



## NATIONAL BUREAU OF STANDARDS REPORT

**NBS PROJECT** 

**NBS REPORT** 

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PROGRESS REPORT

WATER-VAPOR TRANSMISSION IN REPRIGORATED AR NOVS. January 1 to March 31, 1953

F. J. Powlitch, Jr. Heating and Air Conditioning Section

for

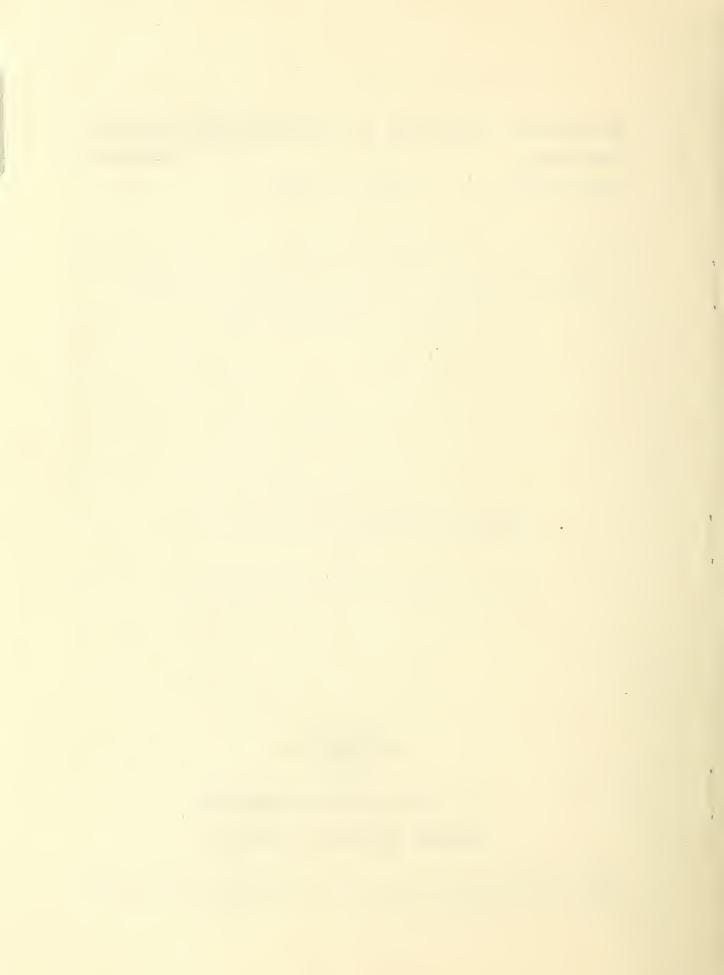
Office of The Guartermaster General



## U. S. DEPARTMENT OF COMMERCE NATIONAL BUREAU OF STANDARDS

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## January 1 to Parch 31, 1953 Office of The Quartermaster General

Construction of the apparatus and installation of the instrumentation and wiring was completed. Calibration of the apparatus and operational tests of the conponent parts were started.

System. It was desired to operate the cold tide as low as -20 deg I maintainin a minimum temperature difference between the air and cold surface to prevent condensation of moisture within the box. A plot of relative humidity virtues aximum allowable temperature difference between the air and coldest surface to prevent condensation was pre-rared for a range of air temperatures from -20 deg to 70 deg I. This plot shows at 70° relative humidity and -20 deg I dry bulb, the maximum allowable temperature difference to prevent condensation would be 6 deg I.

Freliminary ref ineration system tests showed that water 'n the refrigerant system was causing the expansion valves to freeze up. The water was recoved with suitable dryers. Further tests showed a need for increasing the

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fri eration control and present to erature distribution. Orders have been placed and installa ion all start upon delivery of materials.

A heat calibration for the warm side of the operatus was started. Capillary tubes were installed house the warm box and the room and between the cold hot and the room. The purpose of these capillary tubes is we equalize the pressure on each side of the test marti with the room pressure and also to admit hir for a prosure test of the seals of the apparatus before c.c. out. These tubes will be closed when steady becreatures are achieved on each side of the test panel. Lest anel for calibration purposes was constructed fro dx4 ir int and fully insulated with fiber lass insulation. each face of the test panel was covered with 1/16 is o aluminum sheet as a vapor seal. The construction of this panel is similar to that of the walls of the servicetus. The test panel was installed and sir the pur- orplied to the warm side. Sove small lear were indicated and will be corrected before w ter-varor trans issica tests are started. The heat calibration tasts are no: in progress.

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the following surposes to lean started.

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  - a. 2) der i below reus temmerature
  - b. 't room temperature
  - c. 20 der 1 abov. rom terperament State
    buridley controlled at 50
- 2. Vapor tichtness test of condition our second
- 3. Operational test of harddiffer, deba ddition and their respective captions of weighing device.
- 4. in ultaneous heat and water-vapor true size in test of a manel of known character.

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