

10 February 2023

Subject: Pressure Swing Adsorption Nitrogen (N₂) Generator

A pressure swing adsorption (PSA) N₂ Generator is being added to the Davis Campus at the 4850 Level (380 ft above sea level) of the underground facility. The N₂ output of the Generator is replacing boiloff N₂ currently provided by underground storage of liquid nitrogen (LN). The gas stream is utilized as cover gas to avoid contamination of science equipment by trace quantities of atmosphere. Of greatest concern are residual Radon and Krypton in the output stream. Airflow rate between minimum and maximum is to be adjustable by PLC. Requirements for the generator are shown in Table 1.

As a contingency regarding future laboratory expansion, the proposed system shall be modular with future expansion capacity of 40% more than the specified maximum flow of Table 1.

	Min	Max	
N ₂ Flowrate	1	4.4	cfm
Supply pressure	70	100	psig
Discharge Pressure	25	70	psig
Inlet Airflow Rate		45	cfm
Relative Humidity	50	90	%
Temperature	68	80	F
Required N ₂ Purity	99.999		%
Adsorption Media	Carbon molecular seive		
Elevation above sea level	380		ft
Power	120		Volt
	5		Amp
Power frequency	60		Hz
Space allocation	2 W x 6 L x 6 H		ft
Controls	PLC		

Table 1