สำนักงานวิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

CHAPTER V
CONCLUSIONS

1. The transition of the bubble to slug flow occurred over a wide range of the superficial air velocities which covered all of the points predicted by Nicklin's model in equation 4.

$$\varepsilon = \frac{G}{G + L + u_b A}$$

2. A rise velocity of a single slug agreed well with those predicted by equation 5 where c obtained experimentally was found to be 0.33.

$$u_b = c\sqrt{gD}$$

These velocities were independent of slug length.

3. The void fraction predicted from experiment agreed with those predicted by equation 7.

$$\frac{G}{\varepsilon A} = 1.2\frac{G+L}{A} + 0.35\sqrt{gD}$$

4. Rise velocities of continuous generated slugs gave a good agreement with those predicted in equation 6.

$$u_s = 1.2\frac{G+L}{A} + u_b = 1.2\frac{G+L}{A} + 0.35\sqrt{gD}$$

5. The air velocity for air-lift pump operation predicted by equation 9 gave satisfied results

$$\frac{G}{A} = \frac{1.2\frac{L}{A} + c\sqrt{gD}}{\frac{1}{\varepsilon} - 1.2}$$

6. The rise velocity of single slug and slug shape determined by FEM Program gave a good agreement with the experimental data within an error of 1%.

7. Ceramic ball gave the higher region of normal operation than plastic raschig ring did, whereas two different heights of packing gave the same trend of flooding limit line.

8. Pressure drop increased with an increase in the gas mass velocity. Increasing liquid mass velocities when gas mass velocities remained constant also caused pressure drop to increase.