System Requirements

R000 A maximum of four [4] robots shall \emph{cooperatively} mine ping-pong balls from a multiple chamber mine.

R001 A supervisory station console shall monitor all robot activity, receive all robot failure alarms, and provide robot work assignments.

R002 A sensor path beneath the robots shall provide primary navigation throughout the mine.

R003 Bidirectional overhead infrared communication links shall support access to each robot at a minimum of two [2] times per second.

R004 Communications shall be supported robot-robot and robot-console from all locations in the mine.

R005 A maximum of thirty-two [32] of maximum ten [10] foot radius infrared networked communication zones shall support all communications.

R006 One or more robots may exist in each communication zone.

R007 The infrared communication zones shall provide secondary navigation.

R008 Robots shall be implemented on a customer-provided robotic chassis comprised of a drive train and mining implements.

R009 A mining mission shift shall be four [4] hours.

R010 A single voltage rechargeable source shall be provided for each robot.

R011 Given the mission criticality and environment, maintenance activities on robots shall be deferred to the end of the shift.

R012 Robots shall safely interact with other robots, non-robots and their environment.

R013 The design of the system shall be manufacturable.