$$T^{\alpha p}_{ip} = 0$$

$$V_{ip} + (V \cdot \nabla)V + \nabla P_{p} + \nabla p = 0$$

$$T^{\alpha p}_{ip} = (P+P)U^{\alpha}U^{\beta} + P_{p}Q^{\alpha p}$$

$$T^{\alpha p}_{ip} = \nabla_{p}(P+P)U^{\alpha}U^{\beta} + \nabla_{p}(P)Q^{\alpha p}$$

$$= \nabla_{p}(P+P)U^{\alpha}U^{\beta} + \nabla_{p}P_{i}Q^{\alpha p}$$

$$= \nabla_{p}(P+P)U^{\alpha}U^{\beta} + P_{ip}U^{\alpha}_{ip}U^{p} + V^{\alpha}U^{p}_{ip}$$

$$= \nabla_{p}(P+P)U^{\alpha}U^{\beta} + (P+P)[U^{\alpha}_{ip}U^{p} + V^{\alpha}U^{p}_{ip}] + \partial_{p}P_{i}Q^{\alpha p}$$

$$= \nabla_{p}(P+P)U^{\alpha}U^{\beta} + (P+P)[U^{\alpha}_{ip}U^{p} + V^{\alpha}U^{p}_{ip}] + \partial_{p}P_{i}Q^{\alpha p}$$

$$= \nabla_{p}(P+P)U^{\alpha}U^{\beta} + \nabla_{p}P^{\alpha}U^{\beta} + (P+P)[U^{\alpha}_{ip}U^{p} + V^{\alpha}U^{p}_{ip}] + \partial_{p}P_{i}Q^{\alpha p}$$

$$= V^{\alpha}(P^{\alpha}U^{\beta}_{ip} + P^{\alpha}U^{\beta}_{ip}) + (P^{\alpha}U^{\beta}_{ip}) + (P^{\alpha}U^{\beta}_{ip}) + P^{\alpha}U^{\alpha}_{ip}Q^{\alpha p}$$

$$= V^{\alpha}(P^{\alpha}U^{\beta}_{ip} + P^{\alpha}U^{\beta}_{ip}) + (P^{\alpha}U^{\alpha}U^{\beta}_{ip} + P^{\alpha}U^{\alpha}U^{\beta}_{ip}) + P^{\alpha}U^{\alpha}U^{\beta}_{ip}Q^{\alpha p}$$

$$=PU^{\alpha}U^{\beta}_{;\beta}+(P+P)(U^{\alpha}U^{\beta}_{;\beta})_{;\beta}+P_{,\beta}\cdot g^{\alpha\beta}$$

$$=PU^{\alpha}U^{\beta}_{;\beta}+P_{,0}U^{\beta}U^{\alpha}_{;\beta}+P_{,\beta}g^{\alpha\beta}$$

$$=(g^{\alpha\beta}+U^{\alpha}U^{\beta})P_{,\beta}+P_{,0}U^{\alpha}U^{\beta}_{;\beta}$$

= (gartvave) Pro t Pove (var trapva) = Tapp replace & > i Tilip = Po UPViB + Po UBTiBU + PA (giP + NiVB)  $= P_0 \frac{\partial V}{\partial t} + P_0(V \cdot \nabla)V = -P_0 \nabla \phi - \nabla P$ Ten; u = 0 "(pov); + t(P+P) UVU"; + P, y g uv (PtP)V°V", o Pigwi  $/= (P+P) \cup J(U^{m}, o + T^{m}, U^{m})$ = (PF)V°-Tel V°  $U^{m}(PU^{V})_{i,V} = U^{m}(P_{j,V}U^{V}tPU^{V}_{j,V})$ = Ou PU!V = Ump(U, ++gUV(Jg),v

$$= U^{\circ}P() (\sqrt{-9})_{,t}$$

$$= 0$$

$$\begin{array}{l}
C = (PP) \cdot \nabla^{0} \cdot \nabla^{0} \cdot \nabla^{0} + P_{i} \cdot g^{mi} \\
\nabla^{m} = \frac{1}{2} g^{m6} (g_{60,0} + g_{60,0} - g_{60,6}) \\
= \frac{1}{2} g^{m6} (-g_{00,i}) \\
= \frac{1}{2} g^{mi} (-g_{00,i}) \\
= g^{mi} (PP) \frac{1}{2} g^{mi} g_{00,i} + P_{i} i \\
= g^{mi} [(PP) \frac{1}{2} g_{00,i} + P_{i} i] \\
= (PP) \frac{1}{2} m(-g_{00,i}) + P_{i} i
\end{array}$$

$$9w = \begin{pmatrix} -(1-\frac{2M}{r}) \\ (1-\frac{2M}{r})^{-1} \\ y^2 \\ Sin^2\theta \end{pmatrix}$$

$$\frac{d9m}{dxd} = 0 \text{ for } d = 0, 3 (t, \phi)$$

$$\frac{D}{DZ}\left(P^{2}z_{x}\right)=m\frac{D}{DZ}\left(U^{2}z_{x}\right)$$

$$= m \left( \frac{D}{De} V^{\alpha} \right) \cdot \mathcal{E}_{\alpha} + m V^{\alpha} \frac{D}{De} \mathcal{E}_{\alpha}$$

$$= m V^{\alpha} V^{\beta} \nabla_{\beta} \mathcal{E}_{\alpha}$$

$$= 0$$

$$\mathcal{Z} = (-9, 0, t, 0)$$

$$\xi = (-2, 0, 0, t)$$
  
 $\xi = (0, 7, -x, 0)$ 

$$\xi = (0, 0, Z, -y)$$
  
 $\xi = (0, Z, 0, -x)$ 

for Schwar 25 dil 6 Dt, and Pt is inversely  $\vec{Q} = \vec{e}_{t} \vec{R} = \vec{e}_{\phi}$ 3=[ves. A. | cosocosp - rsinacosp. - Isina] Eo + [r.cosp - - + sho] Co = COSP & - (Otto 5 mg Eg #= [r sind Sing- troso coso + - rangeoso treso sing] Eo + Inshasing . - I sind + - rsh & cosp . I cosp ? Ex = (Sint cost sind cost \_ sint cost sind cost) = + (-sing - cosp) =  $\vec{\gamma} = \vec{z} \vec{e}_{J} - \vec{y} \vec{e}_{z} = (\vec{z} \cdot \vec{\partial}_{J} - \vec{y} \cdot \vec{\partial}_{Z}) \vec{e}_{D} + (\vec{z} \cdot \vec{\partial}_{D} - \vec{y} \cdot \vec{\partial}_{Z}) \vec{e}_{D}$ = [rcoso - rcos & sind - (rsho sind - I sind)] eo + (rest - Losp - Loudsing. 0) Ep = (cos20 sind + sin20 sind) do + coto cosp ep

= Sh peo toto cosper