

## Appendix 3

SIMULATE 1

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LET X$ShapeE=0.876
LET X$ShapeK=1.0014
PSEXPB CAPACITY 5
PSEXPL CAPACITY 5
KLA CAPACITY
KCT1 CAPACITY 2
SCDR CAPACITY
SCDEF CAPACITY
SCDFF CAPACITY
KCTBA CAPACITY
PSKAD CAPACITY 5
PSKAL CAPACITY 5
KCT CAPACITY
EXPB CAPACITY
BRL CAPACITY
KCTBB CAPACITY
PSKBD CAPACITY 5
KLB CAPACITY
PSKBL CAPACITY 5
BRLE CAPACITY
BRLKB CAPACITY
BRLKA CAPACITY
LossE CAPACITY
LossKA CAPACITY
LossKB CAPACITY
KTMDE CAPACITY
KTMDR CAPACITY
KTMDF CAPACITY
SCDE CAPACITY
SCDF CAPACITY
EXPPAP CAPACITY
Weibul VALUEOF (-fn$log(1-rn6))^(1/x$shapeE)
LossE VALUEOF fn$INT((1/0.0486)*fn$xpdis)+1
LastE VALUEOF fn$INT((1/0.11785)*fn$xpdis)+1
LossKA VALUEOF fn$INT((12.72*(-fn$log(1-rn6))^(1/0.79))+1)
LastKA VALUEOF fn$INT((1/0.06817)*fn$xpdis)+1
LossKB VALUEOF fn$INT((12.72*(-fn$log(1-rn6))^(1/0.79))+1)
LastKB VALUEOF fn$INT((1/0.06817)*fn$xpdis)+1
WeibuK VALUEOF (-fn$log(1-rn6))^(1/x$shapeK)
GENERATE 6415,5346
GRAPH x$STATE,x$TOTE
LET x$CLEA=CI
EXPBB SEIZE EXPBB,Q ! (Loc: +1,-3)
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LET x$CLEB=CI
PRINT 'Waiting Time KCT OLD;',x$CLEB-x$CLEA,0
LET x$TOTEA=CI
ADVANCE 30,5
GOTO DryE,0.1
SEIZE EXPAA! (Loc: +1,+1)
LET x$EXPAA=CI
SEIZE RSEXP
GOTO LoadE,0.07
ENTER LossE,V$LossE      ! (Loc: +1,+1)
LET x$DEX=s$LossE
AEXPB      WAITIF PSEXPD=F
SEIZE CranED
LET x$CEDA=CI
LEAVE LossE,1
ADVANCE 5,1
ENTER PSEXP,1,Q
SPLIT 1,SRSKTM
RELEASE CranED
LET X$CEDB=CI
LET+ x$CED,x$CEDB-x$CEDA
IF LossE=NE,AEXPB
GOTO ByeE,0.4
ADVANCE 1 ! Contol
WAITIF PSEXP=NE
WAITIF RSKTMD=U
LoadE ENTER BRLE,V$LastE,Q
LET X$LEX=S$BRLE
NoDone      WAITIF PSEXPL=F
SEIZE RSKTML
LET x$RELA=CI
SPLIT 1,SCrane
GOTO KTMFL,0.11
GOTO KTMLE,0.56
ADVANCE 2.1,0.3
GOTO noho1,0.83
ADVANCE 2
noho1 LEAVE KTMDR,1
ADVANCE 3,0.5
ENTER PSEXPL,1
LEAVE BRLE,1
RELEASE RSKTML
LET x$RELB=CI
LET+ x$REL,x$RELB-x$RELA
IF BRLE=NE,NoDone
RSDONE      RELEASE RSEXP      ! (Loc: +2,+0)
ADVANCE 1
WAITIF CranEL=U

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LEAVE PSEXPL,1
ADVANCE 5,1
LET X$CELB=CI
LET+ x$CEL,x$CELB-x$CELA
RELEASE CranEL
TERMINATE
SCXLE      ADVANCE 4.1,0.3   ! (Loc: -12,-5)
           GOTO noho3,0.83
           ADVANCE 2
noho3 LEAVE SCDE,1
           ADVANCE 5.5,0.5
           ENTER PSEXPL,1
           LEAVE BRLE,1
           RELEASE RSKTML
           LET x$RELB=CI
           LET+ x$REL,x$RELB-x$RELA
           IF BRLE=NE,NoDone
           GOTO RSDONE,1
KTMLE      GOTO SCXLE,0.02   ! (Loc: -12,-2)
           ADVANCE 2.1,0.3
           GOTO noho2,0.83
           ADVANCE 2
noho2 LEAVE KTMDE,1
           ADVANCE 3,0.5
           ENTER PSEXPL,1
           LEAVE BRLE,1
           RELEASE RSKTML
           LET x$RELB=CI
           LET+ x$REL,x$RELB-x$RELA
           IF BRLE=NE,NoDone
           GOTO RSDONE,1
KTMFLF     ADVANCE 2.1,0.3   ! (Loc: -11,+4)
           GOTO noho4,0.83
           ADVANCE 2
noho4 LEAVE KTMDF,1
           ADVANCE 3,0.5
           ENTER PSEXPL,1
           LEAVE BRLE,1
           RELEASE RSKTML
           LET x$RELB=CI
           LET+ x$REL,x$RELB-x$RELA
           IF BRLE=NE,NoDone
           GOTO RSDONE,1
SRSKTM     WAITIF PSEXPDP=E ! (Loc: -24,+4)
           SEIZE RSKTMD
           LET x$REDA=CI
           LEAVE PSEXPDP,1
           GOTO KTMDF,0.19

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ADVANCE 3,0.5
GOTO noshi1,0.79
ADVANCE 2
noshi1 ENTER KTMDR,1
ADVANCE 2.1,0.3
RELEASE RSKTMD
LET x$REDB=CI
LET+ x$RED,x$REDB-x$REDA
TERMINATE
KTMDF      GOTO KTMDE,0.95  ! (Loc: -9,+2)
ADVANCE 3,0.5
GOTO noshi2,0.79
ADVANCE 2
noshi2 ENTER KTMDF,1
ADVANCE 2.1,0.3
RELEASE RSKTMD
LET x$REDB=CI
LET+ x$RED,x$REDB-x$REDA
TERMINATE
KTMDE      ADVANCE 3,0.5    ! (Loc: -8,+2)
GOTO noshi3,0.79
ADVANCE 2
noshi3 ENTER KTMDE,1
ADVANCE 2.1,0.3
RELEASE RSKTMD
LET x$REDB=CI
LET+ x$RED,x$REDB-x$REDA
TERMINATE

GENERATE ,,1,1    ! (Loc: +1,-2)
ENTER KTMDF,1000
ENTER KTMDE,1000
ENTER KTMDR,1000
ENTER SCDR,1000
ENTER SCDE,10000
ENTER SCDF,1000
TERMINATE

KCT  GENERATE 954*V$WeibuK
LET x$CLKA=CI
ENTER KCT1,1,Q
LET x$CLKB=CI
PRINT 'Waiting Time KCT OLD;',x$CLKB-x$CLKA,0
IF KCT1A=U,KCT1B
KCT1ASEIZE KCT1A
LET x$TOTKAA=CI
ADVANCE 30,5
GOTO DryK,0.1

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SEIZE KCTAA! (Loc: +1,+2)
LET x$KAAA=CI
RSA1 SEIZE RSSC,Q
GOTO LoadK,0.07
ENTER LossKA,V$LossKA ! (Loc: +1,+1)
LET x$DKA=S$LossKA
AKCTAB WAITIF PSKAD=F
SEIZE CraKAD
LET x$CKADA=CI
LEAVE LossKA,1
ADVANCE 5,1
ENTER PSKAD,1,Q
SPLIT 1,SRSSCD
RELEASE CraKAD
LET X$CKADB=CI
LET+ x$CKAD,x$CKADB-x$CKADA
IF LossKA=NE,AKCTAB
per GOTO ByeAA,0.4
ADVANCE 1
WAITIF PSKAD=NE
WAITIF RSSCAD=U
LoadK ENTER BRLKA,V$LastKA
LET x$LKA=S$BRLKA
NoDona WAITIF PSKAL=F
SEIZE RSSCAL
LET x$RKALA=CI
SPLIT 1,SCranA
GOTO SCLF,0.05
GOTO SCLE,0.67
ADVANCE 1.9,0.3
GOTO noho5,0.83
ADVANCE 2
noho5 LEAVE SCDR,1
ADVANCE 2.5,0.5
ENTER PSKAL,1
LEAVE BRLKA,1
RELEASE RSSCAL
LET x$RKALB=CI
LET+ x$RKAL,x$RKALB-x$RKALA
IF BRLKA=NE,NoDonA
DDR GOTO RSDONA,1
RSDONA RELEASE RSSC ! (Loc: +3,+0)
ADVANCE 1
WAITIF PSKAL=NE
WAITIF CraKAL=U
ByeA RELEASE KCTAA
LET x$KAAB=CI
PRINT '-----'

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WAITIF PSKAL=E
LEAVE PSKAL,1
ADVANCE 5,1
LET X$CKALB=CI
LET+ x$CKAL,x$CKALB-x$CKALA
RELEASE CraKAL
TERMINATE
KTMXLE  ADVANCE 5.5,0.5  ! (Loc: -15,-5)
GOTO noho7,0.83
ADVANCE 2
noho7 LEAVE KTMDE,1
ADVANCE 4.1,0.3
ENTER PSKAL,1
LEAVE BRLKA,1
RELEASE RSSCAL
LET x$RKALB=CI
LET+ x$RKAL,x$RKALB-x$RKALA
IF BRLKA=NE,NoDonA
GOTO RSDONA,1
SCLE GOTO KTMXLE,0.15 ! (Loc: -12,-2)
ADVANCE 1.9,0.3
GOTO noho6,0.83
ADVANCE 2
noho6 LEAVE SCDE,1
ADVANCE 2.5,0.5
ENTER PSKAL,1
LEAVE BRLKA,1
RELEASE RSSCAL
LET x$RKALB=CI
LET+ x$RKAL,x$RKALB-x$RKALA
IF BRLKA=NE,NoDonA
GOTO RSDONA,1
SCLF ADVANCE 1.5,0.3  ! (Loc: -11,+4)
GOTO noho8,0.83
ADVANCE 2
noho8 LEAVE SCDF,1
ADVANCE 2,0.5
ENTER PSKAL,1
LEAVE BRLKA,1
RELEASE RSSCAL
LET x$RKALB=CI
LET+ x$RKAL,x$RKALB-x$RKALA
IF BRLKA=NE,NoDonA
GOTO RSDONA,1
SRSSCD  WAITIF PSKAD=E  ! (Loc: -20,+6)
SEIZE RSSCAD
LET x$RKADA=CI
chack LEAVE PSKAD,1

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GOTO SCDAF,0.21
ADVANCE 2.5,0.5
GOTO noshi4,0.79
ADVANCE 2
noshi4 ENTER SCDR,1
ADVANCE 1.9,0.3
RELEASE RSSCAD
LET x$RKADB=CI
LET+ x$RKAD,x$RKADB-x$RKADA
TERMINATE
SCDAF      GOTO SCDAFF,0.21 ! (Loc: -9,+2)
ADVANCE 2.5,0.5
GOTO noshi5,0.79
ADVANCE 2
noshi5 ENTER SCDE,1
ADVANCE 1.9,0.3
RELEASE RSSCAD
LET x$RKADB=CI
LET+ x$RKAD,x$RKADB-x$RKADA
TERMINATE
SCDAFF     ADVANCE 2,0.5      ! (Loc: -8,+2)
GOTO noshi6,0.79
ADVANCE 2
noshi6 ENTER SCDF,1
ADVANCE 1.5,0.3
RELEASE RSSCAD
LET x$RKADB=CI
LET+ x$RKAD,x$RKADB-x$RKADA
TERMINATE
KCT1BGRAPH x$STATKB,x$TOTKB      ! (Loc: -38,+2)
SEIZE KCT1B
LET x$TOTKBA=CI
ADVANCE 30,5
GOTO DryKB,0.1
SEIZE KCT1BA      ! (Loc: +1,+2)
LET x$KBAA=CI
RSB SEIZE RSSC,Q
GOTO LoadKB,0.07
ENTER LossKB,V$LossKB ! (Loc: +1,+1)
LET x$DKB=S$LossKB
AKCTBB     WAITIF PSKBD=F
SEIZE CraKBD
LET x$CKBDA=CI
LEAVE LossKB,1
ADVANCE 5,1
ENTER PSKBD,1,Q
SPLIT 1,RSSCBD
RELEASE CraKBD

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LET X$CKBDB=CI
LET+ x$CKBD,x$CKBDB-x$CKBDA
IF LossKB=NE,AKCTBB
GOTO ByeB,0.4
ADVANCE 1 ! Control
WAITIF PSKBD=NE
WAITIF RSSCBD=U
LoadKB ENTER BRLKB,V$LastKB
LET X$LKB=S$BRLKB
NoDonB WAITIF PSKBL=F
SEIZE RSSCBL
LET x$RKBLA=CI
SPLIT 1,SCranB
GOTO SCLFB,0.05
GOTO SCLEB,0.67
ADVANCE 3.4,0.3
GOTO noho9,0.83
ADVANCE 2
noho9 LEAVE SCDR,1
ADVANCE 4.5,0.5
ENTER PSKBL,1
LEAVE BRLKB,1
RELEASE RSSCBL
LET x$RKBLB=CI
LET+ x$RKBL,x$RKBLB-x$RKBLA
IF BRLKB=NE,NoDonB
RSDONB RELEASE RSSC ! (Loc: +3,+0)
ADVANCE 1
WAITIF PSKBL=NE
WAITIF CraKBL=U
ByeBB RELEASE KCT1BA
LET x$KBAB=CI
PRINT '-----'
LET+ x$STATKB,1
SPLIT 1,WRSB
ADVANCE 30,5
RELEASE KCT1B
LEAVE KCT1,1
LET x$TOTKBB=CI
LET X$TOTKB=x$TOTKBB-x$TOTKBA
LET X$KBLL=x$KBAB-x$KBAA
LET x$CKBTOT=x$CKBL+x$CKBD
PRINT 'Totaltid Kran KCT 1 B;',x$CKBTOT,0
PRINT 'LASTLOS Prosess KCT 1 B;',X$KBLL,0
PRINT 'Total LIGGETID KCT 1B;',x$TOTKB,0
PRINT 'Utility Crane KCT 1 B;',x$CKBTOT/x$TOTKB*100,0
LET x$CKBL=0
LET x$CKBD=0

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ter5  TERMINATE 1
RSKB LET x$RBOKB=0      ! (Loc: -3,+5)
      RELEASE RSSC
      TERMINATE
WRSB WAITIF PSKBD=NE  ! (Loc: -13,-2)
      WAITIF RSSCBD=U
      LET x$RKBTOT=x$RKBL+x$RKBD
      PRINT 'Antall losset KCTB;',x$DKB,0
      PRINT 'Antall lastet KCT-B;',x$LKB,0
      PRINT 'Totaltid RS KCT 1 B;',x$RKBTOT,0
      PRINT 'RS KCT 1 B per konteiner;',x$RKBTOT/(x$DKB+x$LKB)*100,0
SKA2  GRAPH x$STATKB,x$RKBTOT/(x$DKB+x$LKB)
      LET x$RKBL=0
      LET x$RKBD=0
      LET x$DKB=0
      LET x$LKB=0
      IF x$RBOKB=1,RSKB
      TERMINATE
BYEB LET x$RBOKB=1      ! (Loc: -18,-2)
      GOTO ByeBB
DryKB ADVANCE 228*fn$xpdis  ! (Loc: -6,-3)
      ADVANCE 30,5
      LET x$TOTKBB=Ci
      LET X$TOTKB=x$TOTKBB-x$TOTKBA
      PRINT '<><><><><><><><><><><><><><><>'
      PRINT 'Total LIGGETID KCT 1B;',x$TOTKB,0
      PRINT '<><><><><><><><><><><><><><><>'
      RELEASE KCT1B
      LEAVE KCT1,1
ter4  TERMINATE 1
SCranB  WAITIF PSKBL=E  ! (Loc: -11,+10)
      SEIZE CraKBL
      LET x$CKBLA=Ci
      WAITIF PSKBL=E
      LEAVE PSKBL,1
      ADVANCE 5,1
      LET X$CKBLB=Ci
      LET+ x$CKBL,x$CKBLB-x$CKBLA
      RELEASE CraKBL
      TERMINATE
KTXLBE  ADVANCE 4.1,0.3  ! (Loc: -18,-4)
      GOTO noho11,0.83
      ADVANCE 2
noho11  LEAVE KTMDE,1
      ADVANCE 5.5,0.5
      ENTER PSKBL,1
      LEAVE BRLKB,1
      RELEASE RSSCBL

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LET x$RKBLB=CI
LET+ x$RKBL,x$RKBLB-x$RKBLA
IF BRLKB=NE,NoDonB
GOTO RSDONB,1
SCLEB      GOTO KTXLBE,0.15 ! (Loc: -12,-2)
ADVANCE 3.4,0.3
GOTO noho10,0.83
ADVANCE 2
noho10     LEAVE SCDE,1
ADVANCE 4.5,0.5
ENTER PSKBL,1
LEAVE BRLKB,1
RELEASE RSSCBL
LET x$RKBLB=CI
LET+ x$RKBL,x$RKBLB-x$RKBLA
IF BRLKB=NE,NoDonB
GOTO RSDONB,1
SCLFBADVANCE 3.4,0.3 ! (Loc: -11,+4)
GOTO noho12,0.83
ADVANCE 2
noho12     LEAVE SCDF,1
ADVANCE 4.5,0.5
ENTER PSKBL,1
LEAVE BRLKB,1
RELEASE RSSCBL
LET x$RKBLB=CI
LET+ x$RKBL,x$RKBLB-x$RKBLA
IF BRLKB=NE,NoDonB
GOTO RSDONB,1
RSSCBD     WAITIF PSKBD=E ! (Loc: -18,+6)
SEIZE RSSCBD
LET x$RKBDA=CI
LEAVE PSKBD,1
GOTO SCDBF,0.21
ADVANCE 4.5,0.5
GOTO noshi7,0.79
ADVANCE 2
noshi7     ENTER SCDR,1
ADVANCE 3.4,0.3
RELEASE RSSCBD
LET x$RKBDB=CI
LET+ x$RKBD,x$RKBDB-x$RKBDA
TERMINATE
SCDBF      GOTO SCDBFF,0.21 ! (Loc: -9,+2)
ADVANCE 4.5,0.5
GOTO noshi8,0.79
ADVANCE 2
noshi8     ENTER SCDE,1

```

```
ADVANCE 3.4,0.3
RELEASE RSSCBD
LET x$RKBDB=CI
LET+ x$RKBD,x$RKBDB-x$RKBDA
TERMINATE
SCDBFF      ADVANCE 4.5,0.5  ! (Loc: -8,+2)
GOTO noshi9,0.79
ADVANCE 2
noshi9 ENTER SCDF,1
ADVANCE 3.4,0.3
RELEASE RSSCBD
LET x$RKBDB=CI
LET+ x$RKBD,x$RKBDB-x$RKBDA
TERMINATE

START 450
END
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