



N93-26900

 SPACE PROPULSION TECHNOLOGY DIVISION	 Lewis Research Center
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NEP FACILITIES (LERC)

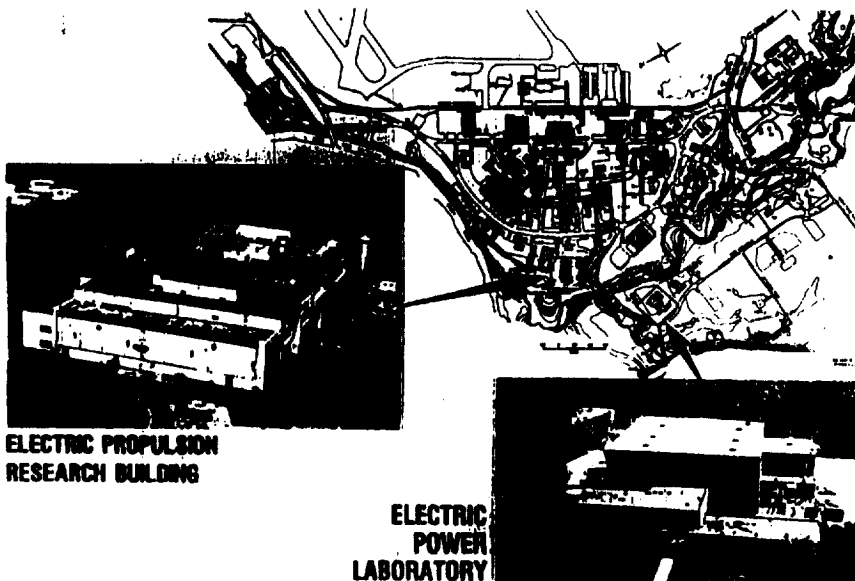
**Nuclear Propulsion Technical Interchange
October 21, 1992**

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Facility Manager/EPL, EPRB, Stirling**

NASA
C-16-05473

SPACE SIMULATION FACILITIES

Lewis Research Center



**ELECTRIC PROPULSION
RESEARCH BUILDING**

**ELECTRIC
POWER
LABORATORY**

ED 81104



EPRB

ELECTRIC PROPULSION RESEARCH BUILDING(#16)

FACILITIES

VACUUM CHAMBERS (9): RANGE FROM 3FT. TO 10FT. DIA.

BELL JAR SYSTEMS (6)

CAPABILITIES

EXTREMELY HIGH (~ 1000 STD L/M - H₂ @ 10⁻¹ TORR) PUMPING SPEEDS

HIGH VACUUM LEVELS (10⁻⁷ TORR)

CRYOPUMPED CHAMBERS

ACTIVITIES

COMPONENT DEVELOPMENT

THRUSTER TESTING

POWER CONDITIONING INTEGRATION



EPL

ELECTRIC POWER LABORATORY (BLDG.301)

FACILITIES:

VACUUM CHAMBERS(3): 5FT. X 15FT.; 15FT. X 63FT; 25FT. DIA. X 82FT. LONG

BELL JAR SYSTEMS(7)

MAJOR FEATURES:

CLOSED LOOP REFRIG. SYSTEM TO ODP TRAPS

FULLY AUTOMATED

<<< UTILIZATION - >>> LOW OPERATING COST & MANPOWER REQUIREMENTS

TANK 6:

* 20 OD PUMPS; 4 FORELINE BLOWERS; 3 MECHANICAL PUMPS

* > 240 KW THERMAL REJECTION LN₂ COOLED SHROUD

o SOLAR SIMULATOR

TANK 5:

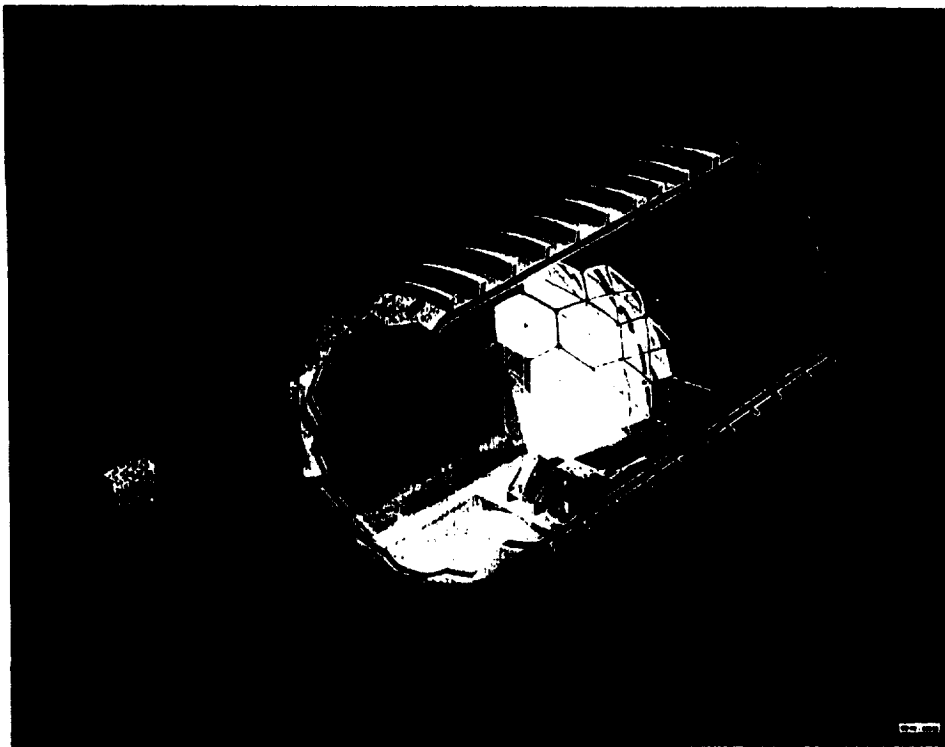
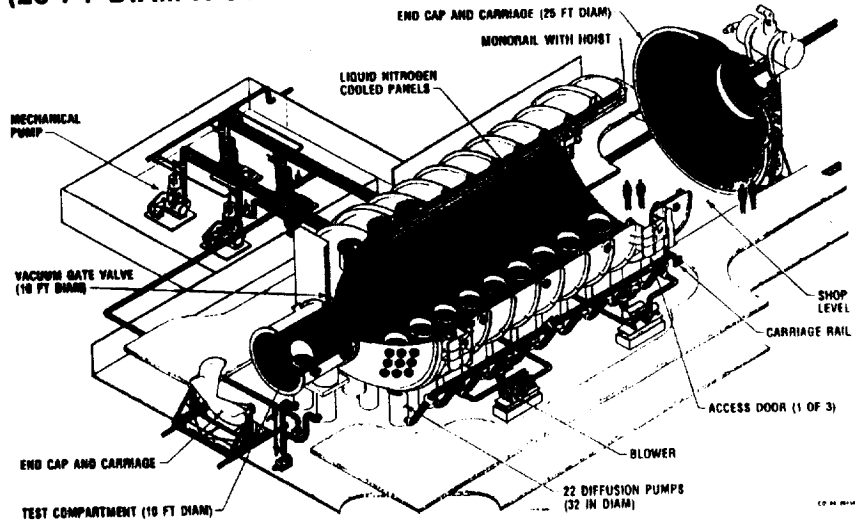
2000 PUMPS; 4 FORELINE BLOWERS; 4 MECHANICAL PUMPS

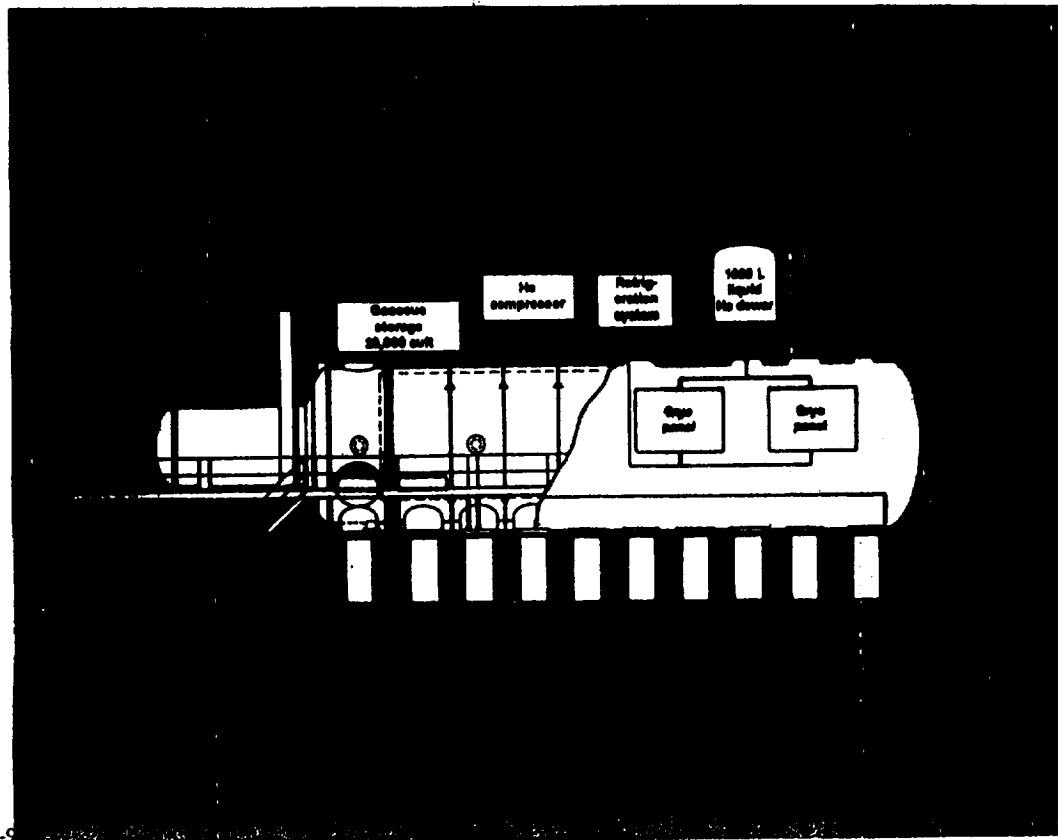
41M² CRYOPANEL - GHe/LHe REFRIGERATOR/LIQUIFIER CRYO-SYSTEM

* EXPECTED IN POST 1991 COF PROJECT

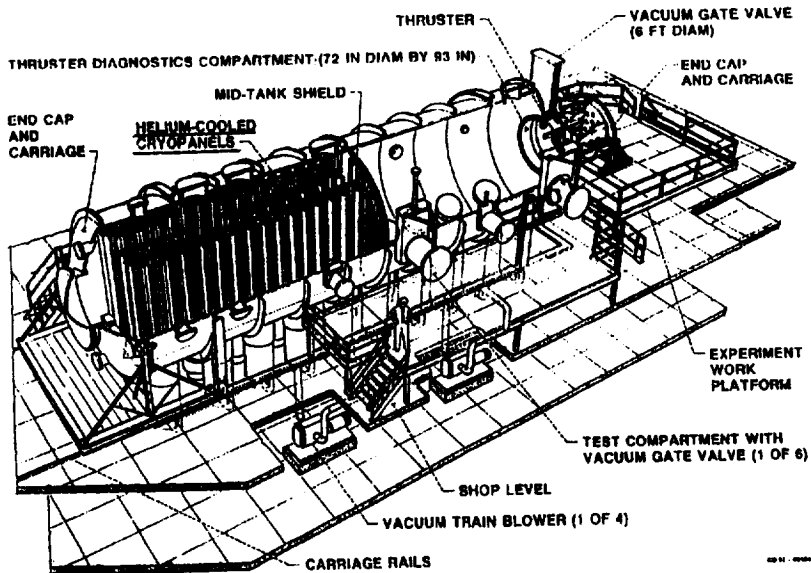
o ADVOCATE: 5400; INSTALL & OP 1994/1995

Lewis Research Center TANK 6 VACUUM FACILITY (25 FT DIAM X 82 FT OVERALL)



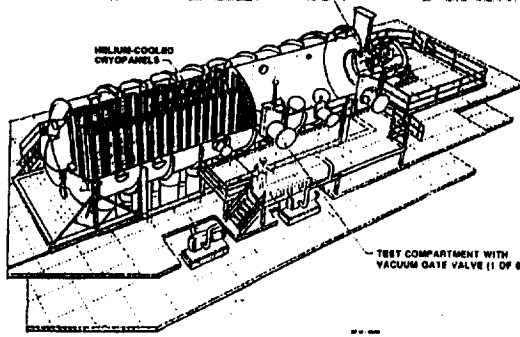
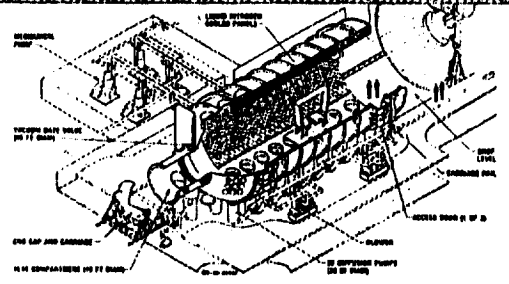


NP-TIM-9



		SPACE PROPULSION TECHNOLOGY DIVISION			NASA Lewis Research Center
NUCLEAR ELECTRIC PROPULSION					
LOW THRUST. ELECTRIC					
		<u>ION</u>		<u>MPD</u>	
		5KW (Xe)	25KW (Xe, Kr)	100KW (H ₂)	200KW (Ar)
\dot{M} (Mg/s)		5.3	27	40	320
REQ'D.PRESS.(TORR)		$<1.0 \times 10^{-5}$	$<1.0 \times 10^{-5}$	$<3.0 \times 10^{-4}$	$<3.0 \times 10^{-4}$
TANK 5 FACILITY					
(20)ODP/ \dot{M} (Mg/S)		5.3	22	25.5	100
ACTUAL PRESS(TORR)		1.3×10^{-5}	3.7×10^{-5}	4.8×10^{-4}	2.3×10^{-4}
CRYOPANEL/ \dot{M} (Mg/S)		8.0	TBD	TBD	155
ACTUAL PRESS (TORR)		1.2×10^{-5}	TBD	TBD	1.0×10^{-4}
FOCUS					
[USING FOUR(4) FORELINE BLOWERS & MECH. PUMPS = 300 Mg/SEC. @ 6×10^{-1} TORR - H ₂]					

Test Facilities For Electric Propulsion At NASA LeRC



• Tank has been cleaned of mercury contamination

• 20 QDR's ion pumps
• 100 sputter oxide 90,000 l/s
• xenon pumping capability

• Tank's 40 μm cryopump system operational

• Tank's pumping capability is unique to NASA with 20 QDR's and cryopump yielding 40,000 l/s for xenon