STUDENT WORKBOOK



AIR TRAINING COMMAND

MISSILE LAUNCH/MISSILE OFFICER

LN₂/He TRANSFER SYSTEM DATA FLOW ANALYSIS

August 1961

COURSE OZR1821B/3121B-4 TECHNICAL TRAINING

FOR INSTRUCTIONAL PURPOSES ONLY

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THE STUDENT STUDY GUIDE, contains the specific information required in the Unit of Instruction or it will refer to other publications which the student is required to read. It contains the necessary information which is not adaptable for student study in other available sources. The material included or referred to is normally studied either outside the classroom or during supervised study periods in the classroom. Also included are thought provoking questions which permit self-evaluation by the student and which will stimulate classroom discussion.

THE STUDENT WORKBOOK, contains specialized job procedures, important information about the job, questions to be answered, problems to be solved and/or work to be accomplished by the student during the classroom/ laboratory, airplane/equipment activity. It serves as a job sheet, operations sheet, mission card, checklist, or exercise to be performed during classroom or laboratory periods. Also included are questions which will aid the student in summarizing the main points of the subject or Unit of Instruction.

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LN2/He TRANSFER SYSTEM DATA FLOW ANALYSIS

OBJECTIVE

This project is designed to help the student gain an understanding of the Liquid Nitrogen/Helium Transfer System operation.

EQUIPMENT

None

INSTRUCTIONS TO STUDENT

Using the following schematics trace the flow of LN2/He and electrical signals.

- 1. Liquid nitrogen/helium transfer subsystem (Figure 1)
 - a. Trace flow of liquid nitrogen.
 - b. Trace flow of helium.
 - c. Trace electrical signals for valves.
 - d. Demonstrate to the instructor your ability to perform the above tasks.
- 2. PCU and HCU Relay Logic (Figure 2)
 - a. List <u>all</u> the conditions that will automatically put the PCU in Emergency Pressurization.
 - b. List the conditions that will automatically put the PCU in Emergency Pressurization prior to Change to Internal

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- c. List the conditions that will automatically put the PCU in Emergency Pressurization after Change to Internal.
- 3. Using Figures 1 and 2 answer the following questions:
 - a. What is the source of pneumatic pressure for the missile propellant tank pressurization during:
 - (1) Standby
 - (2) Countdown
 - b. In the event that the source of normal standby pressure decays to its lower limits, it will then be switched over to ______ pressurization.
 - c. The GN2 ground pressurization storage bottle has two functions. They are:
 - (1)
 - (2)
 - d. At countdown start, the purpose of Inflight He2 is to
 - e. If the launcher platform should stick in some mid-position, the missile propellant tank pressures would be maintained from the ______ at the following pressures.

(1) PSI in the LOX tank.

(2) PSI in the fuel tank.

Missile tank pressures could be maintained for approximately ______ hours with the launch platform in this position.

- f. The opening of valve 26 in the PDU during a countdown allows He flow to the _____.
- g. The opening of valve 11 in the PDU during a countdown allows He flow to the _____.
- h. During standby, GN2 is flowing through valve 50 in the PDU to the PCU. At the start of countdown, valve 50 closes and valve ______ opens allowing He flow to the PCU for the purpose of ______.



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