```
NOTE   BIRTH RATE EQUATIONS
NOTE
R      B.KL=CLIP(D.JK,(TF.K*POP.K*FFW/RLT),TIME.K,PET)
C      FFW=.21
C      RLT=30
C      PET=4000
S      CBR.K=1000*B.JK/POP.K
A      TF.K=MIN(MTF.K,(MTF.K*(1-FCE.K)+DTF.K*FCE.K))
A      MTF.K=MTFN*FM.K
C      MTFN=12
A      FM.K=TABHL(FMT,LE.K,0,80,10)
T      FMT=0,.2/.4/.6/.8/.9/1/1.05/1.1
A      DTF.K=DCFS.K*CMPLE.K
A      CMPLE.K=TABHL(CMPLET,PLE.K,0,80,10)
T      CMPLET=3/2.1/1.6/1.4/1.3/1.2/1.1/1.05/1
A      PLE.K=DLINF3(LE.K,LPD)
C      LPD=20
A      DCFS.K=CLIP(2,DCFSN*FRSN.K*SFSN.K,TIME.K,ZPGT)
C      ZPGT=4000
C      DCFSN=4
A      SFSN.K=TABHL(SFSNT,DIOPC.K,0,800,200)
T      SFSNT=1.25/1/.9/.8/.75
A      DIOPC.K=DLINF3(IOPC.K,SAD)
C      SAD=20
A      FRSN.K=TABHL(FRSNT,FIE.K,-.2,.2,.1)
T      FRSNT=.5/.6/.7/.85/1
N      FRSN=.82
A      FIE.K=(IOPC.K-AIOPC.K)/AIOPC.K
A      AIOPC.K=SMOOTH(IOPC.K,IEAT)
C      IEAT=3
A      NFC.K=(MTF.K/DTF.K)-1
A      FCE.K=CLIP(1.0,(TABHL(FCET,FCFPC.K,0,3,.5)),TIME.K,FCEST)
C      FCEST=4000
T      FCET=.75/.85/.9/.95/.98/.99/1
A      FCFPC.K=DLINF3(FCAPC.K,HSID)
A      FCAPC.K=FSAFC.K*SOPC.K
A      FSAFC.K=TABHL(FSAFCT,NFC.K,0,10,2)
T      FSAPCT=0/.005/.015/.025/.03/.035
NOTE
NOTE   EXOGENOUS INPUTS TO THE POPULATION SECTOR
NOTE
NOTE   INDUSTRIAL OUTPUT
NOTE
A      IO.K=CLIP(IO2.K,IO1.K,TIME.K,LT)
C      LT=500
A      IO1.K=CLIP(IO12.K,IO11.K,TIME.K,LT2)
C      LT2=500
A      IO11.K=.7E11*EXP (TIME.K*.037)
A      IO12.K=POP.K*CIO
C      CIO=100
A      IO2.K=.7E11*EXP(LT*.037)
A      IOPC.K=IO.K/POP.K
NOTE
NOTE   INDEX OF PERSISTENT POLLUTION
NOTE
A      PPOLX.K=1+RAMP(PS,PT)
C      PS=0
C      PT=10
NOTE
NOTE   SERVICE OUTPUT
NOTE
A      SO.K=CLIP(SO2.K,SO1.K,TIME.K,LT)
A      SO1.K=CLIP(SO12.K,SO11.K,TIME.K,LT2)
A      SO11.K=1.5E11*EXP (TIME.K*.030)
A      SO12.K=POP.K*CSO
C      CSO=150
A      SO2.K=1.5E11*EXP(LT*.030)
A      SOPC.K=SO.K/POP.K
NOTE
NOTE   FOOD
NOTE
A      F.K=CLIP(F2.K,F1.K,TIME.K,LT)
A      F1.K=CLIP(F12.K,F11.K,TIME.K,LT2)
A      F11.K=4E11*EXP (TIME.K*.020)
A      F12.K=POP.K*CFOOD
C      CFOOD=250
A      F2.K=4E11*EXP(LT*.020)
A      FPC.K=F.K/POP.K
NOTE
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NOTE   CONTROL CARDS
NOTE
C      DT=1
C      LENGTH=200
C      PLTPER=10
C      PRTPER=0
PLOT   SOPC=S,IOPC=I,FPC=F(0,1000)/POP=P(0,16E9)/
X      CBR=B,CDR=D(0,50)/LE=L(0,80)/FPU=U(0,1)/FCE=C(.5,1)
RUN    STANDARD
NOTE
NOTE   PARAMETER CHANGES FOR THE POPULATION SECTOR RUNS
NOTE
NOTE   HISTORICAL RUNS
NOTE
C      LENGTH=75
C      PLTPER=5
RUN    FIGURE 2-84: HISTORICAL BEHAVIOR, SUMMARY VARIABLES
C      LENGTH=75
C      PLTPER=5
PLOT   LMF=F,LMHS=H,LMP=P,LMC=C(0,2)/HSAPC=S,EHSPC=E(0,250)
RUN    FIGURE 2-85: HISTORICAL BEHAVIOR, MORTALITY VARIABLES
C      LENGTH=75
C      PLTPER=5
PLOT   TF=T,MTF=M,DTF=D,DCFS=C(0,15)/FRSN=R(.6,1.4)/
X      SFSN=S(.75,1.25)/CMPLE=L(1,4)
RUN    FIGURE 2-86: HISTORICAL BEHAVIOR, FERTILITY VARIABLES
NOTE
NOTE   CONSTANT INCOME PER CAPITA RUNS
NOTE
C      IPHST=4000
C      LT2=0
PLOT   SOPC=S,IOPC=I,FPC=F(0,1000)/POP=P(0,16E9)/
X      CBR=B,CDR=D(0,50)/LE=L(0,80)/FPU=U(0,1)/FCE=C(.5,1)
RUN    FIGURE 2-87: CONSTANT LOW INCOME
C      IPHST=4000
C      LT2=0
C      CIO=1000
C      CSO=1500
C      CFOOD=2500
RUN    FIGURE 2-88: CONSTANT HIGH INCOME
C      LT2=0
RUN    FIGURE 2-89: CONSTANT LOW INCOME, IMPROVED HEALTH CARE
NOTE
NOTE   EXPONENTIAL ECONOMIC GROWTH RUNS
NOTE
RUN    FIGURE 2-90: EXPONENTIAL ECONOMIC GROWTH, SUMMARY VARIABLES
PLOT   LMF=F,LMHS=H,LMP=P,LMC=C(0,2)/HSAPC=S,EHSPC=E(0,250)
RUN    FIGURE 2-91: EXPONENTIAL ECONOMIC GROWTH, MORTALITY VARIABLES
PLOT   TF=T,MTF=M,DTF=D,DCFS=C(0,15)/FRSN=R(.6,1.4)/
X      SFSN=S(.75,1.25)/CMPLE=L(1,4)
RUN    FIGURE 2-92: EXPONENTIAL ECONOMIC GROWTH, FERTILITY VARIABLES
C      FCEST=75
PLOT   SOPC=S,IOPC=I,FPC=F(0,1000)/POP=P(0,16E9)/
X      CBR=B,CDR=D(0,50)/LE=L(0,80)/FPU=U(0,1)/FCE=C(.5,1)
RUN    FIGURE 2-96: EXPONENTIAL GROWTH, PERFECT FERTILITY CONTROL
C      FCEST=75
C      ZPGT=75
RUN    FIGURE 2-97: EXPONENTIAL GROWTH, FERTILITY CONTROL, REDUCED DCFS
NOTE
NOTE   RUNS SIMULATING CONSTANT TOTAL OUTPUT
NOTE
C      LT=100
RUN    FIGURE 2-98: CONSTANT TOTAL OUTPUT
C      LT=100
C      FCEST=75
RUN    FIGURE 2-99: CONSTANT TOTAL OUTPUT, PERFECT FERTILITY CONTROL
C      LT=100
C      FCEST=75
C      ZPGT=75
RUN    FIGURE 2-100: CONSTANT OUTPUT, FERTILITY CONTROL, REDUCED DCFS
NOTE
NOTE   SENSITIVITY TESTS
NOTE
C      LT=100
T      LMHST=1/1.1/1.8/2/2.2/2.35
PLOT   SOPC=S,IOPC=I,FPC=F(0,1000)/POP=P(0,16E9)/
X      CBR=B,CDR=D(0,50)/LE=L(0,80)/FPU=U(0,1)/FCE=C(.5,1)
PLOT   LMF=F,LMHS=H,LMP=P,LMC=C(0,2)/HSAPC=S,EHSPC=E(0,250)
PLOT   TF=T,MTF=M,DTF=D,DCFS=C(0,15)/FRSN=R(.6,1.4)/
X      SFSN=S(.75,1.25)/CMPLE=L(1,4)
RUN    FIGURE 2-103: LIFE EXPECTANCY OF 100 YEARS
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