

revised 10/10/50

INFORMATION FOR: [REDACTED]

SUBJECT: Visit [REDACTED]

BRG 13	REV DATE 18 July 50	BY 05747
ORIG COMP 656	SPI 50	TYPE 03
ORIG CLASS 5	PAGES 4	REV CLASS C
JUST 22	NEXT REV 20/0	AUTH: 10/10/50

1. Time and Place of Meeting - The meeting was held on October 20, 23, 24, 1951 at [REDACTED]

2. Attendance [REDACTED]

3. Discussion

1. 7-11 - The undersigned had hoped to check out and return with 10 ST-1 switch systems. This was not possible because difficulty had been encountered in low temperature operations. The receiver units operated satisfactory down to 40° F. where the battery ceased to be functional. They also continued to operate down to about 20° F. The undersigned informed the people [REDACTED] that as long as the unit satisfied the above requirements they would be acceptable for our uses. By the time of the undersigns departure, the temperature problem that existed had been solved and the people at Baird were made aware that all 10 transmitters and receivers should have been given final tests prior to the undersigns next visit, in order that he might check out the units and return with them to Washington.

The evaluation of the [REDACTED] transmitter has been slowed up because we were trying to do it under adverse conditions. Since this condition has been clarified, progress will be forthcoming at a reasonable rate.

2. 7-13-B [REDACTED] Transmitter ST-2A - [REDACTED] was informed of the results of this summer tests on the nine units at Washington. From these tests it is concluded that the limiting factor in the operation of an ST-2A is the tube life that can be obtained from a 6AN6 sub-miniature tube. It has been decided that on the production ST-2A to be made, all efforts will be toward increasing the life of the 6AN6. An increase in life can be obtained at a small sacrifice in power output. Some of the units have been giving up to 45 and 50 milli-watt output. These units appear to be good only for 1500 hours. If we were to drop the power output to 30 milli watts and thus, operate the tubes at a more conservative figure.

Memorandum for the record.

Subject: Visit [redacted]

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It is possible that we might double the life of the tubes. The undersigned, therefore, recommends that we set all ST-2A output at approximately 30 milli-watt output. The range we might lose in power output is far out weighed by the longer life operation.

The manufacturer has already encountering trouble on the delivery date of the hard-to-get vital tantalum capacitors. Using all pressure possible [redacted] was able to get a verbal agreement to a delivery on December 15. Were this delivery made, everything would be satisfactory but past experience with this company shows that if the delivery were made by December 31, we should consider ourselves fortunate. Therefore, the undersigned is going to make every effort possible to obtain more of a priority on the delivery of these items. Since his return from this trip the undersigned has been in touch with [redacted] of the Contract Branch and [redacted] is looking into the possibility of obtaining these capacitors from the Armed Services.

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3. P-163-B - [redacted] Transmitter ST-3 - Because of the production contract of 100 ST-2A's, there has been a relief in the pressure on the ST-3. This will be the first time that an ST unit has been made that the field people were not depending on it to satisfy their operational needs. This relief in pressure allows us to try some minor variations which should bring about improved operation without running the risk of fouling up operations. Any of the changes that will be made will in general be minor and should have no drastic effect on the equipment. The following are some of the design goals that are being incorporated in the ST-3. The modulator will be a diode and will thus remove the effects of the aging of tubes upon the modulating sensitivity. In the ST-2A the capacity between the collector and emitter was used as the modulator. If the tubes aged, the value of this capacity changed as a function of the input capacity of the oscillator tube. The afore mentioned diode will eliminate this problem. By installing a diode in the feed back patch of the audio amplifier an AGC capability of up to about 60 db is expected to be possible. The diode charges the capacitor on positive peaks and thus, controls the bias of the first audio transistor. The demonstration showed to the undersigned was the following. With the undersigned talking directly into the microphone at a distance of about 2" and [redacted] about 9 ft. away talking in a soft voice, the under-

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Memorandum for the record.

Subject: Visit [redacted]

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It is possible that we might double the life of the tubes. The undersigned, therefore, recommends that we set all ST-2A output at approximately 50 milli-watt output. The range we might lose in power output is far out weighed by the longer life operation.

The manufacturer has already encountering trouble on the delivery date of the hard-to-get vital tantalum capacitors. Using all pressure possible [redacted] was able to get a verbal agreement to a delivery on December 15. Were this delivery made, everything would be satisfactory but past experience with this company shows that if the delivery were made by December 31, we should consider ourselves fortunate. Therefore, the undersigned is going to make every effort possible to obtain more of a priority on the delivery of these items. Since his return from this trip the undersigned has been in touch with [redacted] of the Contract Branch and [redacted] is looking into the possibility of obtaining these capacitors from the Armed Services.

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3. P-10J-1 - [redacted] Transmitter ST-3 - Because of the production contract of 100 ST-2A's, there has been a relief in the pressure on the ST-3. This will be the first time that an ST unit has been made that the field people were not depending on it to satisfy their operational needs. This relief in pressure allows us to try some minor variations which should bring about improved operation without running the risk of fouling up operations. Any of the changes that will be made will in general be minor and should have no drastic effect on the equipment. The following are some of the design goals that are being incorporated in the ST-3. The modulator will be a diode and will thus remove the effects of the aging of tubes upon the modulation sensitivity. In the ST-2A the capacity between the collector and emitter was used as the modulator. If the tubes aged, the value of this capacity changed as a function of the input capacity of the oscillator tube. The afore mentioned diode will eliminate this problem. By installing a diode in the feed back path of the audio amplifier an AGC capability of up to about 20 db is expected to be possible. The diode charges the capacitor on positive peaks and thus, controls the bias of the first audio transistor. The demonstration showed to the undersigned was the following. With the undersigned talking directly into the microphone at a distance of about 2" and [redacted] about 9 ft. away talking in a soft voice, the undersigned was able to follow both sides of the conversation. Further details of this system will be forthcoming as the project progresses but at this time all indications are that we might have the answer to a long needed AGC system.

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Memorandum for the record.

Subject: Visit [redacted]

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It is possible that we might double the life of the tubes. The undersigned, therefore, recommends that we set all ST-2A output at approximately 30 milli-watt output. The range we might lose in power output is far out weighed by the longer life operation.

The manufacturer has already encountering trouble on the delivery date of the hard-to-get vital tantalum capacitors. Using all pressure possible [redacted] was able to get a verbal agreement to a delivery on December 15. Were this delivery made, everything would be satisfactory but past experience with this company shows that if the delivery were made by December 31, we should consider ourselves fortunate. Therefore, the undersigned is going to make every effort possible to obtain more of a priority on the delivery of these items. Since his return from this trip the undersigned has been in touch with [redacted] of the Contract Branch and [redacted] is looking into the possibility of obtaining these capacitors from the Armed Services.

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3. P-103-B - [redacted] Transmitter ST-3 - Because of the production contract of 100 ST-2A's, there has been a relief in the pressure on the ST-3. This will be the first time that an ST unit has been made that the field people were not depending on it to satisfy their operational needs. This relief in pressure allows us to try some minor variations which should bring about improved operation without running the risk of fouling up operations. Any of the changes that will be made will in general be minor and should have no drastic effect on the equipment. The following are some of the design goals that are being incorporated in the ST-3. The modulator will be a diode and will thus remove the effects of the aging of tubes upon the modulating sensitivity. In the ST-2A the capacity between the collector and emitter was used as the modulator. If the tubes aged, the value of this capacity changed as a function of the input capacity of the oscillator tube. The afore mentioned diode will eliminate this problem. By installing a diode in the feed back patch of the audio amplifier an AGC capability of up to about 60 db is expected to be possible. The diode charges the capacitor on positive peaks and thus, controls the bias of the first audio transistor. The demonstration showed to the undersigned was the following. With the undersigned talking directly into the microphone at a distance of about 2" and [redacted] about 9 ft. away talking in a soft voice, the under-
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Memorandum for the record.

Subject: Visit [redacted]

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1. AM-43 - [redacted] Transmitter

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The people at [redacted] have now come up with a working system which will fit the initial requests for [redacted] packages and transmission over a distance of 50 ft. Our request for a new transducer has been in since early October but none has been forthcoming. The only thing for [redacted] to do prior to the marriage of their part of the system with [redacted] is to install and adapt to the new transducer, this should take about two weeks from the time they have the new transducer. Since his return to Washington, the undersigned has informed the Engineering Division of this situation and is currently waiting for them to deliver the afore said transducer.

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2. AM-44 - Carrier Current System

A proposal for 100 transmitters and 50 receivers is being drawn up [redacted] The following specifications to be incorporated in the proposal. The transmitters will be built on two frequencies such that two of them may be operated on the same line at the same time without causing interference in the receiver. Seventy-five of the transmitters will be built with the Burnell filter incorporated in the same package. The remain twenty-five will have filters supplied in a separate package thus allowing more flexibility for concealment. The Burnell filter almost completely eliminates harmonic transmission and thus, detectability on standard AM broadcast receivers. From the checks made at West Out it appears that the 2 db insertion loss in the filter will not adversely effect the operational capability of the system.

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The passive switch problem that was encountered at West Out namely that under certain conditions the transmitter could be turned on but not turned off, is solved when Burnell filter is used in the Transmitter. The reason is the following: when a transmitter without the filter is put on the line it loads the line at the switching frequency of 20 KC and therefore, sufficient power is not developed across the switch to activate it, however, when the Burnell filter is used since it is a band-pass filter it blocks the 20 KC and the switch remains as sensitive as before.

[redacted]
DHB/APD/EB

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Distribution

Orig. - P-77

P-163-B - 1

P-163-B - 1

P-212 - 1

AM-43 - 1

AM-44 - 1

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