14	Power / space requirements exceed CUC capacity	DAQ Technical			Leave provision for all data to be shipped to surface. Will require WDM on fibres – technically feasible, but expensive.
15	Insufficient throughput	DAQ Technical			plan to allow for expansion or upgrade of system components
16	CISC systems introduce noise in electronics	CISC Technical	Electric noise from the purity monitors is caused by the current surge in the discharging process of the main capacitor of the xenon light source when producing a flash	M	We will develop software for light source triggering mechanism to prevent the PrM flash lamp from flashing during photon detector data taking. In addition, we will make faraday cage to ground the light source. All CISC systems will be reviewed in regards the grounding & shielding plan
17	Not enough photons arriving at PMTs	DPPD, SPPD Technical	Due to the long drift distance and the position of the cathode on top of the PMTs, it could happen that not enough photons arriving to PMTs can be distinguished from noise.	L	In order to avoid this problem, the gain of the PMTs can be increased to be able to detect more photons. Otherwise, alternative light collection systems should be considered.
18	Air quality is very bad and affects the ventilation of the crates on top of the cryostat	DPCE, SPCE, DAQ Technical	Each uTCA crate, including the digitization cards inside, dissipates less than 300 W. The crates incorporate fan units for the cooling. The air should be reasonably clean in order not to obstruct the filters or the cooling units. This also impacts WIB crates, photon readout, power supplies and network switches.	L	The working conditions of any industrial environment or experimental hall at CERN/Fermilab are enough in order to guarantee the normal functioning of the fan units of the crates. There could be problems only in case of a very dusty environment. For instance if clouds of dust are liberated in the air due to the activity in the mine. Requirement to LBNF to have reasonable air conditions without over presence of dust, has to be set properly. This requirement should normally match also the one for health of the personnel operating around the experiment without the need of wearing masks.
19	Obsolescence of electronic components needed for maintenance during the long operation period of the experiment	DPCE, SPCE, SPPD, DAQ Technical	All electronics components will undergo obsolescence on the world market due to evolution of technology and market demand. In general electronic components are designed by industry for a lifetime much shorter than needed for DUNE. There is the risk that over 20 years period of operation time of DUNE some components will no longer be available for maintenance/repair. This is a general problem affecting all customized electronic components in DUNE (that are accessible) and a general DUNE policy should be established.	M	Allocate enough spares in order to be able to face this problem. It is preferable to have complete spares (e.g. complete spare cards) instead than spare components since also the technology in the industry to fix the cards may be evolving
20	LAr purity is less than expected or uniformity of the distribution of impurities is larger than	SPCE, DPCE, SPPD, SPCE		M	Study with ProtoDUNE
21	Insufficient LEM gain and stability	CRP	Experience with the 3x1x1 and with ProtoDUNE LEM production indicates that careful attention has to be paid to the LEM design and production techniques and to the HV distribution for the	M	Continue to develop experience from 3x1x1 diagnosis and from ProtoDUNE-DP construction and operation
22	LAr surface flatness and stability is less than requires to allow efficient extraction and	CRP Technical		L	study with ProtoDUNE-DP and develop tools
23	Insufficient expert personnel	all			Avoid single points of failure. Plan resources to support experts to live at SURF during installation.
24	Insufficient calibration tools to extract DUNE detector performance and physics	all	Conditions for calibrating the detector are different underground at SURF compared to on the surface at ProtoDUNE		Collaboration has created a Calibration Consortium to augment the Calibration task force