6. CONCLUSIONS:

- a. Errors that occurred on the remote printers during humidity and vibration tests were due to maladjusted brushes on the special transmitter distributors. Adjustments were made and the equipments performed satisfactorily.
- b. The redesigned heavier gauge rack mounts performed satisfactorily during front-to-back and side-to-side vibration tests. The vertical plane of vibration tests was scheduled for completion on 6 March 1959.
- c. The vertical plane of vibration was conducted on the completely redesigned relay rack mounts. The remaining two planes of vibration were scheduled for completion on 6 March 1959.
- d. The failure of the two Sigma relays during humidity tests were due to moisture entering the relay covers causing corrosion of the relay contacts. The failure of the line break switch was also due to moisture entering the switch.
- e. A target date of 16 March 1959 has been established for the completion of all environmental testing on the TSEC/EM-19A. A final report of the environmental tests will be available on approximately 27 March 1959.

7. RECOMMENDATIONS:

- a. It is recommended that EEC inspect the two Sigma relays that failed during humidity to determine if a seal would be required to insure proper operation during high humidity.

- b. It is recommended that if both redesigned relay rack mounts perform satisfactorily during shock and vibration tests that the TSSC/EN-19A Project Engineer decide which type would be most feasible to use with the equipment. It is the opinion of the undersigned that the completely redesigned relay rack mount would be the most economical to fabricate in production.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

The recommendations in paragraph 7. of this report have been coordinated with the TSSC/EN-19A Project Engineer.

James A. Keels
JAMES A. KEELS
ENG-111

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25 February 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Haguevax Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

16 through 18 February 1959

2. EQUIPMENT NOMENCLATURE:

TEEC/NV-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. National Security Agency

**Mr. Norman A. Stead, Contracting Officers Representative (COR),
ENG-3**

b. Signal Corps

Mr. Edward Qualter, Resident Government Inspector (RGI)

c. Haguevax Corporation

**Mr. Gene Nelson, Project Engineer
Mr. Harold Ruppel, Quality Control Manager**

4. PURPOSES OF TRIP:

The purposes of the trip were to:

- a. Review the manufacturer's and the Resident Government Inspector's (RGI) inspection procedures to assure that adequate Quality Assurance is being maintained.**

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25 February 1959

- b. Resolve any differences that may arise between the NRI and Magnavox Corporation during evaluation of TSEC/HW-19A, Electronic Start-Stop Teletypewriter Signal Mixer equipment.
- c. Assist the NRI in visual and operational testing of the TSEC/HW-19A equipment.

4. CONVERSION BRIEFS:

- a. From 12 January through 18 February 1959, 17 TSEC/HW-19A equipments were conditionally accepted by the NRI. The following discrepancies must be resolved before the HW-19A equipments can be finally accepted.
 - (1) High AC ripple voltage on Jack J-32 (B minus voltage). A waiver has been requested by Magnavox.
 - (2) Waveforms at Jacks J-21, J-22, J-29 and J-34 do not meet specifications. A waiver has been requested by Magnavox.
 - (3) Rack Mount Channels and Liners are not available for shipment with units. Magnavox is delaying fabrication of Channels and Liners until notified by NSA of what corrective action is necessary (Rack Mount Channels and Liners failed shock and vibration testing).

During the first two weeks of February 1959, no equipments were submitted to the NRI for operational tests.

- b. On a previous trip it was requested that Magnavox install a 50-cycle test for the HW-19A equipment. Magnavox will accomplish 50-cycle testing during the 24-hour aging position. One equipment out of every five produced will be tested for 50-cycle operation. This equipment will receive a short operational test before and after aging. The NRI is performing surveillance on the contractors sampling of the 50-cycle operational test.

25 February 1979

- c. Magnavox has complied with NSA's request that the shipping containers be modified to add an additional cleat around the overseas packing crate. A modified packing crate was submitted to the RFI for evaluation and accepted.

6. CONCLUSIONS:

- a. The RFI will continue to inspect and conditionally accept EW-19A equipment pending action from NSA concerning AC ripple voltage, waveforms, and Channels and Liners.
- b. The RFI will not release any EW-19A equipment until AC ripple voltage, waveform and Channel and Liner discrepancies have been resolved by NSA.
- c. Magnavox is operationally testing EW-19A equipment for 50-cycle operation on a sampling plan basis.
- d. The RFI is performing surveillance on the contractors sampling of the 50-cycle operational test.
- e. Magnavox has complied with NSA's request for modification of overseas shipping crates.

7. RECOMMENDATION:

It is recommended that:

The ENG-1 Project Engineer take necessary action to resolve discrepancies that are delaying final acceptance of completed EW-19A equipment. This is an ENG action.

8. ACTION TAKEN ON RECOMMENDATION:

The ENG-1 Project Engineer has been requested to take necessary action on the recommendation contained in paragraph 7. Quality Assurance criteria utilized by the RFI will be amended, by ENG-3, to reflect all necessary changes.

Norman A. Stead

NORMAN A. STEAD

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14 Feb 59

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

The Magnavox Co.

b. Address

1505 South Main Street
Urbana, Illinois

c. Dates of Trip

9 to 14 February 1959

2. EQUIPMENT:

TSEC/HW-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. Raymond R. A. Rozanski, Project Engineer, ENG-121

b. The Magnavox Company

Mr. G. Nelson, TSEC/HW-19A Project Engineer

Mr. H. E. Ruppel, Quality Control

Mr. S. Thomas, Sales Manager

Mr. Postin, Security Officer

4. PURPOSES OF TRIP:

a. To avoid possible delay in NSA's acceptance or rejection of Preproduction Model equipments and possible delay in delivery of equipments to the Services by discussing rack mounts and rubber grommets on cables which failed during vibration testing of Preproduction Model equipments.

b. To discuss difficulties which the contractor is having in meeting operational test specifications.

c. Discuss provisioning documents which have been rejected by NSA for the second time.

Declassified by D. Janosek

Deputy Associate Director for Policy and Records

on 2/7/2011 and by RF6

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5. CONFERENCE BRIEFS:

a. Possible redesigns for the rack mount channels and liners were discussed. Mr. Rozanski stated that the original design, using 0.094 inch instead of 0.059 inch cold rolled steel would be vibrationally tested. Magnavox stated that these heavier rack mounts would be produced at no increase in contract price and within six weeks after Magnavox received approved manufacturing drawings. NSA will forward to Magnavox the approved mounts which pass vibration tests, plus any sketches from which the mounts were fabricated.

b. In the event that approved rack mounts and liners cannot be produced in time for scheduled shipments to the Services, Magnavox stated that they can ship the equipments without rack mounts by slightly modifying the packing in their present shipping box design. Magnavox requested two weeks notice if such action is contemplated, and stated that no increase in contract price would result.

c. Five shipping boxes will be shipped to NSA by 6 March 1959. These are for the equipments which NSA is using for Preproduction Model equipment tests. Magnavox will give NSA an estimate of the cost for reconditioning the equipments which have been subjected to environmental tests when the equipments are available. NOT TEST

d. Magnavox stated that they will send NSA the original drawings of their shipping box design by 1 April 59.

e. Magnavox has forwarded to the Contracting Officer two requests (numbers four and five) for changes to voltage levels specified in System Test Specification NSA No. 13. Magnavox has operationally tested over 25 equipments.

f. Magnavox returned a set of incorrect size drawer slides to Grant Pulley and Hardware Co. Based on Grant's promise of shipment, Magnavox stated that they will ship the proper drawer slides to NSA during the week of 2 March 1959.

g. Magnavox was told that the rubber bushing on the keyboard cable (modification kit) had parted at the connector during the aborted vibration test of Preproduction Model equipments. It was determined that Magnavox was not complying with the manufacturing drawings for these cables in order to make assembly easier. This resulted in the cable's clamp being tightened on the individual wires instead of the outer cable insulation which encloses all of the wires. Mr. Rozanski directed Magnavox to comply with the manufacturing drawings. Mr. Qualter stated that he would not accept cables not made according to specifications.

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h. Provisioning document sheets, which had been returned to Magnavox for correction (second time), were reviewed by the NSA and Magnavox representatives. Magnavox representatives stated that they understood the corrections to be made, and that corrected sheets would be mailed to NSA by 25 February 1959.

i. Mr. Nelson was reminded that when a change is made to one of the following documents the others should be reviewed to determine whether or not the change should be reflected in them; the documents are manufacturing drawings, list of material, provisioning documents, drawing list and the manual.

j. Approximately 110 revision directives or requests were reviewed. Questions were answered and additional information was furnished. The origins of these are as follows: 70 were originated by Magnavox and 15 by NSA during the mid-1958 specification review; the remaining 25 were originated by Magnavox since the review. Magnavox will forward these original NSA form 278's to NSA.

k. Magnavox was asked when the eight components would be stenciled instead of rubber stamped, but no specific date was given. Magnavox was supposed to supply the Government with this information by 14 November 1958. Mr. Rozanski told Mr. Nelson that if stenciling dates were not given by the time Preproduction Model equipments are accepted or rejected, Magnavox would be given a waiver for stenciling requirements on 65 equipments and no more.

l. Mr. Qualter stated that he had one operational test position which he requested under inspection provisions of the contract. Mr. Qualter stated that he considered this request for the test position a reasonable request.

m. In addition to the Government Inspector's operational test position, Mr. Thomas stated that Magnavox had sufficient Government Furnished Equipment (GFE) for five other operational test positions. He stated that this GFE was sufficient for Magnavox to keep up with a production rate of 100 equipments per month.

n. Calibration logs are being maintained by Magnavox on test equipment. Tempest equipment was checked on 12 February 1959, but not witnessed by Mr. Rozanski,

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o. Magnavox had purchased 200 ASTRON filters and began to substitute them in place of HOPKINS filters (FC-1) without Government authorization. HOPKINS filters were in the Government Furnished Model equipment and they were used by Magnavox in their initial production. This matter was brought to Mr. Rozanski's attention by Mr. Qualter. Mr. Rozanski told Mr. Nelson that ASTRON filters were not acceptable or equivalent since HOPKINS filters appeared on Qualified Products Lists (for MIL-F-18344) while ASTRON did not.

p. Approximately one-half of the TSEC/HW-19A production line has been moved from the second floor to the first floor. Mr. Postin, new security officer for Magnavox at their Urbana plant stated that according to NSA regulations, it was not necessary to inform NSA security of the move since the portion of assembly line which was moved was unclassified.

q. Mr. Postin noted that his list of NSA Contracting Officer's representatives was dated in 1957. This list contained names of people no longer associated with this contract and it omitted names of people now on this contract.

6. CONCLUSIONS:

a. Approved rack mount channels and liners will not be ready for the scheduled shipment of TSEC/HW-19A equipments in March 1959. However, the equipments can be shipped in the shipping boxes without rack mounts. If the Services will accept the first shipments without rack mounts, then shipments will probably be made on schedule.

b. There is a possibility that it may be economically feasible to rework three TSEC/HW-19A equipments which were subjected to environmental tests during this and the previous contract.

c. After Magnavox forwards to NSA corrected provisioning sheets (25 February 1959) and the revision directives and requests, the greatest majority of changes to technical specifications and documentation will have been accomplished.

d. Magnavox needs a current list of Contracting Officer's Representatives for contract DA49-170-sc-2465.

Services OK'd.

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7. RECOMMENDATIONS:

It is recommended that:

a. The services be formally asked if they will accept shipments of TSEC/HW-19A equipments without rack mount channels and liners until 1 June 1959 with the rack mount channels and liners to be furnished as their production exceeds the current production of equipments. This is an ENG action.

*Completed
3/10/59
K*

b. The three TSEC/HW-19A equipments, which were subjected to environmental tests under this and the preceding contract be reworked if economically feasible. This is an ENG action.

c. CSEC-05 initiate action to furnish The Magnavox Company, 1505 South Main Street, Urbana, Illinois with a current list of names of all Contracting Officer's Representatives for contract DA49-170-sc-2465.

8. ACTIONS TAKEN ON RECOMMENDATIONS:

a. ENG-02 is preparing correspondence for the Services according to the recommendation contained in paragraph 7.a.

b. The NSA TSEC/HW-19A Project Engineer has made informal arrangements for Magnavox to see and estimate the cost of reworking the equipments, as mentioned in paragraph 7.b., after current environmental tests are completed (24 February 1959).

c. The recommendation contained in paragraph 7.c. was informally coordinated with CSEC-05 and SIGPO-5. It was determined that the current list of Contracting Officer's Technical Representatives was forwarded to Magnavox, Urbana, Illinois, from the Contracting Officer by letter dated 15 December 1958. No further action is necessary on this recommendation, since on 17 February 1959 SIGPO-5 telephoned their representative, who was visiting the Urbana Plant, and instructed him to take the necessary action.

Raymond R. A. Rozanski
RAYMOND R. A. ROZANSKI
ENG-121

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10 February 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

Magnavox Corporation

b. Address

Urbana, Illinois

c. Dates of Trip

19 through 23 January 1959

2. EQUIPMENT NOMENCLATURE:

TSBC/SM-19A, Electronic Start-Stop Teletypewriter Mixer

3. REPRESENTATIVES:

a. National Security Agency

Mr. Russell C. Sizemore, EMI-3

Mr. Norman A. Stead, Contracting Officers Representative (COR),
EMI-3

b. Signal Corps

Mr. Edward Qualter, Resident Government Inspector In-Charge
(RGIIC)

Mr. L. Kaiser, Assistant Chief, Quality Assurance Division,
Chicago Regional Office

c. Magnavox Corporation

Mr. Steve Thomas, Sales Manager

Mr. Gene Nelson, Project Engineer

Mr. Harold Ruppel, Quality Control Manager

10 February 1959

4. PURPOSES OF TRIP:

The purposes of the trip were to:

- a. Deliver NSA Standard of Acceptance No. 10B, Copy No. 1, to the Resident Government Inspector In-Charge (RGIIC).
- b. Review and coordinate Standard of Acceptance No. 10B with the RGIIC and Magnavox and resolve any problems pertaining to the Standard and its intended use.
- c. Review the Contractor's Quality Control as related to the TSEC/EM-19A production program and to assist the RGIIC in final visual/mechanical and operational evaluation of the TSEC/EM-19A.
- d. Permit Mr. Sizemore, Mr. Steed's immediate supervisor, to observe the Contractor's and RGIIC's Quality Control programs as related to the TSEC/EM-19A.

5. CONFERENCE BRIEFS:

- a. Upon arrival at Magnavox a conference was held with the RGIIC and Magnavox for the purpose of coordinating the final Standard of Acceptance No. 10B for the TSEC/EM-19A equipment. Standard of Acceptance No. 10B was reviewed in detail in order to clarify its use and concept as inspection criteria. During the review the RGIIC requested that the following amendments to the Standard be made:
 - (1) The visual/mechanical inspection station for chassis hardware, established at the beginning of production, be eliminated. The RGIIC explained that this inspection could be accomplished during the final inspection of the end product, this procedure would eliminate duplication of inspection. A review of the RGIIC inspection records revealed that the process averages of the visual/mechanical inspection for chassis hardware at the subject station was high. The RGIIC was instructed to perform a surveillance inspection at this test station.
 - (2) Mr. L. Kaiser, Assistant Chief, Quality Assurance Division of the Signal Corps, requested that the RGIIC be allowed to final operationally test the EM-19A's on a sampling plan

10 February 1959

in accordance with MIL-STD-105A, rather than on a 100 percent basis. The reason for this request is the length of the System Test and the time required to perform the test will cause the RHIC to fall behind when Magnavox reaches peak production. Mr. Kaiser further requested that a review of the System Test be made for the purpose of eliminating redundant steps. NSA representatives agreed to review the System Test. As a result of the review of the System Test the following agreements were reached:

- (a) NSA representatives set an AQL of 1 percent Major for final operational tests, with the stipulation that lot sizes would not exceed fifteen equipments. This procedure will require that the RHIC test the RH-19A equipment operationally on a 100 percent basis until Magnavox reaches peak production. Upon Magnavox reaching peak production, a larger lot size will be allowed, if after a review of the quality of the RH-19A's accepted, it is found that the over-all quality of the end product is good.
- (b) Resistance checks, paragraphs 11.6 through 11.6.1.1 of the System Test will be placed on surveillance basis at Magnavox's test positions.
- (c) Voltage and waveforms checks, paragraphs 11.17 through 11.18.21.2 will be placed on an AQL of 4 percent Major.
- (d) The operational portion of the System Test, paragraphs 11.8 through 11.16.2 and 11.19 through 11.21.2.5 will be placed on an AQL of 1 percent Major.

The agreements listed above will be incorporated into NSA Standard of Acceptance No. 10B in the form of an Amendment. In order to verify the changes to the System Test, listed in paragraphs 5.a(2)(a), 5.a(2)(b), 5.a(2)(c) and 5.a.(2)(d) above, a final acceptance inspection was performed on an RH-19A submitted by Magnavox, utilizing the revised System Test.

- b. During the above test it was found that the waveform at Jack J-34, as shown in the System Test Data Sheet, was missing. The disappearance of the waveform was attributed to the changing of the leads 1 and 7 of tube V-7. The changing of leads 1 and 7 was

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done to eliminate previously encountered Testset problems. It was further revealed during this test that the waveforms at Jacks J-21, J-22 and J-23 were at the extremes of their tolerances. Upon questioning, Magnavox stated that the tolerances specified were unrealistic and requested tolerance changes at these points. Magnavox informed the NSA representatives that they were withholding some equipment which would not fall within the specified tolerances. Magnavox was instructed to initiate a Technical Action Request (TAR) requesting an expansion of tolerances at the test points in question and forward to NSA for action.

- c. A review of all electrical testing revealed that neither Magnavox nor the NIIIC's electrical testing facilities have provisions for testing the MI-19A electrically and operationally for 50-cycle operation. A 50-cycle operation requirement is specified in NSA Purchase Description No. 10 for TSEC/MI-19A equipment. Magnavox was requested to install a 50-cycle test, preferably at the aging station. Magnavox agreed to install the 50-cycle test at the aging position. Installation of the 50-cycle test will require the borrowing of Government Furnished Equipment (GFE) from one of the Magnavox final test positions. Continuation of the 50-cycle test after reaching peak production will be dependent upon NSA furnishing the following additional GFE:
- (1) One Page Printer.
 - (2) One Transmitter Distributor.
 - (3) One TSEC/MI-10.
- d. A sample of Magnavox's final packaging for overseas shipment of MI-19A equipment was submitted to the NIIIC and the NSA representatives for evaluation. The sample was rejected for the following reasons:
- (1) Undersized lumber was used in construction of the wooden container (9/16" lumber was specified; 1/2" lumber was used).
 - (2) One-half of the nails specified was used in assembly of the wooden container.

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Magnavox will instruct the vendor to correct the deficiencies noted. The RIIIC will perform inspections of the container to see that specifications are adhered to.

Magnavox requested that they be allowed to package all EW-19A equipment for overseas shipment (six equipments only are scheduled for domestic shipment). This request was granted with the stipulation that the six equipments would be packaged for overseas shipment at no extra cost to the Government. Magnavox concurred.

- e. While reviewing prints CE 75986 and CE 75987, furnished to Magnavox for packaging, it was observed that the prints did not comply with the packaging specifications of NSA Purchase Description No. 10. This will necessitate changing of the prints.
- f. A survey of Magnavox's instrument calibration department was made during this trip. It was observed that test equipment is calibrated at 30-day intervals. The calibration department is capable of providing Magnavox and the RIIIC with adequately calibrated test instruments.
- g. As a result of the recent power transformer failures in the field, the NSA Project Engineer requested the RIIIC-3 COR to investigate the action taken by Magnavox to insure that the power transformers meet MIL-T-27 requirements. The vendor has guaranteed that the above transformers meet MIL-T-27 requirements. Magnavox was requested, however, to procure a Certificate of Compliance from the vendor stating that the transformers comply with TP480377.
- h. In order to be more qualified to perform acceptance testing on the EW-19A equipment, the RIIIC requested that a copy of EAM-40/TREC, "Repair and Maintenance Manual for TREC/EW-19A Equipment," be forwarded to his office. It would be a benefit to the Agency if a copy of the requested manual was furnished to the RIIIC.
- i. Although poor quality was encountered on the first equipment produced on this contract, a marked improvement was noted during this trip. The improvement in quality was due largely to Magnavox conducting night courses in cabling and soldering techniques for their production employees.

10 February 1959

6. CONCLUSIONS:

- a. The final Standard of Acceptance No. 108 for TSEC/EM-19A equipment has been coordinated with the BELIC and Magnavox.
- b. Amendments will be made to Standard of Acceptance No. 108 to reflect the changes made as a result of the review of the System Test. Reference paragraphs 5.a.(2)(a), 5.a.(2)(b), 5.a.(2)(c) and 5.a.(2)(d) of this report.
- c. Magnavox agreed to install a 50-cycle test at the aging position.
- d. Deficiencies will be corrected on the packaging case for EM-19A equipment.
- e. All equipment will be packaged for overseas shipment.
- f. Magnavox will request a Certificate of Compliance from the vendor stating that the power transformers are in compliance with TFAH0371.
- g. Magnavox's calibration program is capable of insuring that a high degree of accuracy is maintained in test instruments.

7. RECOMMENDATIONS:

It is recommended that:

- a. The BELIC at Magnavox be furnished with a copy of EAM-40/TSEC, "Repair and Maintenance Manual for TSEC/EM-19A Equipment." This is a MWT action.
- b. NSA System Test Data Sheets be revised to reflect the results found at Jack J-34. This is an ENG action.
- c. ENG-1 Project Engineer review the 50-cycle operational test and coordinate the results with the ENG-3 COM for incorporation in NSA Standard of Acceptance No. 108. This is an ENG action.
- d. Magnavox be furnished with GFS listed in paragraph 5.c. of this report in order to perform the 50-cycle test during peak production. This is a GSEC-05 action.

10 February 1979

- a. IMA drawings be revised to comply with packaging specifications of IMA Purchase Description No. 10. This is an IMA action.

8. ACTION TAKEN ON RECOMMENDATIONS:

- a. IMA has been contacted and will take the necessary action to execute recommendation 7.a. of this report.
- b. IMA-1 Project Engineer has been notified of the revision to IMA System Test Data Sheets. This action was coordinated with IMA-1 on 26 January 1979.
- c. The IMA-3 COB has coordinated the 50-cycle operational test with IMA-1. This action was coordinated on 26 January 1979.
- d. CSEC-05 has been notified of the additional DFT required by Magneton in order to perform 20-cycle operational tests. This action was coordinated with CSEC-05 on 28 January 1979.
- e. IMA-3 COB has notified IMA-1 concerning revisions to IMA drawings for packaging of equipment for overseas shipment. This action was coordinated with IMA-1 on 26 January 1979.

Russell O. Sizemore
RUSSELL O. SIZEMORE
IMA-312

Norman A. Stead
NORMAN A. STEAD
Contracting Officers Representative
IMA-312

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- IMA-311
- IMA-313
- IMA-312

2 February 1959

TRIP REPORT

1. IDENTIFICATION OF TRIP:

a. Name of Organization

U. S. Testing Laboratories, Inc.

b. Address

1415 Park Avenue
Edison, New Jersey

c. Date of Trip

29 through 30 January 1959

2. EQUIPMENT:

TRNC/SM-19A, Electronic Start-Stop Teletypewriter Signal Mixer

3. REPRESENTATIVES:

a. NSA

Mr. James A. Keala, Test Engineer, EES-111

b. U. S. Testing Laboratories, Inc.

Mr. T. Hooke, Project Engineer
Mr. William Krause, Assistant Project Engineer
Mr. Joseph Salerano, Test Technician

4. PURPOSE OF TRIP:

The purpose of this trip was to observe the vibration testing of a TRNC/SM-19A Pilot Production equipment. Also, to discuss with U. S. Testing personnel, the results of environmental tests that have been performed on the Pilot Production SM-19A to date.

5. CONTINUING MATTERS:

a. Background

EES is currently performing acceptance tests on the Pilot Production TRNC/SM-19A equipments. Two equipments are being tested for operational suitability and three equipments are being used for environmental testing. EES is performing the operational suitability tests and the environmental tests are being performed by the U. S. Testing Laboratories, Inc. under the direction of EES.

b. Vibration Tests

- (1) Difficulty was encountered in mounting the MN-19A in the test fixture for vibration testing. In order to fit the equipment in the test fixture it was necessary to grind approximately 1/16 inch off the inside flanges of the left and right relay rack mount liners. It was concluded that grinding 1/16 inch off the flanges would not cause any adverse conditions during vibration testing. The flanges were approximately 1/16 inch wider than the dimensions specified on the manufacturing drawings. This was due to proper dimensions not being maintained during fabrication. The test fixture used for this test was the same as used for the vibration testing of the MN-19A Service Test Equipment and at that time no difficulties were encountered in mounting the equipment.
- (2) Vibration tests were conducted in accordance with MIL-E-16400B and MIL-STD-167. The MN-19A performed satisfactorily during the resonance search test. During variable frequency tests, in which the equipment is vibrated from five cycles per second to 33 cps. for five minutes in discrete frequency intervals of 1 cps., it was noticed when a frequency of 30 cps. was reached both the left and right relay rack mount liners were fractured. Vibration was stopped to determine the extent of these fractures and it was decided that further vibration would result in erroneous vibration readings since the vibration of the unit was increased by the broken relay rack mount liners. It was further concluded that grinding 1/16 inch off the flanges of the left and right relay rack mount liners did not intensify the fracturing of the rack mounts since the fractures occurred at a different location. No further vibration tests were performed.

c. Results of Other Tests

U. S. Testing reported only two equipment troubles during temperature and accelerated life tests as to date. Mr. Salzano pointed out that the line restore switch shorted out on equipment #360 and that the K1 and K3 relay on the same equipment had to be replaced during accelerated life tests. However, Mr. Salzano stated that these troubles occurred because of a defect in the conditioning chamber.

6. CONCLUSIONS:

- a. Approximately 1/16 inch of metal had to be removed from the inside flanges of the left and right relay rack mount liners in order to mount the MN-19A in the test fixture. This was due to an increase in the dimensions of the relay rack mount liners on the pilot production equipments.

- b. Vibration tests were conducted in accordance with MIL-E-16400B and MIL-STD-167. The IM-19A performed satisfactorily during the resonance search. During variable frequency tests the relay rack mount liners fractured when a frequency of 30 cycles per second was reached. Vibration was stopped at this point, and it was decided that further vibration would result in erroneous vibration readings.
- c. U. S. Testing reported only two equipment troubles during temperature and accelerated life tests as to date.

7. RECOMMENDATIONS:


- a. It is recommended that ENE inspect the fractured relay rack mount liners to determine what improvements are necessary to insure proper supporting of the TENC/IM-19A. Also that the width of the IM-19A plus the relay rack mount liners do not require more than 17-1/4 inches of mounting space, which is the maximum inside dimension of a standard relay rack.
- b. It is recommended that immediately after improvements are made on the relay rack mount liners that a set be delivered to U. S. Testing Laboratories in order to continue vibration tests.

8. ACTION TAKEN ON RECOMMENDATIONS:

- a. The recommendations in paragraph 7. of this report have been coordinated with the TENC/IM-19A Project Engineer. The Project Engineer is scheduled for a visit to the Magnavox Company on 9 February 1959 at which time the discrepancies and recommendations in this report will be discussed with Magnavox representatives.
- b. A memorandum to the operating element (RMS-1) directing action on the recommendations contained in paragraph 7. has been prepared for the signature of Chief, RMS.

James A. Keels
 JAMES A. KEELS
 RMS-111

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