

### Helium Reserve Calculations

References:

- [1] HI-2002407, Rev. 10, Table 7.5.
- [2] HI-STORM CoC Amendments 1 through 4
- [3] HI-2043317, Rev. 6, EXCEL Calculation "MPC\_pres.xls".
- [4] HI-STORM CoC Amendment #5

Hypothetical Large Leak rate: 1.00E-05 atm-cc/s @ 25oC ref. ambient temperature

	<b>Calculations Supporting CoC Amendments 1 through 4</b>			
	<b>MPC-32</b>	<b>MPC-24</b>	<b>MPC-68</b>	<b>MPC-24E</b>
Free Vol. (lit.) {Ref. [1]}	6184	6529	5989	6490
Cavity Avg. Temp. (K) [1]	513.61	512.91	523.38	514.86
Min. Backfill Press. (psia@70F) [2]	44	44	44	44
Helium Backfill Volume (lit@1 atm & 25oC)				
Required to support 5atm	17940.0	18966.7	17050.0	18782.0
Min. Backfill Qty	18755.4	19801.7	18164.0	19683.5
Helium Reserve	815.4	835.0	1114.0	901.5
40-Year Helium Leak Volume (@1 atm & 25oC)	12.6	12.6	12.6	12.6

	<b>Calculations Supporting Amendment 5</b>			<b>MPC-24E</b>
	<b>MPC-32</b>	<b>MPC-24</b>	<b>MPC-68</b>	

Free Vol. (lit.) {Ref. [3]}	6428	6683	6428	6484
Cavity Avg. Temp. (K) [3]	529.3	529.3	519.1	529.3
Min. Backfill Press. (psia@70F) [4]	60.2	60.2	60.2	60.2
Helium Backfill Volume (lit@1 atm & 25oC)				
Required to support 7atm	25333.1	26338.1	25830.9	25553.8
Min. Backfill Qty	26673.3	27731.4	26673.3	26905.6
Helium Reserve	1340.2	1393.3	842.4	1351.8
40-Year Helium Leak Volume (@1 atm & 25oC)	12.6	12.6	12.6	12.6