$$\Rightarrow \quad v = z. \qquad \Rightarrow \quad \sigma(z, l) = z.$$

$$\Rightarrow \quad \Omega_{[E]} = dd^c \log \frac{1}{\|\sigma\|^2} = dd^c \log \frac{1}{\|z\|^2} = -dd^c \log \|z\|^2;$$

By P24, if f is holomorphic, $\bar\partial \circ f^* = f^* \circ \bar\partial$ and, from the well-known fact $d \circ f^* = f^* \circ d$, $\partial \circ f^* = f^* \circ d$.

$$\pi' : \tilde{U}_\epsilon - E \longrightarrow \mathbb{P}^{n-1}$$
$$(z, l) \longmapsto l.$$

The Fubi-Study metric ω on $\mathbb{P}^{n-1}$ is given by

$$\omega = \frac{i}{2\pi} \partial\bar\partial \log \|\tau\|^2, \qquad \tau : \mathbb{P}^{n-1} \longrightarrow \mathbb{C}^n - \{0\}, \quad l \longmapsto z$$

$$\Rightarrow \pi'^* \omega = \frac{i}{2\pi} \pi'^* \partial\bar\partial \log \|\tau\|^2$$

$$= \frac{i}{2\pi} \partial\bar\partial\, \pi'^* \log \|\tau\|^2 = \frac{i}{2\pi} \partial\bar\partial \log \|\tau \circ \pi'\|^2$$

$$= \frac{i}{2\pi} \partial\bar\partial \log \|z\|^2 = dd^c \log \|z\|^2 = -\Omega_{[E]}.$$

Note that ω is $(1,1)$-form on $\mathbb{P}^{n-1}$ while $-\Omega_{[E]}$ is $(1,1)$-form on $\tilde{U}_\epsilon - E$.
Since $\pi'^* \omega(v, \bar v) = \omega(\pi'_* v, \overline{\pi'_* v}) \geq 0$ (ω is positive defite), $-\Omega_{[E]} = \pi'^* \omega \geq 0$.

3. We have seen that $-\Omega_{[E]} = \pi'^* \omega$ on $\tilde{U}_\epsilon - E$; by continuity it follows that $-\Omega_{[E]} = \pi'^* \omega$ throughout $\tilde{U}_\epsilon$, and in particular

$$-\Omega_{[E]}\big|_E = \omega > 0 \quad \text{on } E.$$