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c                         CHAPTER VIa  -  SECTION 4.1
c
c  Finds aN and aL for given condenser conditions (Vi, DT, etc.)
c  Add ho from Nusselt Condensation
      implicit real*8(a-h,o-z)
      data di,do/1.,1.1/
      data pi,gc,g/3.1415927,32.2,32.2/
      data aks,hfg/27.6,1023.9/
      data qdot,Vi,Tai,Tbi,To/6.80694E9,5.,68.,98.,123./
c
      open(5,file='b.out')
c
      gc=gc*3600.*3600.
      g=g*3600.*3600.
      i=0
      j=0
c
      Tavgi=0.5*(Tai+Tbi)
      call intrpl(tavgi,cpi,cpgi,amui,amugi,aki,akgi,
     1            pri,prgi,sigfi,betafi,roi,rogi,anufi,
     2            anugi,vfi,vfgi,vgi)
      Ts=0.5*(To+Tavgi)
      Tfilm=0.5*(Ts+To)
      call intrpl(tfilm,cpfo,cpgo,amufo,amugo,akfo,akgo,
     1            prfo,prgo,sigfo,betafo,rofo,rogo,anufo,
     2            anugo,vfo,vfgo,vgo)
      aJa=cpfo*(To-Ts)/hfg
      hfgp=hfg*(1.+0.68*aJa)
      anom=g*rofo*(rofo-rogo)*akfo*akfo*akfo*hfgp
      dnom=amui*do*(To-Ts)
      ho=0.729*Sqrt(sqrt(anom/dnom))
c
100   continue
      i=i+1
      di=0.555
      do=0.625
      if(i.gt.1) go to 101
      go to 200
101   continue
      if(i.gt.2) go to 102
      di=0.680
      do=0.750
      go to 200
102   continue
      if(i.gt.3) go to 103
      di=0.805
      do=0.875
      go to 200
103   continue
      if(i.gt.4) go to 104
      di=0.930
      do=1.000
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      go to 200
104   continue
      if(i.gt.5) go to 105
      di=1.18
      do=1.125
      go to 200
105   continue
      if(i.gt.6) go to 200
      di=1.370
      do=1.500
200   continue
      if(i.eq.6) j=j+1
c
      di=di/12.00
      do=do/12.00
c
      ai=pi*di*di/4.00
      DTlmtd=((To-Tai)-(To-Tbi))/dlog((To-Tai)/(To-Tbi))
      dmi=qdot/(cpi*(Tbi-Tai))
      C1=4.00*dmi/(pi*amui*di)
      C3=0.023*aki*(Pri**0.4)*(C1**0.8)
      aN=4.*qdot/(roi*Vi*3600.00*pi*di*di*cpi*(Tbi-Tai))
      C4=(dlog(do/di)/(2.*aks))+(1./(ho*do))
      C5=pi*DTlmtd/qdot
      aL=((aN**0.8/C3)+C4)/(C5*aN)
      Rei=C1/aN
      hi=C3/(di*(aN**0.8))
      ffac=0.184/(Rei**0.2)
      DPi=ffac*(aL/di)*roi*Vi*Vi*3600.*3600./(2.*gc*144.00)
       dip=di*12
       dop=do*12
       write(5,10) dip,dop,aN,aL,DPi
10    format(5f15.5)
11    format(2e15.3)
12    format(f20.7,/)
c
      if(i.lt.6) go to 100
      write(5,12) Vi
      if(i.ne.1.and.i.ge.6) i=0
      If(J.gt.2) go to 202
      Vi=Vi+2.00
      go to 100
202   continue
      if(J.gt.3) go to 203
      Vi=Vi+3.00
      go to 100
203   continue
      if(J.gt.4) go to 204
      Vi=Vi+4.
      go to 100
204   continue
      if(J.gt.5) go to 1000
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```
      Vi=Vi+5.
      go to 100
c
1000  continue
      stop
      end
c
c.
```