SUPPLEMENTARY BI-MONTHLY

PROGRESS REPORT NO. 12

On

CONTRACT NO. NObsr-42419

(TRANSVAR ROTARY JOINT)

C O N F I D E N T I A L

SUBMITTED BY

BUREAU OF SHIPS

On

CONTRACT NO. NObsr-42419

INDEX NO. NE050526

By

SPERRY GYROSCOPE COMPANY
Division of The Sperry Corporation
Great Neck, New York

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INTRODUCTION:

The purpose of the current program of the reactivated subject contract is to study both theoretically and experimentally the Transvar rotary joint. It is also the purpose of this program to complete the development of the joint to provide a final, complete working model.

The current program is a reactivation of subject contract previously completed on June 30, 1950 and is manifested by a change in work content of the original contract. This program, in requesting a final complete working model, calls for further development on the Transvar rotary joint, resulting in more desirable electrical characteristics such as lower insertion loss, high power capacity, uniform characteristics with rotation, eight percent bandwidth at 9365 Mc., and the incorporation of mechanical features such as bearings, dust seals and mounting lugs. Consideration will be given to methods of pressurization and problems involved in production design.

FINAL MODEL OF TRANSVAR ROTARY JOINT:

The fabrication and assembly of the rotary joint has been completed and electrical tests of VSWR and insertion loss have been made over the frequency range 8900-9900 megacycle.

Resonant characteristics were observed at 9027, 9274, 9527 and 9793 megacycles, where high insertion losses, in excess of

26 db, were observed at particular rotational positions in the diagonal-arm operating condition. Between resonant frequencies the maximum insertion loss is about 1 db and VSWR of about 1.5 throughout the complete rotation.

Accelerated tests are now being made on the life of the oil seals. Only one seal is undergoing test and after 80,000 revolutions no sign of wear on either the seal or on the anodyzed rubbing surface is evident. These tests will be continued to obtain more data on the seals.

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