

PROGRAM PILLAR

\$DEBUG

\$DECLARE

C*****

C PROGRAM FOR CALCULATING SAFETY FACTORS OF PILLARS USING PAGE/

C LAUBSCHER EQUATION BASED ON HYDRAULIC RADIUS.

C WRITTEN FOR CURRAGH RESOURCES LTD, FARO PROJECT

C J.I. MATHIS 16/11/91

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001440

REAL*4 PD(100,10)

REAL*4 RDIP,SE,SEM,LA,PA,RATIO,PS_T,WEFF,PS,PH,SF

INTEGER I,J,K

INTEGER NP

CHARACTER*4 PI(100)

C*** GET THE DATA

WRITE(*,1)

1 FORMAT(/,' ***** PILLORY POGRAM *****',/)

NP=1

100 WRITE(*,2)

2 FORMAT(/,' PILLAR NAME (A4) ',\)

READ(*,50) PI(NP)

IF(PI(NP).EQ.'XXXX') GO TO 200

WRITE(*,3) PI(NP)

3 FORMAT(/,' INPUT FOR PILLAR ',A4,': ',/,

1 ' AREA,PERIMETER,HEIGHT, LOAD AREA, V. STRESS, OREBODY DIP',/)

READ(*,*) (PD(NP,J),J=1,6)

WRITE(*,4)

4 FORMAT(/,' PILLAR STRENGTH (MPa) ',\)

READ(*,*) PD(NP,7)

50 FORMAT(A4)

C*** AREA = FEET, PERIMETER = FEET, HEIGHT = FEET, LOAD AREA = FEET

C V. STRESS = PSI, DIP = DEGREES FROM HORIZONTAL

C*** CALCULATE DIP STRESS CORRECTION, ASSUME HORIZONTAL STRESS =

C TWO TIMES VERTICAL STRESS

C SIGMAE=SIGMAV*COS^2(DIP)+SIGMAH*SIN^2(DIP)

RDIP=PD(NP,6)/57.2958

SE=(COS(RDIP)**2+2.*SIN(RDIP)**2)*PD(NP,5)

C*** CONVERT TO MPA

SEM=SE/145.

C WRITE(*,*) ' SEM ',SEM

C*** CONVERT LOAD AREA TO SQUARE METERS

LA=PD(NP,4)/10.758

C*** CONVERT PILLAR AREA TO SQUARE METERS

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C*** CONVERT PILLAR AREA TO SQUARE METERS

PA=PD(NP,1)/10.758

C*** RATIO OF PILLAR AREA TO LOAD AREA

RATIO=LA/PA

C WRITE(*,*)' LA,PA,RATIO ',LA,PA,RATIO

C*** PILLAR STRESS=RATIO*INSITU LOAD

PSTR=RATIO*SEM

C WRITE(*,*)' PSTR ',PSTR

C*** CALCULATE THE EFFECTIVE PILLAR WIDTH (HYDRAULIC RADIUS*4)
C CONVERT TO METERS

WEFF=(4.*PD(NP,1)/PD(NP,2))/3.28
PH=PD(NP,3)/3.28

C WRITE(*,*)' WEFF,PH ',WEFF,PH

C*** PILLAR STRENGTH (MPA) (FOR PILLARS WEFF/PH < 4.5)

PS=PD(NP,7)*WEFF**.5/(PH**.7)
C WRITE(*,*)' PS ',PS

C*** SAFETY FACTOR = PILLAR STRESS/PILLAR STRENGTH

SF=PS/PSTR
PD(NP,8)=SF

WRITE(*,*)' SAFETY FACTOR ',SF

NP=NP+1
GO TO 100

200 OPEN(UNIT=20,FILE='PILLAR.DAT',ACCESS='SEQUENTIAL')

DO 210 I=1,NP-1
WRITE(20,51) PI(I),(PD(I,J),J=1,8)
210 CONTINUE

51 FORMAT('''',A4,'''',1X,7(F6.0,1X),F5.3)

CLOSE(20)

STOP
END

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