$$= \left(\frac{\sqrt{-1}}{2}\right)^{n-p} \frac{1}{r^{2n-2p}} \int_{B[r]} \psi \wedge (\partial\bar\partial \|z\|^2)^{n-p}$$

$$= \left(\frac{\sqrt{-1}}{2}\right)^{n-p} \frac{1}{r^{2n-2p}} \int_{B[r]} d(\psi \wedge \bar\partial \|z\|^2 \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}),$$

since ψ is closed,

$$= \left(\frac{\sqrt{-1}}{2}\right)^{n-p} \frac{1}{r^{2n-2p}} \int_{\partial B[r]} \psi \wedge \bar\partial \|z\|^2 \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}$$

by Stokes' theorem

Γ (H) $(T, p, r) = \dfrac{1}{r^{2n-2p}} \displaystyle\int_{B[r]} \psi \wedge \omega^{n-p}$

$$\omega = \frac{\sqrt{-1}}{2} \sum_i dz_i \wedge d\bar z_i = \frac{\sqrt{-1}}{2} \partial\bar\partial\, z_i \bar z_i = \frac{\sqrt{-1}}{2} \partial\bar\partial \|z\|^2$$

$$\omega^{n-p} = \left(\frac{\sqrt{-1}}{2}\right)^{n-p} (\partial\bar\partial \|z\|^2)^{n-p}$$

$$= \left(\frac{\sqrt{-1}}{2}\right)^{n-p} \frac{1}{r^{2n-2p}} \int_{B[r]} \psi \wedge (\partial\bar\partial \|z\|^2)^{n-p}$$

$$= \left(\frac{\sqrt{-1}}{2}\right)^{n-p} \frac{1}{r^{2n-2p}} \int_{B[r]} \psi \wedge (\partial\bar\partial \|z\|^2) \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}$$

$$d(\psi \wedge \bar\partial \|z\|^2 \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}) = \psi \wedge d(\bar\partial \|z\|^2) \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}$$

$= \psi \wedge \partial\bar\partial \|z\|^2 \wedge (\partial\bar\partial \|z\|^2)^{n-p-1}$ since $d\,\partial\bar\partial \|z\|^2 = 0$, and $d\psi = 0$.

$\Rightarrow$ By Stokes' theorem, it follows. $\lrcorner$

Now on the sphere $\|z\| = r$,

$$0 = d(z, z) = (dz, z) + (z, dz)$$

$$\Rightarrow \partial\bar\partial \log(z, z) = \partial\left(\frac{(z, dz)}{(z, z)}\right) = (dz, dz) \big/ (z, z),$$