Case study of large scale 3D marine seismic data acquisition
Youngwan Kim1* and Seoungsoo Park1

Marine 3D seismic data acquisition technology continues to progress rapidly. Marine steamer data acquisition is still the most popular data acquisition technique. Marine 3D seismic surveys may be carried out using quite different techniques. The main difference of the offshore and onshore is the geometry, that streamer acquisition and end-on geometry is used; in onshore data acquisition, a center-spread geometry is possible. Generally, number of streamer are 2~4, and that is the small scale seismic acquisition. Number of streamer are 6~10, that called middle scale seismic acquisition, number of streamer are bigger than 12, that is large scale seismic acquisition. We introduce the large scale marine 3D seismic acquisition using 2 source, 12 streamer geometry. Survey area is the offshore Africa and about 2,000 km². Streamer separation is 100m and total streamer length is 6,000m. Group interval is 12.5m, so nominal fold is 60. Number of source is 2 and source interval is 25m, flip-flop firing. And source separation is 50m. Bin size is 6.25×25m. We analyze the optimum number of streamers. That analysis needs some assumptions; nominal fold is 60, boat speed is 4.5 Knots, %Downtime is 10% of total time, Cost per km. is 150S, Downtime cost/day is 10,000$. The result of optimum number of streamer are 12 and that number of streamer are used the field data acquisition. If the cost of 12 streamer is 100, then 18 streamer is 104%, 16 streamer is 116%, 10 streamer is 134%, 8 streamer is 148%. So, optimum number of streamer is very important factor for large scale 3D marine seismic data acquisition.

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*Corresponding Author: ywkim1@kogas.or.kr
1) 한국가스공사 가스연구원