Chapter 4
Conclusions and Recommendations

This chapter includes conclusions of the results in accordance with its objectives and some recommendations obtained during the various stages in this research.

4.1 Conclusions

1. Forward modeling technique provides the credible modeled shot containing primary, seafloor multiples and ghost to this research.

2. Identification of primaries and multiples in modeled data can be performed by correlation between seismic events in simulated shot with arrival time of predictable events in calculated shot.

3. There are at least 20 seismic events involved in the shallow hard seafloor model.

4. In dealing with predictive deconvolution, there are 4 parameters concerned, an autocorrelation gate (G), an operator length (n), gap length (α), and percentage of prewhitening (ε). Among those, n and G are the most sensitive parameters.

4. Evaluation of the optimum criteria for removing multiple in the three-layer model appropriately agrees with of the two-layer model.

5. Main optimum criteria for removing multiple is the package of *NMO/PDC/DNMO*. Not only does it suppress multiples, it clearly attenuates some artifact at middle- and far-offset range generally generated by *PDC*.

6. To effectively apply the package of *NMO/PDC/DNMO*, the seismic waveform of the data should be minimum phase which allows *PDC* to successfully meet its important assumption.

7. Evaluation of the optimum criteria for removing multiples using the optimum criteria in this research, both on modeled and real data, well supports that the periodicity enhancement prior to *PDC* can comparatively removes multiples from seismic data more than the conventional one as well as obtain better improvement of the quality and increase resolution of seismic stacked section.

4.2 Recommendations

For *PDC* work, there are three important points to be previously checked, (1) the minimum-phase filter before the main package cannot be ignored, (2) the applicable gain parameters should not be applied too strong because it will enhance some multiples to be stronger than primaries, and (3) truncating mute zone should not be designed too severe, otherwise, some data at far-offset range will be cut off by accident.

Since the testing *PDC* parameters plays a key roll in preparing stage both in academic study and commercial processing, it is recommended that main parameters of G, n, α, and ε should be firstly set following the guide line in Table 2-4.

Intuitively, the package of *NMO/PDC/DNMO* consumes only a little of *CPU* time over the conventional one therefore it can be suggested in this research that this new method can be applied as a module in actual commercial data processing work.

For better development of the multiple removing tool, it is of interested to further study the effectiveness of this method in future by comparing the package of *NMO/PDC/DNMO* in common shot domain with other multiple removal techniques such as the optimum fold reduce method, the offset separation method, and so on.