CHAPTER 5

CONCLUSIONS

The full-scale fire tests in this thesis are based on the test standard of machinery space from FMRC[17] fire performance test protocol. The fire scenarios are the shielded and unshielded pool fires. In the shielded pool fire tests, three different protection designs are used. They are non-protection, conventional sprinkler and high-pressure water mist fire suppression systems, respectively. In the water mist system, it is further divided into two protection categories, which are 4 and 6 high-pressure nozzles, respectively.

The results of the shielded fire tests indicate that pool fire can be extinguished for insufficient oxygen support in the nature ventilation condition. But the temperature measured 50 cm above the pool fire still can prove that water mist fire suppression system has a superior fire control on pool fire comparing to a conventional sprinkler system. The measurements of oxygen and CO concentrations suggest that the water mist system is able to continue reducing the oxygen consumption and increasing CO concentration.

The comparison between shielded and unshielded pool fire tests shows that the obstruction has no obviously influence on the fire suppression effectiveness. But for the room temperature, the unshielded pool fire tests have the higher average temperatures than these of the shielded ones. It is attributed to the increase of hot vaporization gas amount.