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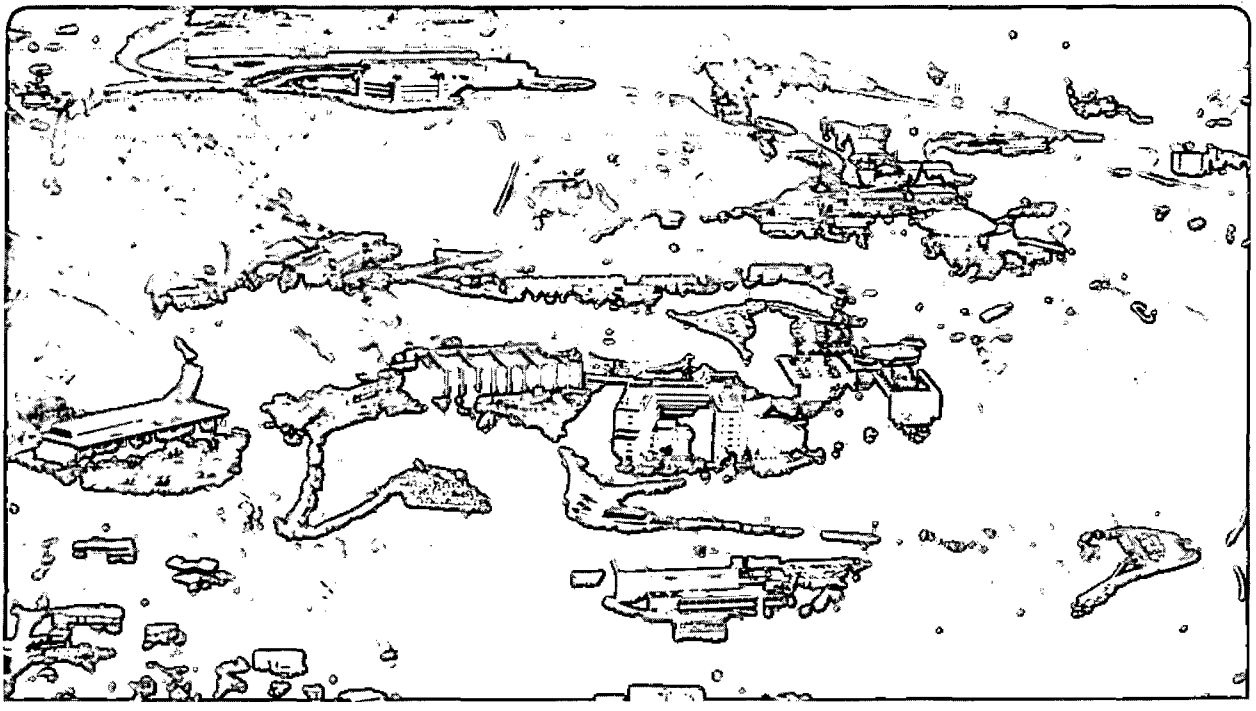

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LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA	CODE ES 0510	SPECIFICATION	SERIAL M484	PAGE 1 OF 1
WRITTEN BY Egon Hoyer	DEPARTMENT Mechanical Engineering	LOCATION Berkeley	DATE January 16, 1976	
TITLE ESCAR REFRIGERATION PLANT OIL - WATER REMOVAL SYSTEM FOR 3000 SCFM 300 PSI HELIUM GAS			CHECKED BY R Byrns	

1.0 SCOPE

This application covers an oil-water removal system for helium gas. The system is seen as a combination of a demister, filters, and adsorbtion units. The purified helium will subsequently be cooled to liquid form in a helium refrigerator-liquifier and high purity is required to prevent downstream plugging and malfunction.

2.0 OPERATING CONDITIONS AND PERFORMANCE

2.1 Minimum capacity of the oil-water removal system shall be 3000 SCFM of helium gas with a pressure range of 270 to 300 PSI with an entry gas temperature range between 50°F and 80°F.

2.2 The entering helium gas will contain 500 parts per million (.05%) average of oil with occasional stream loading to 1000 PPM of oil and 100 PPM (.01%) of water. The exit helium gas stream shall contain less than 0.1 PPM of oil and water.

2.3 The oil and water removal system shall be capable of continuous operation for a minimum period of 3000 hours without adsorbtion bed replacement.

2.4 The pressure drop across the system shall be less than 3.5 PSI with 3000 SCFM of helium gas flow at 280 PSI.

2.5 The system shall be capable of complete evacuation and leak tight with no detectable leaks on the most sensitive scale of a General Electric Halide Leak Detector. Ultimately, a mass spectrometer will be used by LBL to leak hunt to less than 1×10^{-6} standard cc/sec.

3.0 CONSTRUCTION

3.1 All pressure vessels shall be designed, constructed and tested in accordance with Section VIII of the latest ASME Code for Unified Pressure Vessels. Minimum design pressure shall be 320 PSIG. Vessels will be hydrostatically tested to 1.5 times minimum design pressure.

3.2 Helium gas inlet and outlet connections shall be 3" diameter ASA flanged.

3.3 Inlets and outlets to the vessels shall be adequately screened or filtered to prevent entrainment of the drying agent during process flow, purge back flow and evacuation.

4.0 INFORMATION REQUIRED

4.1 Within three (3) weeks following receipt of purchase order, the vendor shall furnish three (3) certified copies of installation drawings.

4.2 Bidders should furnish with their proposals a description of the unit offered including drawings, materials, cuts of details, and amount of adsorbent material required.

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