

UNCLASSIFIED

AD NUMBER

AD038018

CLASSIFICATION CHANGES

TO: unclassified

FROM: confidential

LIMITATION CHANGES

TO:
Approved for public release; distribution is unlimited.

FROM:
Distribution authorized to DoD only;
Administrative/Operational Use; JUL 1953. Other requests shall be referred to Bureau of Ships, Washington, DC 20350.

AUTHORITY

NAVSHIPS ltr dtd 1 Apr 1968; NAVSHIPS ltr dtd 1 Apr 1968

THIS PAGE IS UNCLASSIFIED

Armed Services Technical Information Agency

Because of our limited supply, you are requested to return this copy **WHEN IT HAS SERVED YOUR PURPOSE** so that it may be made available to other requesters. Your cooperation will be appreciated.

AD

38018

NOTICE: WHEN GOVERNMENT OR OTHER DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE U. S. GOVERNMENT THEREBY INCURS NO RESPONSIBILITY, NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

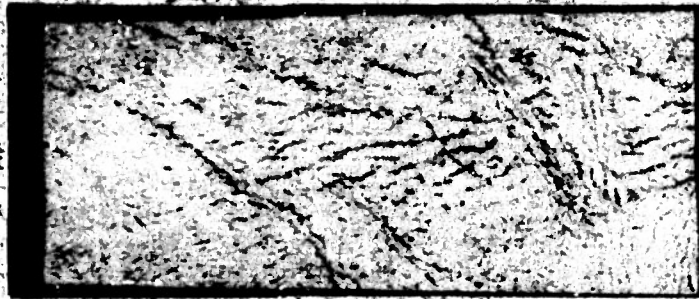
Reproduced by
DOCUMENT SERVICE CENTER
KNOTT BUILDING, DAYTON, 2, OHIO

CONFIDENTIAL

AD No. 38013

ASTIN FILE COPY

CONFIDENTIAL
SECURITY INFORMATION



FURTHER DISSEMINATION IS AUTHORIZED ONLY TO
MILITARY AGENCIES



VARIAN
associates

FURTHER DISSEMINATION IS AUTHORIZED ONLY TO
MILITARY AGENCIES

CONFIDENTIAL
SECURITY INFORMATION

CONFIDENTIAL

SECURITY INFORMATION

VARIAN ENGINEERING
REPORT NO. 132-9

COPY NO. 3

FURTHER DISSEMINATION IS AUTHORIZED ONLY TO
MILITARY AGENCIES.

PROGRESS REPORT

REFINEMENT AND PRODUCTION OF 1000 RUGGED
X-BAND LOCAL OSCILLATOR V-52 KLYSTRONS

For Period: 1 March to 31 March 1953

Prepared for

Bureau of Ships Navy Department


on


BuShips Contract NObs-5358

Prepared by:

David Clifford

Approved by:


H. Myrle Stearns
Vice-Pres. and Gen. Manager


Sigurd F. Varian
Vice-Pres. for Engineering

NOTICE:

This document contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18 U. S. C., Sections 793, 794, 795. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

JULY 1953

8100712

54AA

Page 1 of 6

49548
25604

CONFIDENTIAL

SECURITY INFORMATION

8110730-54

CONFIDENTIAL

SECURITY INFORMATION

PURPOSE

The purpose of the program engaged under BuShips Contract NObs-5358 is to refine and produce one thousand (1000) rugged ~~X~~-band local oscillator V-52 klystrons. This tube is to comply with the specifications of SHIPS E-720, which were subsequently modified at a conference held at the Bureau of Ordnance, Washington, D.C. on 20-21 May 1952 and later at a conference held at Varian Associates on 29-30 September 1952.

Page 2 of 6

CONFIDENTIAL

SECURITY INFORMATION

CONFIDENTIAL

SECURITY INFORMATION

PROGRESS

During March emphasis was placed on the completion of prototype production tubes of two types. The first tube type utilized the same parts as used in tubes already in production, except that a drawn steel flange was brazed to the body to provide for proper seating of the mica window. This construction served to replace a large number of machined parts with punch-press parts and to provide a flange that could be brazed or soldered directly to the external cavity. Two tubes of this type were completed and submitted for tests. Both tubes were found to have excessive response to unwanted spurious modes and to be rather poorly compensated for ambient warm-up.

Development of the second type of prototype tube was also started this month. This tube was fabricated almost entirely of punch-press parts. The object of this construction was to utilize as many as possible of the standard parts manufactured in large quantities for metal receiving tubes. The body section proper remained a lathe-turned part with a simple milled slot for the iris, and the same drawn steel window flange was used as for the first prototype. It was planned to devise means for mounting the brazed cathode assembly on the molded glass stem used for metal receiving tubes, and to devise a similar type of stem mount for the reflector. Five tubes of this type were assembled ready for insertion of grids and mica windows when tests were completed on the first prototype. It then became obvious that the same difficulties with undesired modes and temperature compensation encountered in the first prototype tube would be met in the newer design. Because of these design problems, it was decided to shift this work to a developmental

Page 3 of 6

CONFIDENTIAL

SECURITY INFORMATION

CONFIDENTIAL

SECURITY INFORMATION

contract being negotiated, and concentrate on refining production techniques to produce the tube as it had been originally designed.

In this connection, no tubes of the original design were actually produced during this month. However, parts, such as the molybdenum drift tube, continued to be made. The drift tubes are being drawn from sheet stock rather than machined from solid rod, with very satisfactory results. The parts are uniform in dimensions, and the surface finish is considerably superior to that of machined parts. During March parts were drawn with improved quality and reduced shrinkage over the previous month's production.

Several pieces of equipment required for V-52 production were either constructed or ordered this month. A stem machine was built and placed in operation. Sample lots of stems were fabricated and minor modifications made to the machine for optimum performance.

Two electric ovens and recording process controllers were ordered from the Despatch Oven Company. The first of these ovens is for production annealing of cathode and reflector stems, and is designed to permit the use of a non-oxidizing atmosphere such as nitrogen or forming gas. The recording process controller ordered for this oven will provide both a carefully controlled annealing schedule and an individual record of each annealing cycle. The second electric oven is designed for use in curing the molded silastic bases on the tube. This oven, also ordered with a recording process controller, incorporates a timed exhaust system to provide for the external exhaust of the fumes that are liberated during the first few hours of the curing cycle.

Page 4 of 6

CONFIDENTIAL

SECURITY INFORMATION

CONFIDENTIAL

SECURITY INFORMATION

A set of design drawings was received from the Lindberg Engineering Company in connection with the hump-back conveyor furnace previously ordered. Upon examination of the drawings, minor modifications were requested by Varian to best meet our requirements. These were agreed to by the supplier, and delivery of the furnace was promised for May.

During March a new test equipment console was designed and built. This console was designed to include one complete set of production test equipment arranged to provide maximum efficiency and economy in test operations. Test equipment units previously received were incorporated, and the completed console was placed in operation.

Page 5 of 6

CONFIDENTIAL

SECURITY INFORMATION

CONFIDENTIAL

SECURITY INFORMATION

PROGRAM FOR NEXT INTERVAL

Emphasis will be made during the next period to construct 200 V-52 tubes of the present design.

Estimated expenditures during March 1953: \$20,700.00

Estimated man-hours during March 1953: 1720

Page 6 of 6

CONFIDENTIAL

SECURITY INFORMATION

Armed Services Technical Information Agency

Because of our limited supply, you are requested to return this copy WHEN IT HAS SERVED YOUR PURPOSE so that it may be made available to other requesters. Your cooperation will be appreciated.

AD

38018

NOTICE: WHEN GOVERNMENT OR OTHER DRAWINGS, SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE U. S. GOVERNMENT THEREBY INCURS NO RESPONSIBILITY, NOR ANY OBLIGATION WHATSOEVER; AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION, OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

Reproduced by
DOCUMENT SERVICE CENTER
KNOTT BUILDING, DAYTON, 2, OHIO

CONFIDENTIAL