Partial cavitation occurs in numerous industrial and naval applications. Cavitation on lifting surfaces or in cryogenic rocket motors can damage equipment, and in general be detrimental to the system performance. Much work has gone into understanding the basic physical processes involved [2, 3, 4, 8]. If a partially cavitating condition is likely to occur, it would be of use to be able to control it. Kawanami et al. [6] used obstacles to prevent a re-entrant from moving upstream and they were successful in preventing the generation of cloud cavitation. However, recently Ganesh et al. [5] discovered that under certain conditions a condensation shock can be the dominant mechanism instead of a re-entrant jet, and under these conditions an obstacle placed on the surface is not sufficient to prevent cloud shedding from partial cavities. To investigate the nature of cloud shedding in conditions where a condensation shock occurs, we investigated the effect of non-condensable gas injection both from the apex and into the mid cavity. Experiments were carried out at the University of Michigan 9-Inch Water Tunnel. We utilized the X-ray densitometry system described by Mäkiharju et al. [7] to measure the time resolved 2D void fraction distribution without flow perturbations. To reduce the baseline attenuation, the water tunnel's test section was further contracted to have a (76mm)2 cross-section. The wedge geometry and gas injection locations are shown in figure 1. In addition to the 1 kHz void fraction measurements, the unsteady pressure was measured using surface mounted transducers sampled at 500 kHz. The transducers were located at 32 and 50 mm downstream of the apex.