

## List of Spares for the MicroBooNE Cryogenics System

Prepared for the MicroBooNE Operational Readiness Review

(source: M. Geynisman, M. Zuckerbrot)

November 23, 2015

The following is a list of spares available for projected maintenance and reasonable probabilities of failures in the MicroBooNE cryogenics system.

<b>system</b>	<b>component</b>	<b># in the system</b>	<b># of spares</b>	<b>location of spares</b>
cryogenics	liquid argon pump and motor	2	1	Lab F
cryogenics	rebuild bearing kits for the LAr pumps	0	3	LArTF
cryogenics controls system	spare PLC S7 and remote bases	1	1	LArTF
cryogenics controls system	I/O module spares	40-50	>50	DAB

The rest of the components (i.e., reliefs, actuators, and transmitters) exist as spares at the lab either in cabinets or installed on other idle equipment, but are not specifically at LArTF.

The most important spare process equipment such as the recirculation pump, condenser, and filter skid were built into the system and already exist in the MicroBooNE cryogenics network at LArTF.