6.0 CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE WORK:

The study of a Sub-Ambient phase change material for coolness storage involves the understanding of (a) phase change material (b) types of Refrigeration system (c) the media used for charging and discharging the pcm and (d) load profile. In this thesis efforts were made to study all the four components. From the results obtained in various chapters it can be concluded that:-

(i) In the present decade a good number of companies have come up in the field PCMs and a good number of commercial branded PCMs are available in the national and international market for different applications. In the thesis a list has been prepared for the potential PCMs and also made few testing before utilizing them.

(ii) Experimental results with Package type air conditioner showed that power consumption while charging PCM in higher capacity refrigeration system is less than lower capacity of refrigeration.

(iii) The use of Sub-Ambient phase change material of 20°C showed that there is increase in chiller capacity with respect to nominal capacity of chiller.

(iv) The comparative analysis between storage system and conventional system reveals that payback period for the storage system working in Mumbai where time of day tariff is provided is the best and other places like
jodhpur is worst. When the system was coupled with Cooling Towers, the feasibility of coolness storage has further increased.

The recommendations for future work are

1. Thermal cycle tests may be conducted for other Sub-Ambient phase change materials.

2. Low cost of Sub-Ambient phase change material in range of 15-20 °C for use in refrigeration and Air-Conditioning System should be identified and tested to develop the commercial units.

3. A latent heat storage system may be developed for vapor absorption refrigeration.

4. Theoretical analysis of cylindrical type of thermal storage units may be developed.