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Project Whirlwind  
Servomechanisms Laboratory  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

SUBJECT: BI-WEEKLY REPORT, August 19, 1949

To: 6345 Engineers

From: Jay W. Forrester

**1.0 SYSTEMS TESTS**

**1.1 Whirlwind I System Test**

(N. H. Taylor)

An important milestone was passed on August 9th when the first program was run in the Whirlwind I computer, using central control, test storage and the arithmetic element. A few days later five registers of flip-flop storage were added and a program was successfully run which used all 32 storage registers which were available. The program itself was one designed to assure that all flip-flops in the repetitive units of Whirlwind I had the ability to hold a 0 or a 1. This program has been in the machine for several days and on several occasions has run for a period of 45 minutes without errors.

It became apparent that in order to locate the sources of errors which did show up, a revision of the test equipment in the Console Room was necessary, and so a revised system has been installed. This permits the stopping and starting of the computer in a periodic manner and enables the visual study of each time pulse or flip-flop action by the operator.

In running these first programs through the computer, we are continually running into situations which cause slight changes in program timing or voltage amplitude settings. These changes are essentially a part of the engineering design. It is encouraging, therefore, to note that even before such adjustments are made throughout the system, the programs can be run for periods as long as 45 minutes.

During the next two week period the systems group will concentrate on coordinating the gains which have been made to date. This will necessitate considerable work in marginal checking to uncover the weak points in the overall system. In order to

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1.1 Whirlwind I System Test (Continued)

speed this portion of the program, the second shift, which was recently interrupted, due to vacations, has been resumed.

(G. C. Sumner)

The WWI system has now grown to the point that simple programs can be followed. The following orders have been installed: ca, ad, ts, sl, sr, mh, sp, cp, su. Test Program Number 1, which complements all flip-flop registers periodically has been run for periods of 45 minutes without error. It should be emphasized, however, that there are a number of electronic details that have been uncovered but not disposed of which must be cleared up before reliable operation is obtained. The object of systems testing at this point has been to get a fairly complicated program operating with reasonable consistency and then go back carefully to clear up detail discrepancies. An example of the things not disposed of is the timing of CR check. The timing was carefully worked out in preliminary tests within the register, but in actual operation the transit time of pulses received via the main bus adds to the timing squeeze. As it now stands, correct operation is obtained as long as CR flip-flops stay healthy. However, if any of them becomes slightly marginal, an extra stop alarm results. This matter is high on the priority list. Also the Program Counter is oversensitive to input amplitude and is not reliable enough as a counter. A delay element at the FF trigger input is required.

The control circuits for obtaining periodic operation have been revamped to allow delaying the sweeps of synchrosopes. The panels in Test Control have been rearranged. Those panels which replaced the WWI control matrix (mostly coders) are no longer needed and have been removed.

(H. F. Mercer)

The following failures of electrical components have been found since August 5, 1949:

<u>TUBE</u>	<u>QUANTITY</u>	<u>COMMENTS</u>
7AD7	1	Flip-flop tube in Storage Switch Switch Panel. Flip-flop would not restore with

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1.1 Whirlwind I System Test (Continued)

<u>TUBE</u>	<u>QUANTITY</u>	<u>COMMENTS</u>
		up to 22 volts on cathode but would restore with neighboring flip-flop tubes down to 5 volts and start at 9 volts on way up. Tube showed short between screen and control grid. Clock readings: Filament hours 506.4, Plate hours 470.2.
6SN7	1	Tube in Time Pulse Distributor Output Panel had intermittent grid short. Clock readings: Filament hours 713.4, Plate hours 657.6.
<u>PULSE TRANSFORMER</u>	<u>QUANTITY</u>	<u>COMMENTS</u>
5:1	1	Replaced Pulse Transformer T-3 in Register Driver, Type 1, Serial #1. Intermittently open primary caused loss of shift pulses to digits 8-15 while checking scale factor operation.
1:1	1	Replaced Pulse Transformer T-1 in A-register, Serial #8. Intermittent open in secondary caused a failure of ARS to read to AC.

1.2 Storage Tube Reliability Tester

(R. L. Sisson and L. J. Nardone)

Installation of teletype equipment for "reading-in" and "reading-out" of the storage tube reliability tester has been completed. Although teletype operation has yet to be fully tested, a few tests indicate that successful operation will be obtained.

The expansion and conversion of the reliability tester to a 5 tube unit is now 100 percent completed. Only minor changes

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1.2 Storage Tube Reliability Tester (Continued)

for improved operation will be made as tube testing is carried out.

1.3 Five Digit Multiplier

(E. S. Rich)

One multiplier failure was recorded during the last two-week period. This failure was the result of a poor solder joint in the power-cable connector to the restorer-and-clock-pulse distributor. The error occurred on August 9 after an eight-day error-free run. Operation since that time also has been without errors. One tube and three clamping crystals that were contributing to low margins were replaced on August 13. The tube was a type SR-1030 (preproduction 7AK7) which had been in operation over 11,000 hours.

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2.0 CIRCUITS AND COMPONENTS

2.1 Circuits by System Number

410 In-Out Control

(H. S. Lee)

The aluminum panel has been fabricated, painted, and is now being engraved.

820 ES Deflection

(H. Kenosian)

Decoupling coils of the ESD transmission line termination panel have been constructed. These coils must pass 1.5 amperes of current, so that they are necessarily large. Inductance is 680 microhenrys but the Q is very low (20) because of the type of construction.

(C. W. Watt)

ESD Decoders: Final assembly is about 90 percent complete.

ESD Output Panels: Complete and tested.

ESD Transmission Line: The lower channels for the ST mount and all the transmission lines and associated hardware for racks E0 - E15 have been installed, including the sections crossing the aisle. This was finished somewhat ahead of schedule.

833 Signal Plate Driver

(C. W. Watt)

Drawings for the signal plate driver are complete and sheet metal work has started three days behind schedule.

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835 ES Drivers

(C. W. Watt)

Holding Gate and Read Gate Generators: Work is about 90 percent complete in the shop on these two panels. Testing will begin during the week of August 22.

2.5 Tubes and Components

(H. B. Frost)

Tests made this week on a group of 6AS7G tubes and a group of 6AN5 tubes, both of which have been on life test 2000 hours, are rather promising. No apparent cathode interface is noticeable in either group. Some apparent cathode poisoning in the 6AS7G tubes noted at 1000 hours has disappeared at 2000 hours. Only one of twenty 6AN5 tubes has changed appreciably; this tube has increased in plate current.

Some scope pictures were taken this week of long period (1 millisecond time constant) emission decay observed by means of the pulse testing equipment mentioned in the last bi-weekly.

Because of a considerable amount of cooperation received this last week, the tube shop records are in somewhat better shape.

(J. Olivieri)

The following complements have been completed and delivered:

- 6 Standardizer Amplifiers
- 1 IOC Synchronizer Panel
- 3 ESD Decoders
- 1 Teletype Reader and Control
- 1 Storage Selection Mixer
- 1 IOC Interlock Panel
- 1 IOR Auxiliary Panel
- 1 Holding Gate Generator
- 1 Read Gate Generator

6AN5's and 6AS7's having 2000 hours were retested for B. Frost.

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2.5 Tubes and Components (Continued)

Curves of a normal and abnormal 7AD7 were drawn.

Plate, screen, and cutoff distribution information for 725 7AD7's of the F8B production type was compiled. This shows the 0 hour distribution and 100 hour distribution.

Ninety 7AD7's and ninety 7AK7's were burned. Forty-five 7AD7's have been tested in preparation for burning.

The backlog of tube data cards is rapidly being completed by additional help. All of the backlog of cards have some information on them and these should be completely finished within two weeks.

2.6 Test Equipment

(R. L. Best)

Five multivibrator frequency dividers have been built and distributed. An engineering note has been written describing these units, and will have the number E-281.

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<u>2.2 WWI Drawing List</u>	<u>Block Diagram</u>	<u>Block Schematic</u>	<u>Circuit Schematic</u>
System	B-37071-6		
Control	B-37098-6		
Master Clock	B-37159-5		
101 Pulse Generator	B-37155-4	B-32385	E-32333-5
102 Program Counter	B-37062-6	B-32213-1	D-31516-6
103 Program Register	B-37067-4	B-39289-2	D-33836-1
104 <u>Control Switch</u>			
Input Panel	B-37066-5	B-34321-1	
Matrix Panel	B-37066-5	C-33843-2	R-32722-4
Switch Panel	B-37066-5	B-34100	Z60CS00-2-F
Output Panel	B-37066-5	B-34101	Z60CS00-D
105 Operation-Matrix Driver Panel		Z60CM00-B	Z60CM00-1-G
105 <u>Control-Matrix</u>			
(1-40), Rack C-9	D-37192		
(41-80), Rack C-10	D-37193		
(81-120), Rack C-11	D-37194		
105 Control-Pulse Output Unit		Z60CP00	Z60CP00-1-C
106 <u>Time-Pulse Distributor</u>			
Counter Panel	B-37068-6	Z60PDC0-3-D	Y60PDC0-E
Output Panel	B-37068-6	Z60PDC0-4-C	Z60PDC0-1-F
109 Clock-Pulse Control	B-39817-5	C-32642-5	E-31916-8
110 Frequency Divider	B-37154-4	B-32264-1	R-31729-3
111 Synchronizer	B-37172-2	C-33465	R-33466-2
112 Restorer-Pulse Generator	B-37160-5	B-32209-4	D-31909-8
200 Test Storage	B-37156-2		
201 Test-Storage Amplifiers	B-37127-7	C-32355-4 C-33708	D-33705-2

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	<u>Block Diagram</u>	<u>Block Schematic</u>	<u>Circuit Schematic</u>
2.2 <u>VWI Drawing List (continued)</u>			
201 <u>Storage Switch</u>			
Input Panel	B-37121-2	B-34322-1	
Matrix Panel	B-37121-2	C-32855-4	R-32722-4 D-33706-2
Switch Panel	B-37121-2	B-34102	Z60CS00-2-F
Output Panel	B-37121-2	B-34103	Z60CS00-D
202 <u>Toggle Switch Storage</u>			
Switch Panel	B-37122-3	C-33708	D-33706-2 C-33707
Output Panel	B-37122-3	C-32080	E-32721-4
203 <u>Flip-Flop Storage</u>			
Output Panel	B-37080-5	B-32209-1	E-31635-6
Register Panel	B-37087-4	B-32208-1	E-31621-6
Control	B-37081-7	D-32106-3	
301 A-Register, Digit 0	B-37056-3 B-37072-9	B-31574-1	D-31573-3
301 A-Register, Digits 1-15	B-37056-3	B-31211-3	D-31276-12
302 <u>Accumulator</u>			
Digit 0	B-37173-1	D-32851-1	R-32850-4
Digit 0, Auxiliary Panel	B-37173-1	B-32492-2	D-32602-1
Digits 1-14	B-37173-1	D-31213-4	R-31275-10
Digit 15		D-33964	
303 B-Register	B-37097-6	B-31212-5	D-31277-3
304 Sign Control &	B-37072-9		
308 Divide-Error Control		C-31576-3	E-31619-2
305 Step Counter	B-37074-7	D-31029-2	D-39764-4
305 Step-Counter Output		A-32723-1	D-32735-2
306 Multiply &		B-31532-3	E-31538-5
307 Shift Control	B-37072-9		
308 Divide Control	B-37072-9	B-31552-3	R-31718-4
308 Overflow & Special Add Memory	B-37072-9	B-31576-5	E-31672-5

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2.2	<u>WVI Drawing List (continued)</u>	<u>Block Diagram</u>	<u>Block Schematic</u>	<u>Circuit Schematic</u>
310	Point-Off Control	B-37072-9	C-31600-6	E-31717-6
400	<u>Input-Output</u>	B-37178-1		
	403 In-Out Register	B-37178-1	B-32434-2	D-31277-8
	404 Comparison Register	B-37178-1	B-32578-3	E-32576-8
	404 Comparison-Register Check	B-37178-1	B-33488-1	E-33515-2
601	Check Register	B-39816-3	B-32577-1	E-32576-8
601	Check-Register Check	B-39816-3	B-32018-1	E-32023-3
602	Alarm-Indicator Control	B-37175-1	B-33603	E-33651-3
820	<u>ES Deflection</u>			
	ESD Gate Panel	B-37220	A-34036	B-33876-1
	ESD Decoder	B-37220		E-33908-2
	ESD Output	B-37220		C-34182-1
820	Storage Selection Mixer			SB-34311-2
831	ST Mount	B-37220		SC-34040-2
832	<u>EST Output</u>			
	RF Amplifier	B-37220		D-34315
	Gate Tubes	B-37220		C-34251
833	Signal-Plate Driver	B-37220		D-34029-1
834	Gun Driver	B-37220		SD-34181
835	Holding-Gate Generator	B-37220	A-34354	C-34060-4
835	Read-Gate Generator	B-37220	A-34355	C-34324-4
835	RF Pulser			SE-34549
	Standardizer Amplifier		A-33881-1	C-33880-2
	Bus Driver, Arithmetic Element		A-32297-1	D-31727-7
	Bus Driver, Flip-Flop Storage		A-32296-1	D-31726-7
	Register Driver, Type I		B-32207-1	E-32261-10

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<u>2.2 WWI Drawing List (continued)</u>	<u>Block Diagram</u>	<u>Block Schematic</u>	<u>Circuit Schematic</u>
Register Driver, Type II		B-32691-2	D-32690-3
Bus Connections	B-37124-4	C-37123-3	
Fuse-Indication Panel			W60PPO0-7-D
Voltage-Variation Panel			T60PPO0-6-D
WWI Power-Connector Pin Connections			B-31955-6
Digit-Interlock Panel			W60PPO0-8-B
Fixed-Voltage Switching Panel			T60PPO0-11-B
Power-Interlock & Indication Panel			Z60PPO0-12-B
Power-Supply Control		D-32017-5	D-33184-4 (cabling diagram)

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3.0 STORAGE TUBES

3.1 Construction

(F. H. Caswell, T. F. Clough and P. Youtz)

The storage tube group was on vacation the first week of this period. The second week we built one storage tube, one research tube and initiated processes so that we can construct during August two storage tubes and one research tube each week.

The storage tubes constructed during August will have a heavy evaporated film of silver on the mica for the signal plate instead of the silver paint. We hope this will produce a cleaner and more uniform signal plate. At present we are using a modified evaporation tube for this silvering process. When we get sufficient experience with the process we will do it in a tube on the vacuum-firing system. We do not expect to do this before September.

(R. Shaw)

Engineering Note E-265 has been issued describing the procedures to be followed in maintaining records of the materials used in tube construction.

Drawings are being prepared of an evaporation tube for silvering the back surface of mica dielectric plates.

The storage-tube drafting group has also been engaged in the layout of jigs and other equipment to aid tube construction.

(W. E. Pickett)

Glass Components - Most of the work has centered on bringing the inventory of glass components to a level that will not cause any delay in the construction program. The stock of evaporating-tube envelopes is high and the supply of storage-tube envelopes will take us through the first week of this next period. More envelopes for storage tubes will be constructed if the proposed schedule remains constant.

We have received some ten-pin stems from the local vendor and they seem satisfactory for our needs. A few tubes will

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3.1 Construction (Continued)

have to be constructed before a definite decision can be made about these stems.

No unusual difficulties were encountered and none are expected in this next period.

(J. S. Palermo)

Mechanical Components - The requisitioned mechanical components for the tube construction program of the next two months have been received as planned. In our endeavor to reproduce storage tubes, we have ordered 24 units of all components necessary and therefore eliminated any variables due to different alloys and processing. In addition, all like components are being cleaned simultaneously to avoid a varied technique. To this must be added the controlled evaporation of silver, which excludes variables due to atmospheric elements. Our final target assembly techniques in the Filtered Air Room have been improved continually and a more detailed microscopic examination is being given each successive storage tube target assembly. Particular attention is being given to the results.

A new boiler assembly has been designed and a new boiler assembly jig has been drawn. The construction of this jig has already been discussed and planned with L. Prentice. It is expected that the results of this effort will be available for the next report.

3.2 Test

(C. L. Corderman)

No new tubes were tested during this period due to the storage-tube construction-group vacation. The TV unit was checked over to remove a random disappearance of the picture.

(A. H. Ballard)

Preliminary design has been completed on the automatic control box to be used with the TV demonstrator unit. Construction will begin next week.

Since I will be associated in the future with the High-Speed Write-Read Unit, I have spent the past week in becoming familiar with that system and its operation.

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3.2 Test (Continued)

(J. S. Rochefort, A. H. Ballard and N. S. Zimbel)

The Engineering Note on the High-Speed Write-Read Unit is in the hands of the Storage Tube Group editor.

Preliminary investigations of minimum operation times as well as minimum holding-gun restoring times are being undertaken.

(H. Rowe)

Testing has been completed on RT51, the secondary emission tube, and a memo is being written. A brief summary of the values obtained for  $\delta$  follows.

$V_p$	$\delta$	
50	1.00	first crossover
20	0.75	minimum value between <del>0</del> and first crossover
5	0.93	

3.4 Unclassified

(C. L. Corderman)

Preliminary work has been done on a thesis investigation concerning the influence of mosaic size and spacing upon storage stability and resolution.

(J. H. McCusker)

A rough draft of a thesis on the velocity and current-density distributions in the electron beams of holding and high-velocity electron guns has been written.

(M. I. Florencourt)

Memoranda on the construction, processing and initial testing of the storage tubes from ST96 on are just being issued. These reports were delayed because there was some question of their interest to the members of the project. However, enough persons are convinced of their value that they will continue to be issued on all future tubes. The memoranda mentioned below bring the information up to date

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3.4 Unclassified (Continued)

on the storage tubes so far constructed.

E-268	ST96
E-269	ST97
E-270	ST98
E-271	ST101
E-272	ST102
E-280	ST103
E-273	ST105
E-274	ST106
E-275	ST107
E-276	ST108
E-277	ST109 & ST110

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4.0 INPUT-OUTPUT EQUIPMENT

4.2 Display

(E. S. Rich)

Engineering Note E-276 has been issued describing the system which is being built for special display. The necessary modifications of the Dumont type 241 oscilloscope which is to be used have been determined and Best is now testing the intensifier-gate-generator circuits. An effort is being made to have this system in operation with WWI by September 12.

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5.0 INSTALLATION AND POWER

5.1 Power Jabling and Distribution

(H. S. Lee)

A construction requisition has been forwarded to the shop for the fabrication of the external power cables for ESD panels in Racks EX7 and EX8. The shop has promised completion of this order by August 26. The installation of internal rack wiring and hardware is complete except for these cables.

Drafting of cables for the ES digit prototype has been completed. Fabrication will start within the next week. The internal rack wiring and hardware for the prototype is now being installed. In addition the installation group has started the initial installation of hardware in Racks EO through E15.

Drafting of external power cables for special display is approximately 50% complete. The installation of rack wiring and hardware will start this date.

On August 16 the following individuals met in conference to make a final decision as to the type of power distribution that would be employed for the ES digits: Watt, Dodd, Read, Taylor, Adams, Hoberg and Lee. Three possible methods of distribution were considered:

1. Digitwise as in the present system supplying the repetitive elements.
2. Staggered digitwise, with the ES digits being supplied by the same lines that feed the AE and FF digits that are one digit to the right.
3. Registerwise, so that all ES racks would be treated as one digit.

The registerwise distribution was the final selection as it provided isolation of storage from the other computer elements and also was more economical from a circuit standpoint.

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### 5.1 Power Cabling and Distribution (cont)

On August 15 a conference was convened to reconsider the location of the COR panels (reference page 19 Bi-Weekly Report of August 5). It was decided that the COR panels will remain in their present location, that is, not staggered. Individuals attending were Fahnestock, Everett, Taylor, Adams, Watt, O'Brien, Sumner, and Lee.

C. Watt and H. Lee are presently recapitulating the power requirements for the -15 and -150 volts power supplies in order that future demands exceeding present load may be anticipated. It is requested that these individuals be advised as to any such demand that has not previously been brought to their attention.

A study is being made toward the establishment of systematic procedures for the testing, maintenance and adjustment of power equipment, relays and other elements of the power supply and distribution systems. In this connection, Mr. C. S. Mason a plant engineer of the New England Telephone and Telegraph Co. is expected to visit the project within the next week to inspect our relay installation and make recommendations as to test and maintenance methods and procedures that we could employ to insure peak performance of the relay installation. An effort is also being made to have one or our technicians trained by N.E.T. and T. Co. in relay maintenance.

The design of the HV distribution system has been temporarily suspended pending receipt of dimensional information from the manufacturer on the HV filament transformer. Two of these transformers will be included in each rack junction box which is a major element of the HV system.

### 5.2 Power Supplies

(H. Kenosian)

Breadboard for the holding gun anode supply is complete and is now under test.

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5.2 Power Supplies (cont)

(W. J. Nolan)

Power Supply During Load - This unit consists of two banks of 5 parallel 715's driven by d-c coupled amplifiers. This unit will enable fine control of high pulse, sine wave and d-c currents for the purpose of testing power supplies and associated circuits.

In addition the unit can be used as a high power level pulse generator.

Construction of the unit is complete, and is now being tested.

5.3 Video Cabling

(R. Fairbrother)

Work has started on the production of a block schematic for ES Deflection, to aid in the design of video cables for those two racks. Most of the questions have now been answered, and the schematic should be ready for checking by Wednesday, the 24th.

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6.0 BLOCK DIAGRAMS

(J. M. Salzer)

A seminar has been started mainly for the benefit of those connected with the testing and checking of systems operation. The group meets four times a week and the lecturing load is divided between the systems and block diagram groups with a tendency for it to shift to the latter. For the time being the subject concerns timing of operations and simple programs, and will change according to the needs of the group.

(R. P. Mayer)

The timing diagrams and the block diagrams for the control matrix and control matrix output connections are being revised to include the following: 1) additional transfer checks for ri and ao, 2) additional drawings showing the "9" orders, or "9" orders shown in parentheses on existing drawings, 3) a modification in storage selection control which allows PR to be cleared directly from a control matrix output unit whenever possible, rather than mixing from commands that go to test storage or to ES control, 4) all commands necessary for ES operation, and how they fit in with other commands.

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7.0 CHECKING METHODS

(C. W. Adams)

Various short programs have been tried on the computer with varying success. These programs count, complement, shift, etc., in cyclic fashion with the AC being used as a counter to vary the repetition rate of the cycle. Everything is controlled by central control under the program in test storage. It turns out to be fairly simple to change programs practically at will to obtain different visual effects on the indicator lights. Naturally, errors creep in to these programs as well as into the computer, causing a certain amount of annoyance when no one knows whether to blame the error on the computer or on the program. This annoyance is not great at this time, and as techniques improve, should become even less.

(G. Cooper)

The program for checking CPO units has been completed and found to check failures in 51 of the 100 units now being used. It is very likely that another program (or more) can be written for the remaining units. The word program is used in the sense of a group of orders and constants which will fit into test storage.

Some thought has been given to checking ES. It does not appear likely that much can be done to check ES with test problems. About all that can be done is to transmit a number to ES and then see if ES contains it at some later time. It would be necessary to use TS to hold the orders and constants for such a program. It seems desirable that some sort of built-in checking be provided for ES. An embryonic system has been devised in collaboration with R. P. Mayer and J. M. Salzer.

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9.0 FACILITIES AND CENTRAL SERVICE

9.1 Publications

(J. N. Ulman, Jr.)

The following material has been received in the Library,  
Room 217, and is available to 6345 Personnel.

6345 Reports

<u>No.</u>	<u>Title</u>	<u>Classified</u>	<u>No. of Pages</u>	<u>Date</u>	<u>Author</u>
E-262	Crystal Limiter	-	5	7-25-49	K. McVicar
E-263	Modification of 2:1-4:1 Binary Frequency Divider	-	2	7-25-49	H. Kenosian
E-264	The History of the Development of High-Vacuum, Hot-Cathode, Electrostatic Electron Guns	-	78	7-25-49	J.S. Rochefort
E-265	Control of Tube Components	-	2	8-1-49	(R. Shaw (T.F. Clough
E-267	Time Saved by Simultaneous Operation of AE and FS	-	6	7-29-49	R.P. Mayer
E-268	Storage Tube ST96: Construction, Processing and Initial Testing	-	3	8-1-49	M. Florencourt
E-269	Storage Tube ST97: Construction, Processing and Initial Testing	-	2	8-1-49	M. Florencourt
E-270	Storage Tube ST98: Construction, Processing and Initial Testing	-	4	8-1-49	M. Florencourt
E-272	Storage Tube ST102: Construction, Processing and Initial Testing	-	3	8-9-49	M. Florencourt
E-278	Equipment for Special Display	-	3	8-11-49	E.S. Rich
M-887	Bi-Weekly Report, 8-5-49	R	29	8-5-49	
M-888	Proposed Test Program for Reader-Recorders	-	8	7-9-49	E.S. Rich
A-93	Time Schedule Posting	-	2	8-2-49	R.A. Osborne
A-94	Internal Handling of Classified Documents (Supplement to A-58)	-	1	8-3-49	J.C. Proctor

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Library Files

<u>No.</u>	<u>Title</u>	<u>Author</u>
Bk.Sh. 73	RCA Review, A Technical Journal; June 1949 Pre- And Post-Analyses by Reeves Analysis and Computer Group; June 30 - July 12	RCA (Reeves Instru- ment Corp.
134	Eastman Kodak Monthly Progress Report No. 12, Photographic Digital Reader-Recorder	A.W. Tyler G.E. Company
173	Project Hermes Report: The Hermes A-3 Flight Simulator	G.E. Company
173	Bibliography of Project Hermes Reports Issued, 1945 Through 1948	G.E. Company
180	Document Office Bulletin, August 2, 1949	RLE, MIT
181	Pegasus, April, 1949	Fairchild Corp.
217	The Flight Signal Decoder, 7, April, 1949	(Cornell Aero Lab
326	The Aerovox Research Worker, April - July, 1949	Aerovox Corp.

9.2 Standards, Purchasing and Stock

(H. B. Morley)

Standards - At a meeting of the Standards Committee on August 9, it was decided that no more Class 7 cross-reference standards will be issued. Instead, a notation will be made on Class 6 standards indicating which components are acceptable for WWI use. It was also decided that minimum stock levels as indicated in the standards book will be lowered in the future, and that the majority of items can safely be allowed to drop to fairly low levels before reordering. Certain critical and long delivery items will continue to be ordered far enough in advance to insure adequate stock on hand. A program will be instituted to withdraw a supply of WWI replacement spares from stock and place them in assigned storage.

The following standards were issued and/or revised:

6.021A	Capacitors - Ceramic	8/15/49
6.021B	Capacitors - Ceramic	8/16/49
6.023B	Capacitors - Mica	8/15/49
6.024A	Capacitors - Plastics	8/15/49
6.024E	Capacitors - Paper	8/15/49
6.024F	Capacitors - Paper	8/15/49
6.025B	Capacitors - Trimmer	8/15/49
6.032E	RF Chokes - Iron Core	8/16/49
6.076B	Coil Forms	8/15/49
6.155A	Resistors - High Voltage	8/16/49
6.155B	Resistors - High Stability	8/16/49
7.043	WWI Power Connectors	8/15/49
7.504-4	WWI Abbreviations	8/18/49

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9.2 Standards, Purchasing and Stock (Continued)

Procurement - Quotation and sketches of case size have been received on the combination Power and Filament Transformer for the LV Floating Power Supply. A quantity of six transformers has been ordered and a standard will be written on these after tests have proven them satisfactory.

The sample of the High Voltage Filament Transformer has not been received yet, although it is over one month overdue from promised delivery date. Efforts are being made to expedite delivery. The procurement of all special transformers continues to present the problem of considerable delay both in the time required to get quotations and for delivery; therefore, any requests for special transformers should be presented to procurement as far in advance as possible.

9.3 Construction

(L. Prentice)

Machine Shop - We have finished fabrication of the parts for the ESD Transmission Line and have completed installation. We wish to acknowledge the useful help of Mr. Reardon on this project.

The machine shop has been painted this past week and most of the surplus stock removed to the basement.

Work in progress:

Parts for teletype reader control  
6 spare castings for ESD  
18 backing plates for storage tube

Sheet Metal Shop - Completed during last period:

1 chassis for teletype reader control.  
14 special brackets for ESD  
6 power rack strips

Work now in progress:

18 signal plate driver panels

(R. A. Osborne)

Production Report - The following items have been completed since August 5th:

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9.3 Construction (Continued)

5 Multivibrator Frequency Dividers  
55 93 Ohm Terminating Resistors  
52 68 Ohm Terminating Resistors  
3 Breadboards

(A. R. Curtiss)

Assembly and wiring of the WWI R.F. Pulser is approximately 90% complete.

Since the last report a d-c coupled probe and a Holding Gun Anode supply were breadboard assembled while a power supply dummy load and its associated power supply were constructed.

Changes were made in the R.F. Induction Heater and type RCA 5563 Thyratrons were installed in place of the ampere 575 diodes.

Miscellaneous cables were assembled and two power supplies repaired.

9.4 Drafting

(A. M. Falcione)

There is a general tendency amongst Whirlwind personnel to remove prints from the Library and Engineering Files for reference purposes and retain same in their desks or benches. It is very important that these prints be returned to their respective files as soon as possible for the use of others. In the event a print is desired for a period of time, or for marking up, it is suggested that a print be obtained from the Print Room for the use of the particular individual concerned. This will save much valuable time for those who desire a readily available source of information and for print distribution and replacement.

During the past week approximately 1000 tracings were sent out for Micro-Filming in accordance with our security procedure.

Mrs. Kay Richardson, supervisor of the Print Room, will terminate her services as of 26 August 1949. Her pleasant character and manner, together with her efficient handling of the Print Room operation, have been a great asset to the project.

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9.4 Drafting (Continued)

The work load on the drafting department has greatly reduced since the last report.

9.6 Time Schedules

(R. A. Osborne)

The following Storage Tube Time Schedules are now available:

20	S.T. Mount	C-33572-1
18	E.S. Output	C-33573-1
18	Signal Plate Driver	C-33574-1
18	G <sub>m</sub> Driver	C-33577-1
	R.F. Pulser	C-33576-1
	Read Gate Generator	C-34514
	Holding Gate Generator	C-34514
2	ESD Gate Panels	C-33588-1
3	ESD Decoder	C-33586-1
2	ESD Output	C-33589-1
	ESD Transmission Line	C-34506
	ESD Transmission Line Termination Panel	C-34507
2	ESD Display	C-34508
	Storage Selection Mixer	C-34509
	ES Control	C-33581-1
	Program Register	C-33582-1
	HV Cathode Power Supply	C-34510
6	LV Floating Power Supply	C-34511
	HG Anode Power Supply	C-34512
	+500 Power Supply	C-34513

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