



the shuttle. To discharge the gun an electrical current activates the solenoid and retracts a plunger, thus enabling compressed air to pass through a port hole in the underside of a flange at the top of the shuttle. The pressure difference above and below the shuttle then thrusts it open. The air from the chamber then escapes through four port holes near the centre of the gun and expands rapidly through the water, producing a single bubble and resultant shock wave. The air bubble collapses in a manner similar to that caused by explosives with one notable exception in that its period is controllable and is placed in the desired seismic frequency band.

There are three variables used to control the frequency content of the shock waves. These are:-

- i) depth of the airgun in the water,
- ii) pressure at which the gun is operated,
and
- iii) size of the chambers used on the gun.

Using different guns of various chamber sizes broadens and flattens the frequency spectrum of the pulse (Plate 3).

The depth of the airguns was 30 feet and they were operated at a pressure of 2000 lbs. per square inch with the pressure never falling below 1850 lbs. per square inch. The individual airguns were arranged to produce an 1200 cubic inch array. This array consisted of:

- i) 4 x 10 cubic inch guns.