Version 7.6 - 10/6/2010

doc 2843

Input value	
Calculated	

Quality	Meaning
***	Stable, well understood parameter
**	Reasonably well defined parameter
*	Rough estimate

Parameter	Value	Units	Quality	Req ID	Notes
Detector					
Num Vertical APA's	2		***	FR.Det.LAr Cryo.CST.STD	Chosen to balance construction, installation and cryostat design factors
Detector Vertical APA gap	2.5	cm	***		Stack of 8 x 3mm FR4 + 1mm of slop
Detector Height	14.0	m			
Num Transverse APA's	3		***	FR.Fac.LAr Cavern.Span	Chosen to result in a moderate cavern span
Detector Width	15.0	m			
Num Longitudinal APA's	28		***	FR.Phy.LAr Osc.Size	Chosen to achieve fiducial mass requirement
Detector Longitudinal APA gap	2	cm	***		Req'd for stack of 2 x 2 x 3mm FR4 + 3mm for inter-APA connection
Detector Length	71.0	m			
Total number of APAs	168				
Total number of cathode planes	224				
Detector Longitudinal Fid cut	1.5	m	**	FR.Phy.LAr Osc	Approx value for neutrino oscillation physics. 10cm US, 140cm DS. Basis: ArgoNeuT events and simulations
Longitudinal Fid fraction	98%				
Detector Active Mass	19.9	kton			
Detector Fiducial Mass	16.4	kton			
Number of readout wires	645,120				
Number of readout channels	336				
Number of grid wires	282,240				
Neutrino beam event rate	TBD	evt/day			
Cryostat					
Distance btw cathode plane & wall	0.5	m	*		Space for LAr recirc pumps, purity monitors, instrumentation, etc
Cryostat Width	16.0	m			
APA height above floor	0.5	m	*		Space for LAr piping, APA suppt rail, electronics
LAr depth above APA	0.5	m	*		Space for electronics
LAr Depth	15.0	m			
Ullage %	5.0%		***	FR.Det.LAr ESH.STD	Min value for control system response to fluctuations. Doc #2360
Ullage depth	0.8	m			
Cryostat Depth	16.0	m			Should be integral # of meters for membrane panels
Distance btw detector & far end wall	0.5	m	*		Space for purity monitors, instrumentation, etc
Hatch clearance at near end	2.0	m	*		Space for access hatch
Cryostat Length	74.0	m			Should be integral # of meters for membrane panels
Cryostat Surface Area	5248	m^2			
Cryostat Volume	18944	m^3			
Total LAr Mass	25	kton			
Cryostat Pit					
Insulation thickness	1	m	**	FR.Det.LAr OperCost	
Insulation heat loss	4.7	W/m^2	**	FR.Det.LAr Cryo.CST.Flow	based on k (insulation) = 0.0283 W/m-K for 1m insulation