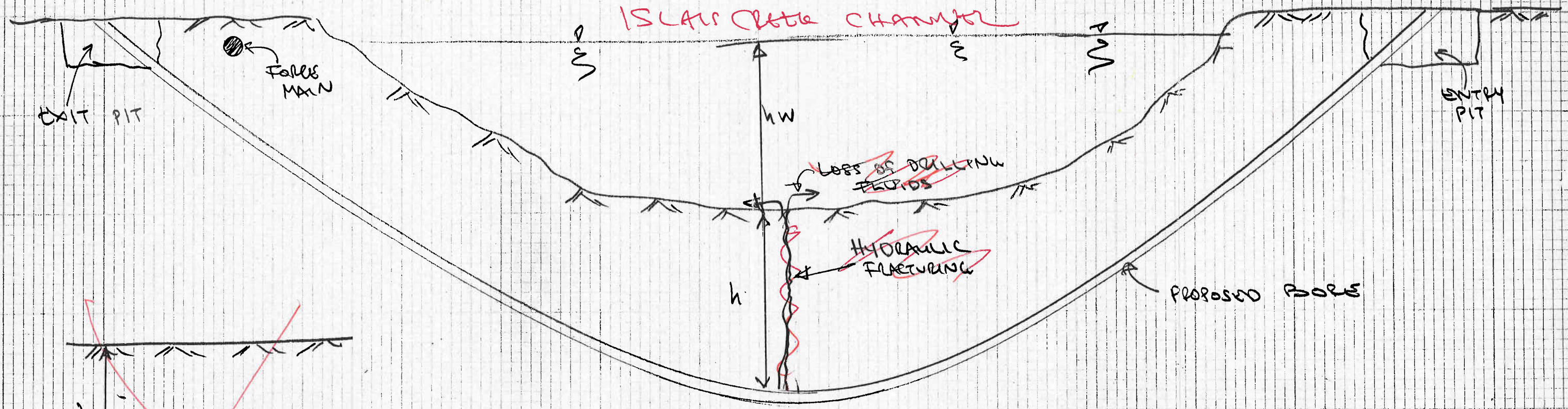
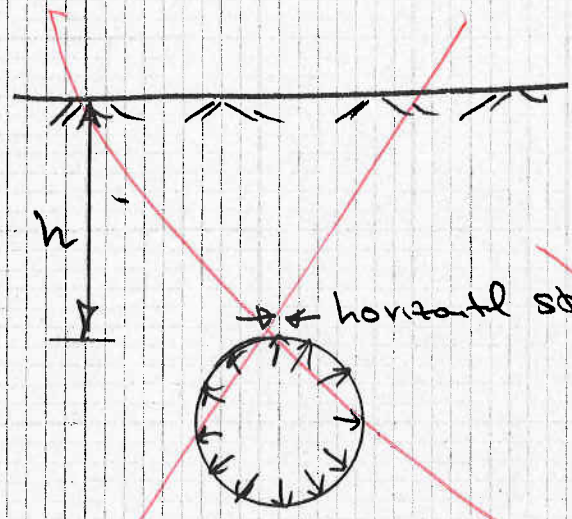


HYDRAULIC FRACTURING



REVISIONS  
 BY \_\_\_\_\_ DATE \_\_\_\_\_ TO EO  
 BY \_\_\_\_\_ DATE \_\_\_\_\_ TO EO

DATE \_\_\_\_\_  
 CHECKED BY \_\_\_\_\_  
 COPY TO EO



horizontal stress =  $\sigma_h$   
 $\sigma_h = K_0 \sigma_{vo} + u_h$   
 $K_0 \approx 0.15$   
 $\sigma_{vo} = \gamma_b \times h$   
 $\gamma_b = 30-35 \text{ pcf}$   
 $u_h = \gamma_w (h + h_w)$

HYDRAULIC FRACTURE OCCURS WHEN THE TANGENTIAL STRESS CAUSED BY THE FLUID PRESSURE EQUALS THE IN-SITU HORIZONTAL STRESS

CONSTRUCTION OF DUCT BANKS UNDER ISLAND CRATER USING DIRECTIONAL DRILLING