COMBUSTION RESEARCH LAB

CELL 13 FACILITY OUTLINE

DESCRIPTION :

The Cryogenics Fluids Technology Office uses CRL Cell 13 as a general purpose liquid nitrogen (LN2) test area. CRL-13 consists of a 12' x 20' test cell, a 13' x 13' high bay area accessible from the test cell which exits outdoors through roll-up doors, a 12' x 19' shop area most of which houses a control room, a 300 gallon LN2 supply dewar positioned in the test cell and GN2 and GHe services supplied from a CRL central tube bank. The basic rig includes an insulated 65 gallon LN2 tank (2 foot diameter vertical cylinder) containing two 6-inch sight glasses in the tank shell and one 2-inch sight glass in the tank top head. The 304 S.S. tank was designed for 150 psia internal pressure and full vacuum at -320 F. The tank is equiped with an external heating cable (60 Watts/foot maximum) and an external LN2 cold wall to reduce heat input into the tank. The tank has a liquid level control and pressure control. A vacuum pump provides low pressure vent capablities to 2 psia. A thermax unit supplies LN2 saturated vapor at various pressures and temperatures. An Escort II data system has been installed for steady-state testing.

CAPABILITIES :

* CONTROLLED LN2 SUBCOOLING IN TANK FOR INTERNAL TESTS OR TO SUPPLY EXTERNAL TEST DEVICES

* LN2 FOR JOULE-THOMSON DEVICE (VISCO-JET) TESTS
  Inlet: 14.7 to 60 psia at 138 to 165 R
  Outlet: 2 to 55 psia
  Flow Rate: 0 to 6 lb/hr

* SATURATED N2 VAPOR FOR JOULE-THOMSON DEVICE TESTS
  Inlet: 14.7 to 60 psia at 138 to 165 R
  Outlet: 2 to 55 psia
  Flow Rate: 0 to 2 lb/hr

* LN2 FOR SPRAY NOZZLE TESTS IN TANK
  Inlet: 25 to 150 psia at 139 R
  Flow Rate: 100 to 1000 lb/hr

* SATURATED N2 VAPOR FOR SPRAY NOZZLE TESTS IN TANK
  Inlet: 14.7 to 45 psia at 140 to 160 R
  Flow Rate: 5 to 125 lb/hr

DATA ACQUISITION SYSTEMS :

* ESCORT II MINICOMPUTER FOR STEADY STATE DATA
  156 channels at 1 sample/sec./channel

SERVICES :

* GN2 VIA CRL CENTRAL SUPPLY - 2200 PSIG MAX
* GHe VIA CRL CENTRAL SUPPLY - 2200 PSIG MAX
* AIR VIA CENTRAL SUPPLY - 125 PSIG MAX
* CITY WATER SUPPLY - 40 PSIG

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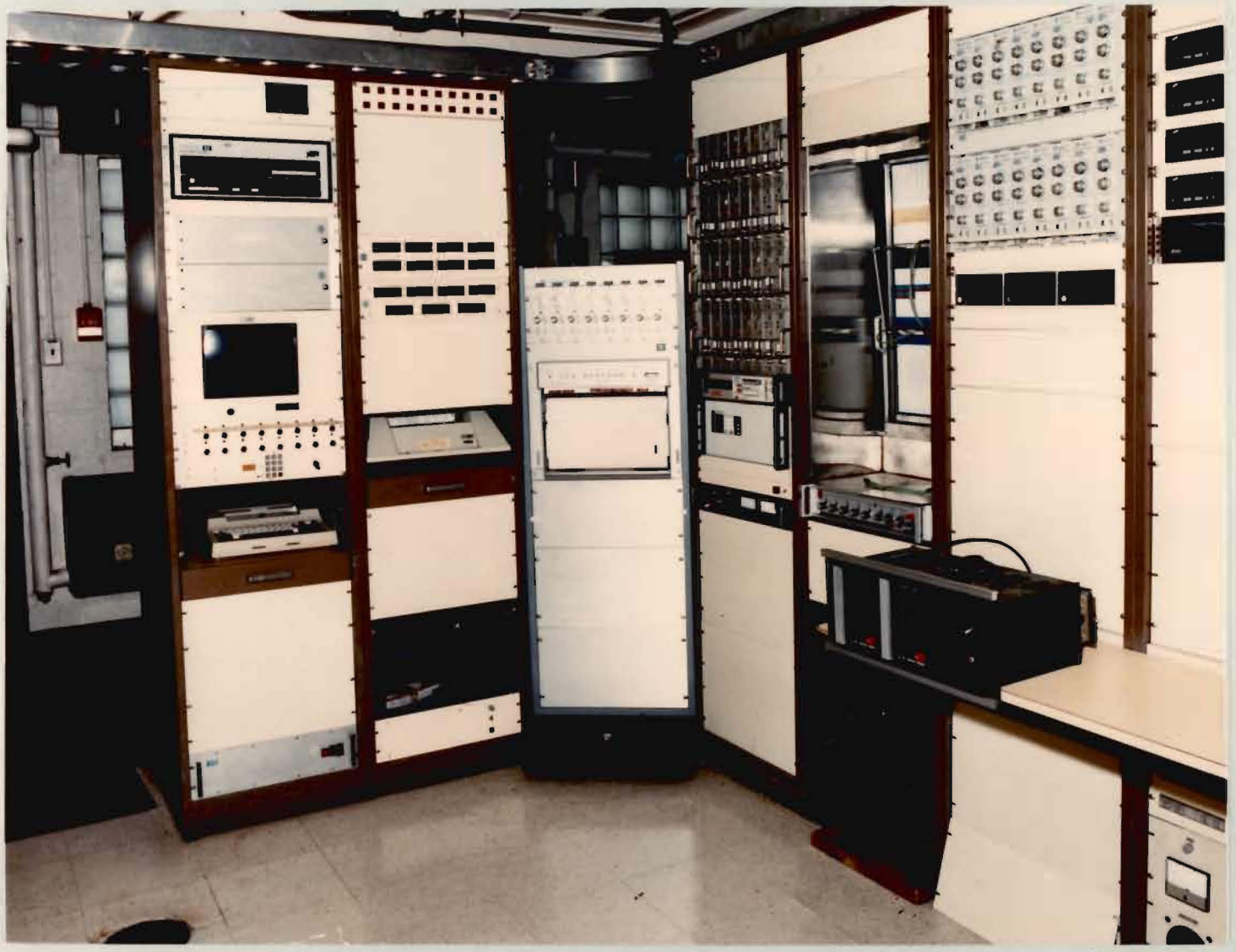
CELL 13 CONTROL ROOM



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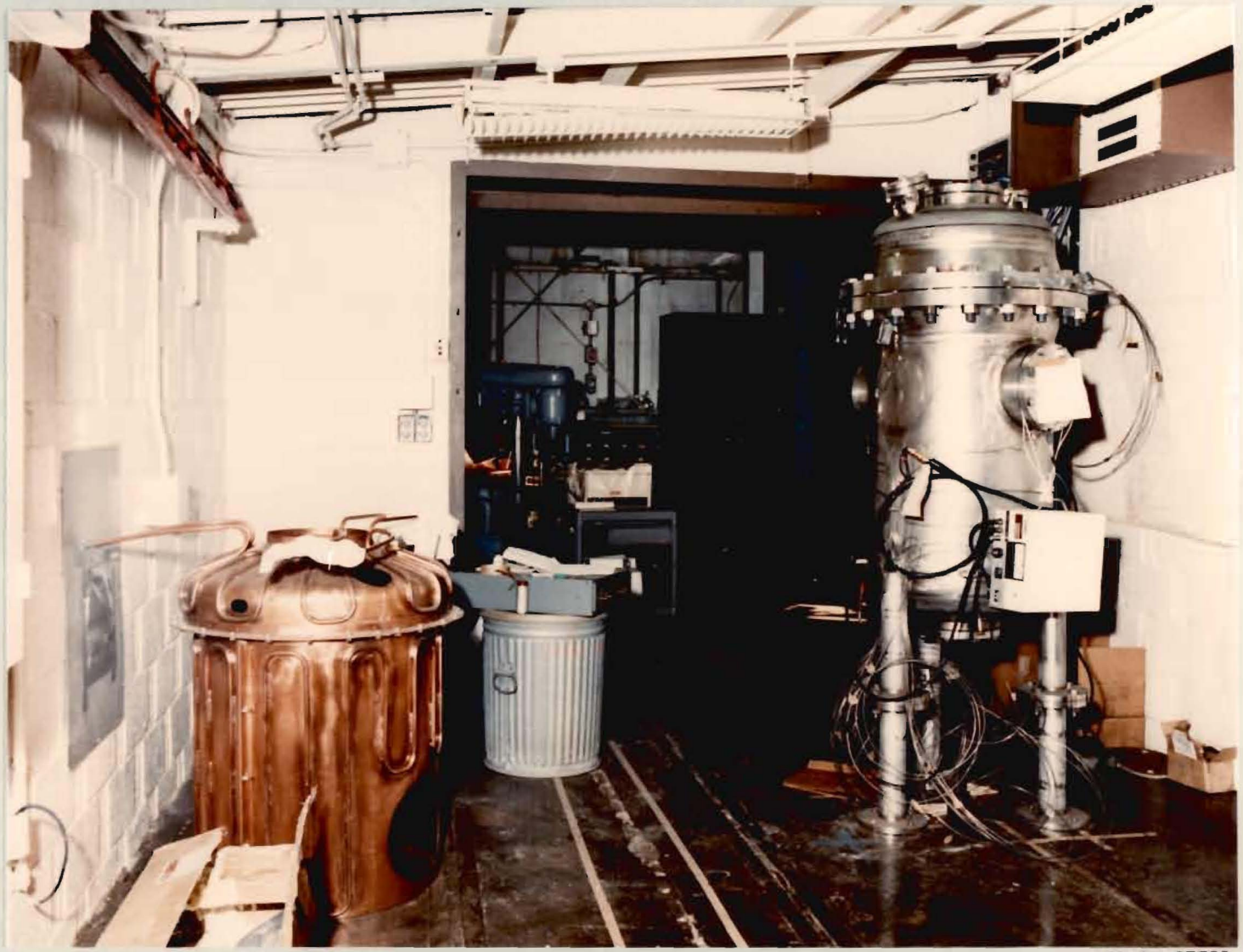
COMBUSTION RESEARCH LAB
CELL 13



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COMBUSTION RESEARCH LABORATORY

FACILITIES CATALOG

Prepared for

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