2. F is tangent to $\sigma(p)$ at one point, i.e., X_p consists of two pencils with focus p. In this case the locus of the lines in X_p will be two hyperplanes (Figure 9).

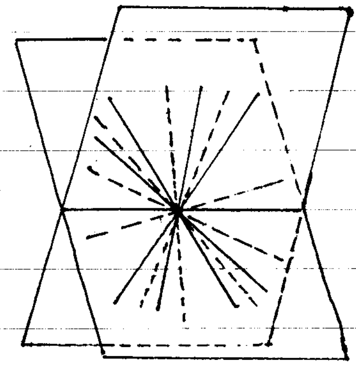

Figure 9

irrelevent here

[Let l be the point s.t $T_l(F) \supset \sigma(p)$.
($F \cap \sigma(p) \subset F \cap T_l(F)$, which is a cone through l over a smooth quadric and) $F \cap \sigma(p)$ is a non smooth quadratic curve in the 2-plane $\sigma(p)$. $\Rightarrow$ The only possibility of $F \cap \sigma(p)$ is the union of two lines.
$\Rightarrow$ Let $F \cap \sigma(p) = l_1 \cup l_2$. $\Rightarrow$ l_1 & l_2 are pencils in $\mathbb{P}^3$, and any line in $\tilde{\Phi}^{-1}(l_1)$ passes p since the line lies in $\sigma(p)$. $\Rightarrow$ $\tilde{\Phi}^{-1}(l_1) = \sigma(p, h_1)$ and $\tilde{\Phi}^{-1}(l_2) = \sigma(p, h_2)$ for some 2-planes h_1, h_2.
Here l_1 & l_2 are distinct since

F is tangent to $\sigma(p)$ at a point, and $F \cap \sigma(p)$ is not smooth at that point.

3. F is tangent to $\sigma(p)$ along a line, i.e., X_p consists of one double line. In this case, the