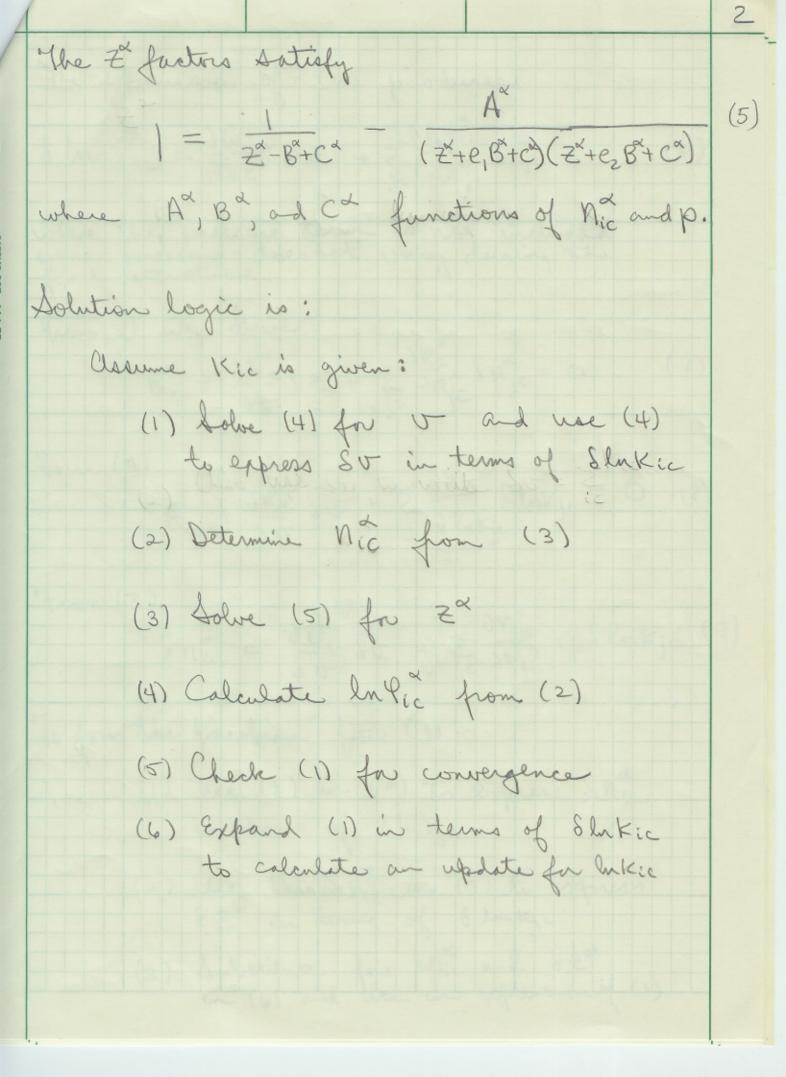
Two-Phase Flash Fogic assume Pad Zi are given We require Ric>0 where Ric = ln Pic - ln Vic - ln Kic and lie is the fugacity coefficient for phose &. The fugacity coefficient can be expressed as 22-141 22-142 22-144 Carried A ln Yic = f(Za, nic, p) the functional form of f is identical for both phases. The mole numbers for each phase satisfy Mic = (1-0) 1+ (kin) 5 (3a) (36) Nic = VKic Nic 1+(KiEI) 5 The vopor froction satisfies $R_{V} = \sum_{ic} \frac{(K_{ic}-1) \text{ flic}}{1 + (K_{ic}-1) \text{ } \sqrt{}} = 0$ (4)



The expansion of (2) produces 8 lmga = dlngie 8 z + Zolngie 8xje (6) where the pressure term is not included since pressure does not vary during the flash iterations. From (5) we have Re + JRe sex + Sign Snje = 0 (7)Ry + 3r Sur + E 3ky Slinkje = 0 Trom (3)

8 nic = 2 mic sv + 2 2 mie Kje 8 lnkje (9) To form the Jacobian for (1): (1) the (8) in (9) to express Snice in terms of Sluxje (2) Use this Shie in (7) to express 8 Zd in terms of 8 lm Kje (3) Substitute for Shic and 82d in (6) and were in expransion of (1)

(4) Dobre BR + Ed Ric & likje for new 8 linkja (5) We do not update SU, SZ on Shic since we iterate separately on v and Z and calculate Snic directly from Kic and J.