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POSTBO A time dependent one dimensional post-burnout heat transfer code.

by

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Date Maj 1971

Department or group

Reactor Physics Department

Group's own registration number(s)

pages + tables + illustrations

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Abstract

The program described calculates the heat transfer in a boiling water channel up to and after the point where a given burn out condition is reached.

Guide to use the program is included together with a test case.

Abstract to

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1. INTRODUCTION.

If the heat input to a boiling water channel exceeds a certain value the heat transfer coefficient between wall and coolant suddenly decreases to fractions of its original value. This phenomenon can be called, among other names, occurence of burnout. The main characteristic of the burnout region is the absence of good contact between the surface and liquid phase, the latter being present only in the form of droplets dispersed in the steam.

In ref. /1/a physical model is suggested for the description of burnout region and steady state calculations using the model are compared with experimental values. Ref. /3/ reports on a reproduction of these calculations.

The present work uses the model proposed in ref. /1/ for the calculation of transients in the burnout region. In the following this model is very briefly outlined, and in the subsequent Sections the basic equations, the numerical method and the preparation of data and running of the program are described. A test case is given.

The essence of the proposed model is the assumption that in the burnout region there is no direct heat transfer from wall to droplets since the droplets do not wet the wall (radiation has been ignored). There is, however, an indirect heat transfer, because the droplets evaporate in the superheated steam atmosphere thus removing heat from the steam. This evaporation is enhanced by ventillation due to the relative velocity between steam and droplets. The size of the droplets change by this evaporation, but their number passing a given cross section per second remains the same. The droplets are also accelerated by the drag force of the passing steam. The initial size of the droplets is arbitrarily determined being a somewhat fictious quantity in the model, as a kind of best fit to experiments.

In the time dependent calculation described below, a tubular channel with no burnout at inlet and/or at zero time is considered and continuity of the appropriate quantities is preserved.

Throughout the report and in the input/output of the program the MKS system of units is used.

2. BASIC EQUATIONS.

The flow in the boiling channel is represented by a one dimensional model. We consider the one dimensional mass continuity equation and the equation of energy conservation.

$$\frac{\partial \rho}{\partial t} + \frac{\partial G}{\partial z} = 0 \qquad (1)$$

$$\frac{\partial E}{\partial t} + \frac{\partial L}{\partial z} = Q \qquad (2)$$

where ρ is the coolant density,
G is the mass flow rate (or momentum density),
E is the internal energy density,
L is the enthalpy flow rate (or enrhalpy flux density),
Q is the incoming heat per unit volume per second.

(In the following we consider an open channel rather than a closed loop therefore, the equation of momentum conservation is not needed.) In the two phase flow we have

$$\rho = \rho_w (1-f) + \rho_s f \qquad (3)$$

$$G = v_w \rho_w (1-f) + v_s \rho_s f \qquad (4)$$

$$E = \rho_w h_w (1-f) + \rho_s h_s f \qquad (5)$$

$$L = \rho_w v_w h_w (1-f) + \rho_s v_s h_s f \qquad (6)$$

where f is the void fraction and indices w and s refer to water and steam, respectively. The assumption of $\partial p / \partial t = 0$ (p is pressure) has been made and kinetic energy terms have been neglected. In the boiling region

$$d\rho_w = d\rho_s = dh_s = dh_w = 0 \qquad (7)$$

however, in the post-burnout region only

$$d\rho_w = dh_w = 0 \qquad (8)$$

will be assumed

2.1. Region below burnout.

The procedure under burnout closely follows that of ref. /2/. The slip correlation due to Bankoff and Jones (see /2/) is used. Because the present program is directed to post-burnout regions, no subcooled region is included. For determining the point where burnout occurs the critical heat flux from Becker's burnout correlation /4,6/ is compared with the actual heat flux.

2.2. Burnout region.

The equations (1) and (2) are now valid with simplifying conditions (8) only, and thereby the number of unknown quantities becomes larger. Additional equations are obtained by formulating the physical model described in Section 1. concerning the formation, acceleration and evaporation of entrained liquid droplets.

The evaporation of water results in a change of droplet diameter, D.

$$\frac{\partial D}{\partial t} + v_w \frac{\partial D}{\partial z} = \left\{ - \frac{4 k_s}{\rho_w D} (T - T_s) \right\} \cdot F \qquad (9)$$

$$\frac{\partial D}{\partial t} + v_w \frac{\partial D}{\partial z} = \left\{ - \frac{4 D_{iff}}{\rho_w RTD} (p_s - P) \right\} \cdot F \qquad (10)$$

Where T_s, p_s are the temperature and pressure inside the droplet,
k_s is the thermal conductivity of steam,

$$D_{iff} = \frac{k_s (\gamma - 1)}{\rho_s R}$$ is mass diffusion coefficient

(γ being the index of isentropic expansion), and F is a ventillation factor

$$F = 1 + 0.276 \, Re_d^{\frac{1}{2}} \left(\frac{\mu_s}{D \rho_s} \right)^{1/3} \qquad (11)$$

where $$Re_d = \frac{(v_s - v_w) \rho_s D}{\mu_s} \qquad (12)$$

is the droplet Reynolds number, and

μ_s is viscosity of steam.

Saturation condition is assumed inside the droplets thus p_s and T_s are related by

$$\frac{p_s}{p_{s1}} = \frac{-\lambda}{R}\left[\frac{1}{T_s} - \frac{1}{T_{s1}}\right] \qquad (13)$$

where p_{s1} and T_{s1} are a corresponding pair of values in some other saturation state.

The velocity of droplets change according to the following equation

$$\frac{\partial v_w}{\partial t} + v_w \frac{\partial v_w}{\partial z} = \frac{3\, C_d\, \rho_s\, (v_s - v_w)^2}{4D\rho_w} \qquad (14)$$

where $C_d = \frac{27}{Re_d^{\,0.84}}$

Denoting by N the number of droplets passing through unit cross section area of the channel per second, the following relation holds

$$f = 1 - \frac{ND^3 \pi}{6\, v_w} \qquad (15)$$

Before the solution of the system of Eqs. (1), (2), (9), (10), (14) can proceed, it should be noted, that

$$\partial\rho_s = a \cdot b \cdot \partial h_s \qquad (16)$$

and $\partial f = c\partial D + g\partial v_w$ (17)

where $a = \frac{\partial \rho_s}{\partial T}$ and $b = \frac{\partial T}{\partial h_s}$ are table functions,

while c and g are obtained by differenciating Eq. (15).

2.3. Superheated steam only.

If the water flow rate in the channel becomes negligible due to the evaporation of droplets, a one phase region with superheated steam is considered. Eqs. (1) and (2) are used with steam quantities alone and $f = 1$, together with (16).

2.4. Heat transfer coefficients.

In the boiling region we use Eq. (3, 2) of ref. /2/, while in the burnout region we use the Heineman correlation following ref. /3/, in the form

$$h = 0.0133 \left(\frac{\rho_s v_s D_e}{\mu_f}\right)^{0.84} \cdot Pr_f^{\,1/3} \cdot \frac{k_f}{D_e} \qquad (18)$$

where $Pr_f = \frac{\mu_f\, C_{pf}}{k_f}$, and f denotes quantities at temperature t_f,

$$t_f = \frac{T + T_{wall}}{2}$$

D_e = channel diameter.

1. NUMERICAL METHOD.

The equations are solved by finite differences method. Because of non-linearities nearly all but the simplest differencing scheems lead to implicit systems solved only by iteration. To avoid this further complexity the following scheem is used.

$$\left.\begin{aligned} &\frac{\partial Y}{\partial t} \text{ is approximated by } \frac{Y_k^{j+1} - Y_k^j}{\Delta t} \\ &\frac{\partial Y}{\partial z} \sim \frac{Y_{k+1}^{j+1} - Y_k^{j+1}}{\Delta z} \\ &\text{and } Y \to Y_k^{j+1} \end{aligned}\right\} \qquad (19)$$

where k is refering to space mesh z_k, and j to time step t_j. $k = 1$ for all values of j is the given (time dependent) boundary condition and $j = 0$ refers to initial values for all k.

The resulting equations are

$$Ac\,\frac{1}{\Delta t}\left(D_k^{j+1} - D_k^j\right) + Ag\,\frac{1}{\Delta t}\left(v_{w_k}^{j+1} - v_{w_k}^j\right) - fab\,\frac{1}{\Delta t}\left(h_{s_k}^{j+1} - h_{s_k}^j\right) =$$

$$w_7 c\,\frac{1}{\Delta z}\left(D_{k+1}^{j+1} - D_k^{j+1}\right) + \left(w_7 g + \rho_w(1-f)\right)\frac{1}{\Delta z}\left(v_{w_{k+1}}^{j+1} - v_{w_k}^{j+1}\right) \tag{20}$$

$$+ \rho_s f\,\frac{1}{\Delta z}\left(v_{s_{k+1}}^{j+1} - v_{s_k}^{j+1}\right) + v_s fab\,\frac{1}{\Delta z}\left(h_{s_{k+1}}^{j+1} - h_{s_k}^j\right)$$

and

$$Be\,\frac{1}{\Delta t}\left(D_k^{j+1} - D_k^j\right) + Bg\,\frac{1}{\Delta t}\left(v_{w_k}^{j+1} - v_{w_k}^j\right)$$

$$-\left(\rho_s f + h_s fab\right)\frac{1}{\Delta t}\left(h_{s_k}^{j+1} - h_{s_k}^j\right) + Q =$$

$$\left[\rho_w h_w(1-f) + w_8 g\right]\frac{1}{\Delta z}\left(v_{w_{k+1}}^{j+1} - v_{w_k}^{j+1}\right)$$

$$+ \left(\rho_s v_s f + v_s h_s fab\right)\frac{1}{\Delta z}\left(h_{s_{k+1}}^{j+1} - h_{s_k}^{j+1}\right) \tag{21}$$

$$+ \rho_s h_s f\,\frac{1}{\Delta z}\left(v_{s_{k+1}}^{j+1} - v_{s_k}^{j+1}\right) + w_8 c\,\frac{1}{\Delta z}\left(D_{k+1}^{j+1} - D_k^{j+1}\right)$$

where

$$v_{w_{k+1}}^{j+1} = \frac{\Delta z}{v_{w_k}^{j+1}}\left(K_1 - \frac{v_{w_k}^{j+1} - v_{w_k}^j}{\Delta t}\right) + v_{w_k}^{j+1} \tag{22}$$

$$D_{k+1}^{j+1} = \frac{\Delta z}{v_{w_k}^{j+1}}\left(K_2 - \frac{D_k^{j+1} - D_k^j}{\Delta t}\right) + D_k^{j+1} \tag{23}$$

The unindexed quantities are to be taken at t^{j+1}, z_k, and the following notations were used

$$A = \rho_w - \rho_s$$

$$B = \rho_w h_w - \rho_s h_s$$

$$w_7 = \rho_s v_s - \rho_w v_w$$

$$w_8 = \rho_s v_s h_s - \rho_w v_w h_w$$

$$K_1 = 20.25\,\frac{\mu_s^{0.84}\,\rho_s^{0.16}\,(v_s - v_w)^{1.16}}{D^{1.84}\,\rho_w}$$

$$K_2 = -\frac{4ks}{\rho_w\,\lambda\,D_k^{j+1}}\,(T - T_s)\cdot F$$

In the course of the computation transcendental equations are solved by iteration in connection with the Bankoff Jones slip correlation (for void fraction, f), the temperature inside the droplet, T_s, and the wall temperature satisfying the Heineman correlation.

In the burnout region the droplet acceleration mechanism virtually replaces the slip correlation used before burnout. The water velocity, v_w, at the point of butnout is the initial value for calculation in the burnout region so to ensure continuity. The adopted numerical scheem, however, seemed to be insufficient to cope with the sudden increase of this velocity, therefore, a somewhat arbitrary limitation had to be used.

There is no obvious way of deciding on the number <u>and</u> size of the droplets at the point of burnout. It seemed advantageous to keep the initial droplet size arbitrarily determined as in the originally proposed model. It should be noted, however, that the relative insensitivity of the results to this initial quantity as observed by /1, 3/ holds only to a much lesser extent if steam quality vs. position downstream from burnout is considered.

The difference scheem used is clearly not unconditionally stable. The condition for stability appears to be in the form of $\Delta z/\Delta t < \delta$, where δ depends also on the actual problem considered. Physically unrealistic oscillatory tendencies should be regarded as signs of instability.

4. PREPARATION OF DATA AND USE OF THE PROGRAM.

In the present form of the program a round tube is considered with given inside wall heat flux, but this heat flux is assumed to appear immediately as a volume heat flux in the coolant. No pressure loss along the channel is accounted for. A case should be characterised by the geometrical data of the tube, pressure, inlet mass flow rate, inlet quality, as functions of time, and wall heat flux as a function of time and position. The time function can be given as discrete points and /or linear variation between points. The heat flux as a function of position is given by a fourth order polynimial.

To facilitate numerical experiments and series of runs a special routine ALTER is provided which can easily be coded to perform alterations of the data if only some values are to be changed from one case to an other. Data formats are as follow.

Card 1. Format (13A6)

TITLE (I)	Title. (LAST in the first 4 columns terminates the run.

Card 2. Format (I12)

NFULL	Full printout at every NFULL-th time-step, short printout (one line) in between.

Card 3. Format (E12.5, I12, 3E12.5)

ZLENG	Length of channel (m).
KM	No. of mesh points.
DEQUIV	Equivalent diameter of channel (m).
AREA	Cross section area of channel (m^2).
PSYS	Pressure (N/m^2).

Card 4. Format(2E12.5)

G	Inlet mass flow rate (kg/m^2sec)
X	Inlet quality

Card 5. Format(5E12.5)

Q1, Q2, Q3, Q4, Q5	Coefficients for wall heat flux polynomial $Q(K) = Q1 + Q2\ z + Q3\ z^2 + Q4\ z^3 + Q5\ z^4$ (W/m^2)

Card 6. Format(I12, E12.5)

NTS	No. of time steps. (if zero, no time dependent calculation.)
DT	Δt (sec)

Card 7. Format(3(E12.5,2I6))

GG(I)	Inlet mass flow rate (kg/m^2sec) between time steps LG(I) and NG(I).
LG(I), NG(I)	(If LG(I+1) = NG(I), LG(I+1) need not be punched. If LG(I+1) > NG(I) linear variation between points NG(I) and LG(I+1) is assumed. Maximum number of values is 24. As many cards of type 7. as needed.)

Card 8. Format(3(E12.5,2I6))

XX(I)	Inlet quality.
LX(I), NX(I)	(Same rules as for card 7) .

Card 9. Format(5E12.5,2I6)

Q1Q(I) Q2Q(I) Q3Q(I) Q4Q(I) Q5Q(I)	Coefficients for wall heat flux polynomial.
LQ(I) NQ(I)	(Same rules as for card 7.)

Card 10. Format(3I12,3E12.5)

L	Standard ALTER card. GO TO(1,2,3,...,10),L in ALTER routine. If L = 0, no alteration is performed and no further data are needed.
K1 K2 A1 A2 A3	To be used freely in accordance with the sub-section of subroutine ALTER selected by L.

5. TEST CASE.

In the POSTBO report testcase there is no burnout in the initially calculated steady state. The disturbancies in G_{inlet} and Q are shown in Fig. 1. The resulting transient in terms of the parameters, x, and T_{wall} at outlet are also shown in Fig. 1.

To save space, Full Printout is at every loth time step only.

The running time of this case on the BURROUGHS computer was 175 sec. (processing time 119 sec.).

REFERENCES.

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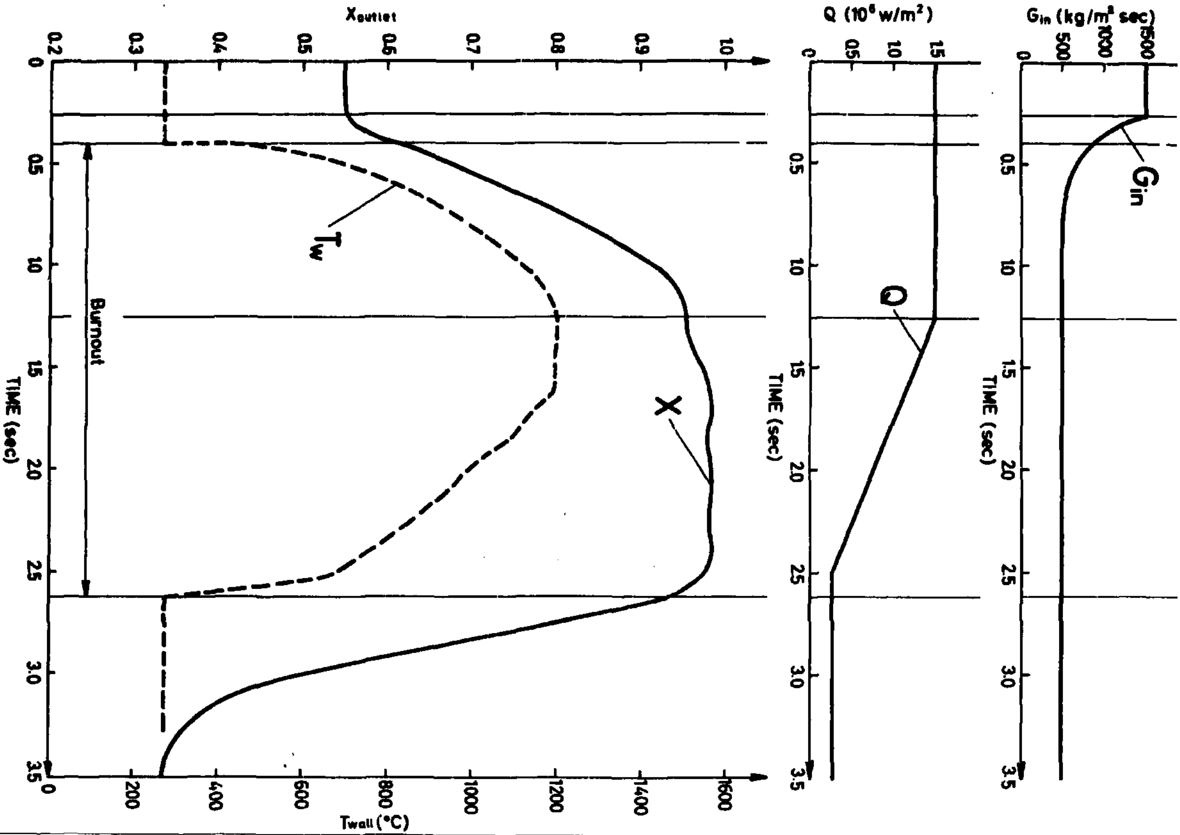


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PROGRAM POSTBU          POSTBO REPORT TESTCASE  (PUMP TRIP - POWER LINEAR DECREASE)  6              PAGE  1

              INPUT DATA

    LENGTH OF CHANNEL (M)      2.0000E 00
    NO. OF MESH POINTS      41
    EQUIV. DIAMETER (M)      9.0000E-03
    CROSS SECT. AREA (M2)      6.3600E-05
    PRESSURE (N/M2)      4.9050E 06

STEADY STATE CALCULATION
    INLET MASS FLOW RATE (KG/M2S)      1.5000E 03
    INLET QUALITY      1.0000E-02
    COEFFICIENTS FOR HEAT FLUX POLYNOMIAL
                        1.5000E 06
                        0.0000E 00
                        0.0000E 00
                        0.0000E 00
                        0.0000E 00


TRANSIENT CALCULATION
    NO. OF TIME STEPS      70
    DELTA T      5.0000E-02
    INLET MASS FLOW DATA
       1.5000E 03    0    5        1.1500E 03    0    6        9.4000E 02    0    7
       8.0000E 02    0    8        7.2000E 02    0    9        6.4000E 02    0   10
       5.8000E 02    0   11        5.5000E 02    0   12        5.3000E 02    0   13
       5.0000E 02    0   70
    INLET QUALITY DATA
       1.0000E-02    0   70

    HEAT FLUX COEFFICEENTS DATA
     1.5000E 06      0.0000E 00      0.0000E 00      0.0000E 00      0.0000E 00      0      25
     3.0000E 05      0.0000E 00      0.0000E 00      0.0000E 00      0.0000E 00     50      70
```

STEADY STATE RESULTS

PRESSURE (N/M2) 0.4905E 07 SATURATION TEMPERATURE (GRAD C) 0.2627E 03
INLET CONDITIONS G= 0.15000E 04 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	6.668E 08	1.000E-02	1.865E-01	2.341E 00	3.237E 00	0.000E 00	F	2.627E 02	2.753E 02
2	5.000E-02	6.668E 08	2.351E-02	3.349E-01	2.825E 00	4.237E 00	0.000E 00	F	2.627E 02	2.753E 02
3	1.000E-01	6.668E 08	3.702E-02	4.288E-01	3.243E 00	5.212E 00	0.000E 00	F	2.627E 02	2.753E 02
4	1.500E-01	6.668E 08	5.053E-02	4.948E-01	3.616E 00	6.164E 00	0.000E 00	F	2.627E 02	2.753E 02
5	2.000E-01	6.668E 08	6.403E-02	5.446E-01	3.954E 00	7.098E 00	0.000E 00	F	2.627E 02	2.753E 02
6	2.500E-01	6.668E 08	7.754E-02	5.839E-01	4.266E 00	8.016E 00	0.000E 00	F	2.627E 02	2.753E 02
7	3.000E-01	6.668E 08	9.105E-02	6.161E-01	4.555E 00	8.921E 00	0.000E 00	F	2.627E 02	2.753E 02
8	3.500E-01	6.668E 08	1.046E-01	6.431E-01	4.826E 00	9.815E 00	0.000E 00	F	2.627E 02	2.753E 02
9	4.000E-01	6.668E 08	1.181E-01	6.661E-01	5.082E 00	1.070E 01	0.000E 00	F	2.627E 02	2.753E 02
10	4.500E-01	6.668E 08	1.316E-01	6.863E-01	5.325E 00	1.158E 01	0.000E 00	F	2.627E 02	2.753E 02
11	5.000E-01	6.668E 08	1.452E-01	7.040E-01	5.556E 00	1.245E 01	0.000E 00	F	2.627E 02	2.753E 02
12	5.500E-01	6.668E 08	1.587E-01	7.198E-01	5.777E 00	1.331E 01	0.000E 00	F	2.627E 02	2.753E 02
13	6.000E-01	6.668E 08	1.723E-01	7.341E-01	5.988E 00	1.417E 01	0.000E 00	F	2.627E 02	2.753E 02
14	6.500E-01	6.668E 08	1.858E-01	7.469E-01	6.189E 00	1.502E 01	0.000E 00	F	2.627E 02	2.753E 02
15	7.000E-01	6.668E 08	1.993E-01	7.586E-01	6.382E 00	1.586E 01	0.000E 00	F	2.627E 02	2.753E 02
16	7.500E-01	6.668E 08	2.128E-01	7.694E-01	6.568E 00	1.670E 01	0.000E 00	F	2.627E 02	2.753E 02
17	8.000E-01	6.668E 08	2.263E-01	7.794E-01	6.746E 00	1.753E 01	0.000E 00	F	2.627E 02	2.753E 02
18	8.500E-01	6.668E 08	2.398E-01	7.886E-01	6.918E 00	1.836E 01	0.000E 00	F	2.627E 02	2.753E 02
19	9.000E-01	6.668E 08	2.533E-01	7.972E-01	7.085E 00	1.918E 01	0.000E 00	F	2.627E 02	2.753E 02
20	9.500E-01	6.668E 08	2.668E-01	8.053E-01	7.245E 00	2.000E 01	0.000E 00	F	2.627E 02	2.753E 02
21	1.000E 00	6.668E 08	2.803E-01	8.129E-01	7.400E 00	2.082E 01	0.000E 00	F	2.627E 02	2.753E 02
22	1.050E 00	6.668E 08	2.938E-01	8.200E-01	7.549E 00	2.163E 01	0.000E 00	F	2.627E 02	2.753E 02
23	1.100E 00	6.668E 08	3.074E-01	8.268E-01	7.694E 00	2.244E 01	0.000E 00	F	2.627E 02	2.753E 02
24	1.150E 00	6.668E 08	3.209E-01	8.332E-01	7.834E 00	2.325E 01	0.000E 00	F	2.627E 02	2.753E 02
25	1.200E 00	6.668E 08	3.344E-01	8.393E-01	7.969E 00	2.405E 01	0.000E 00	F	2.627E 02	2.753E 02
26	1.250E 00	6.668E 08	3.479E-01	8.451E-01	8.100E 00	2.485E 01	0.000E 00	F	2.627E 02	2.753E 02
27	1.300E 00	6.668E 08	3.614E-01	8.507E-01	8.227E 00	2.565E 01	0.000E 00	F	2.627E 02	2.753E 02
28	1.350E 00	6.668E 08	3.749E-01	8.560E-01	8.349E 00	2.644E 01	0.000E 00	F	2.627E 02	2.753E 02
29	1.400E 00	6.668E 08	3.884E-01	8.610E-01	8.468E 00	2.723E 01	0.000E 00	F	2.627E 02	2.753E 02
30	1.450E 00	6.668E 08	4.019E-01	8.659E-01	8.582E 00	2.802E 01	0.000E 00	F	2.627E 02	2.753E 02
31	1.500E 00	6.668E 08	4.154E-01	8.706E-01	8.693E 00	2.880E 01	0.000E 00	F	2.627E 02	2.753E 02
32	1.550E 00	6.668E 08	4.289E-01	8.751E-01	8.800E 00	2.959E 01	0.000E 00	F	2.627E 02	2.753E 02
33	1.600E 00	6.668E 08	4.424E-01	8.795E-01	8.903E 00	3.037E 01	0.000E 00	F	2.627E 02	2.753E 02
34	1.650E 00	6.668E 08	4.559E-01	8.837E-01	9.003E 00	3.114E 01	0.000E 00	F	2.627E 02	2.753E 02
35	1.700E 00	6.668E 08	4.694E-01	8.878E-01	9.099E 00	3.192E 01	0.000E 00	F	2.627E 02	2.753E 02
36	1.750E 00	6.668E 08	4.829E-01	8.918E-01	9.192E 00	3.269E 01	0.000E 00	F	2.627E 02	2.753E 02
37	1.800E 00	6.668E 08	4.964E-01	8.956E-01	9.281E 00	3.346E 01	0.000E 00	F	2.627E 02	2.753E 02
38	1.850E 00	6.668E 08	5.099E-01	8.993E-01	9.367E 00	3.423E 01	0.000E 00	F	2.627E 02	2.753E 02
39	1.900E 00	6.668E 08	5.234E-01	9.030E-01	9.450E 00	3.500E 01	0.000E 00	F	2.627E 02	2.753E 02
40	1.950E 00	6.668E 08	5.369E-01	9.065E-01	9.529E 00	3.576E 01	0.000E 00	F	2.627E 02	2.753E 02
41	2.000E 00	6.668E 08	5.505E-01	9.100E-01	9.605E 00	3.652E 01	0.000E 00	F	2.627E 02	2.753E 02

TIME STEP 0 TIME (SEC) 0.00000E 00 INLET CONDITIONS G= 0.15000E 04 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	6.668E 08	1.000E-02	1.865E-01	2.341E 00	3.237E 00	0.000E 00	F	2.627E 02	2.753E 02
2	5.000E-02	6.668E 08	2.351E-02	3.349E-01	2.825E 00	4.237E 00	0.000E 00	F	2.627E 02	2.753E 02
3	1.000E-01	6.668E 08	3.702E-02	4.288E-01	3.243E 00	5.212E 00	0.000E 00	F	2.627E 02	2.753E 02
4	1.500E-01	6.668E 08	5.053E-02	4.948E-01	3.616E 00	6.164E 00	0.000E 00	F	2.627E 02	2.753E 02
5	2.000E-01	6.668E 08	6.403E-02	5.446E-01	3.954E 00	7.098E 00	0.000E 00	F	2.627E 02	2.753E 02
6	2.500E-01	6.668E 08	7.754E-02	5.839E-01	4.266E 00	8.016E 00	0.000E 00	F	2.627E 02	2.753E 02
7	3.000E-01	6.668E 08	9.105E-02	6.161E-01	4.555E 00	8.921E 00	0.000E 00	F	2.627E 02	2.753E 02
8	3.500E-01	6.668E 08	1.046E-01	6.431E-01	4.826E 00	9.815E 00	0.000E 00	F	2.627E 02	2.753E 02
9	4.000E-01	6.668E 08	1.181E-01	6.661E-01	5.082E 00	1.070E 01	0.000E 00	F	2.627E 02	2.753E 02
10	4.500E-01	6.668E 08	1.316E-01	6.863E-01	5.325E 00	1.158E 01	0.000E 00	F	2.627E 02	2.753E 02
11	5.000E-01	6.668E 08	1.452E-01	7.040E-01	5.556E 00	1.245E 01	0.000E 00	F	2.627E 02	2.753E 02
12	5.500E-01	6.668E 08	1.587E-01	7.198E-01	5.777E 00	1.331E 01	0.000E 00	F	2.627E 02	2.753E 02
13	6.000E-01	6.668E 08	1.723E-01	7.341E-01	5.988E 00	1.417E 01	0.000E 00	F	2.627E 02	2.753E 02
14	6.500E-01	6.668E 08	1.858E-01	7.469E-01	6.189E 00	1.502E 01	0.000E 00	F	2.627E 02	2.753E 02
15	7.000E-01	6.668E 08	1.993E-01	7.586E-01	6.382E 00	1.586E 01	0.000E 00	F	2.627E 02	2.753E 02
16	7.500E-01	6.668E 08	2.128E-01	7.694E-01	6.568E 00	1.670E 01	0.000E 00	F	2.627E 02	2.753E 02
17	8.000E-01	6.668E 08	2.263E-01	7.794E-01	6.746E 00	1.753E 01	0.000E 00	F	2.627E 02	2.753E 02
18	8.500E-01	6.668E 08	2.398E-01	7.886E-01	6.918E 00	1.836E 01	0.000E 00	F	2.627E 02	2.753E 02
19	9.000E-01	6.668E 08	2.533E-01	7.972E-01	7.085E 00	1.918E 01	0.000E 00	F	2.627E 02	2.753E 02
20	9.500E-01	6.668E 08	2.668E-01	8.053E-01	7.245E 00	2.000E 01	0.000E 00	F	2.627E 02	2.753E 02
21	1.000E 00	6.668E 08	2.803E-01	8.129E-01	7.400E 00	2.082E 01	0.000E 00	F	2.627E 02	2.753E 02
22	1.050E 00	6.668E 08	2.938E-01	8.200E-01	7.549E 00	2.163E 01	0.000E 00	F	2.627E 02	2.753E 02
23	1.100E 00	6.668E 08	3.074E-01	8.268E-01	7.694E 00	2.244E 01	0.000E 00	F	2.627E 02	2.753E 02
24	1.150E 00	6.668E 08	3.209E-01	8.332E-01	7.834E 00	2.325E 01	0.000E 00	F	2.627E 02	2.753E 02
25	1.200E 00	6.668E 08	3.344E-01	8.393E-01	7.969E 00	2.405E 01	0.000E 00	F	2.627E 02	2.753E 02
26	1.250E 00	6.668E 08	3.479E-01	8.451E-01	8.100E 00	2.485E 01	0.000E 00	F	2.627E 02	2.753E 02
27	1.300E 00	6.668E 08	3.614E-01	8.507E-01	8.227E 00	2.565E 01	0.000E 00	F	2.627E 02	2.753E 02
28	1.350E 00	6.668E 08	3.749E-01	8.560E-01	8.349E 00	2.644E 01	0.000E 00	F	2.627E 02	2.753E 02
29	1.400E 00	6.668E 08	3.884E-01	8.610E-01	8.468E 00	2.723E 01	0.000E 00	F	2.627E 02	2.753E 02
30	1.450E 00	6.668E 08	4.019E-01	8.659E-01	8.582E 00	2.802E 01	0.000E 00	F	2.627E 02	2.753E 02
31	1.500E 00	6.668E 08	4.154E-01	8.706E-01	8.693E 00	2.880E 01	0.000E 00	F	2.627E 02	2.753E 02
32	1.550E 00	6.668E 08	4.289E-01	8.751E-01	8.800E 00	2.959E 01	0.000E 00	F	2.627E 02	2.753E 02
33	1.600E 00	6.668E 08	4.424E-01	8.795E-01	8.903E 00	3.037E 01	0.000E 00	F	2.627E 02	2.753E 02
34	1.650E 00	6.668E 08	4.559E-01	8.837E-01	9.003E 00	3.114E 01	0.000E 00	F	2.627E 02	2.753E 02
35	1.700E 00	6.668E 08	4.694E-01	8.878E-01	9.099E 00	3.192E 01	0.000E 00	F	2.627E 02	2.753E 02
36	1.750E 00	6.668E 08	4.829E-01	8.918E-01	9.192E 00	3.269E 01	0.000E 00	F	2.627E 02	2.753E 02
37	1.800E 00	6.668E 08	4.964E-01	8.956E-01	9.281E 00	3.346E 01	0.000E 00	F	2.627E 02	2.753E 02
38	1.850E 00	6.668E 08	5.099E-01	8.993E-01	9.367E 00	3.423E 01	0.000E 00	F	2.627E 02	2.753E 02
39	1.900E 00	6.668E 08	5.234E-01	9.030E-01	9.450E 00	3.500E 01	0.000E 00	F	2.627E 02	2.753E 02
40	1.950E 00	6.668E 08	5.369E-01	9.065E-01	9.529E 00	3.576E 01	0.000E 00	F	2.627E 02	2.753E 02
41	2.000E 00	6.668E 08	5.505E-01	9.100E-01	9.605E 00	3.652E 01	0.000E 00	F	2.627E 02	2.753E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BO	MAX X (POINT	.X)	MAX TSTEAM (P	.TS)	MAX TWALL (P	.TW)
1	5.000E-02	1.500E 03	1.000E-02	0	41	5.505E-01	41	2.627E 02	41	2.753E 02
2	1.000E-01	1.500E 03	1.000E-02	0	41	5.506E-01	41	2.627E 02	41	2.753E 02
3	1.500E-01	1.500E 03	1.000E-02	0	41	5.506E-01	41	2.627E 02	41	2.753E 02
4	2.000E-01	1.500E 03	1.000E-02	0	41	5.505E-01	41	2.627E 02	41	2.753E 02
5	2.500E-01	1.500E 03	1.000E-02	0	41	5.505E-01	41	2.627E 02	41	2.753E 02
6	3.000E-01	1.150E 03	1.000E-02	0	41	5.588E-01	41	2.627E 02	41	2.753E 02
7	3.500E-01	9.400E 02	1.000E-02	0	41	5.791E-01	41	2.627E 02	41	2.753E 02
8	4.000E-01	8.000E 02	1.000E-02	0	41	6.132E-01	41	2.627E 02	41	2.753E 02
9	4.500E-01	7.200E 02	1.000E-02	0	40	6.480E-01	41	2.740E 02	41	6.926E 02

TIME STEP 10 TIME (SEC) 0.50000E 00 INLET CONDITIONS G= 0.64000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	6.668E 08	1.000E-02	1.865E-01	9.989E-01	1.381E 00	0.000E 00	F	2.627E 02	2.753E 02
2	5.000E-02	6.668E 08	4.086E-02	4.497E-01	1.446E 00	2.365E 00	0.000E 00	F	2.627E 02	2.753E 02
3	1.000E-01	6.668E 08	6.989E-02	5.627E-01	1.804E 00	3.305E 00	0.000E 00	F	2.627E 02	2.753E 02
4	1.500E-01	6.668E 08	9.754E-02	6.296E-01	2.114E 00	4.217E 00	0.000E 00	F	2.627E 02	2.753E 02
5	2.000E-01	6.668E 08	1.240E-01	6.753E-01	2.392E 00	5.110E 00	0.000E 00	F	2.627E 02	2.753E 02
6	2.500E-01	6.668E 08	1.494E-01	7.092E-01	2.649E 00	5.988E 00	0.000E 00	F	2.627E 02	2.753E 02
7	3.000E-01	6.668E 08	1.740E-01	7.357E-01	2.886E 00	6.855E 00	-0.000E 00	F	2.627E 02	2.753E 02
8	3.500E-01	6.668E 08	1.975E-01	7.571E-01	3.113E 00	7.713E 00	0.000E 00	F	2.627E 02	2.753E 02
9	4.000E-01	6.668E 08	2.202E-01	7.749E-01	3.328E 00	8.563E 00	0.000E 00	F	2.627E 02	2.753E 02
10	4.500E-01	6.668E 08	2.421E-01	7.901E-01	3.533E 00	9.407E 00	0.000E 00	F	2.627E 02	2.753E 02
11	5.000E-01	6.668E 08	2.633E-01	8.033E-01	3.729E 00	1.025E 01	0.000E 00	F	2.627E 02	2.753E 02
12	5.500E-01	6.668E 08	2.839E-01	8.148E-01	3.919E 00	1.108E 01	0.000E 00	F	2.627E 02	2.753E 02
13	6.000E-01	6.668E 08	3.038E-01	8.251E-01	4.102E 00	1.191E 01	0.000E 00	F	2.627E 02	2.753E 02
14	6.500E-01	6.668E 08	3.231E-01	8.342E-01	4.279E 00	1.273E 01	0.000E 00	F	2.627E 02	2.753E 02
15	7.000E-01	6.668E 08	3.418E-01	8.426E-01	4.451E 00	1.355E 01	0.000E 00	F	2.627E 02	2.753E 02
16	7.500E-01	6.668E 08	3.601E-01	8.501E-01	4.617E 00	1.437E 01	0.000E 00	F	2.627E 02	2.753E 02
17	8.000E-01	6.668E 08	3.779E-01	8.571E-01	4.779E 00	1.519E 01	0.000E 00	F	2.627E 02	2.753E 02
18	8.500E-01	6.668E 08	3.952E-01	8.635E-01	4.937E 00	1.600E 01	0.000E 00	F	2.627E 02	2.753E 02
19	9.000E-01	6.668E 08	4.121E-01	8.695E-01	5.091E 00	1.681E 01	0.000E 00	F	2.627E 02	2.753E 02
20	9.500E-01	6.668E 08	4.286E-01	8.750E-01	5.240E 00	1.761E 01	0.000E 00	F	2.627E 02	2.753E 02
21	1.000E 00	6.668E 08	4.448E-01	8.803E-01	5.386E 00	1.842E 01	0.000E 00	F	2.627E 02	2.753E 02
22	1.050E 00	6.668E 08	4.606E-01	8.852E-01	5.529E 00	1.922E 01	0.000E 00	F	2.627E 02	2.753E 02
23	1.100E 00	6.668E 08	4.761E-01	8.898E-01	5.668E 00	2.002E 01	0.000E 00	F	2.627E 02	2.753E 02
24	1.150E 00	6.668E 08	4.913E-01	8.942E-01	5.803E 00	2.081E 01	0.000E 00	F	2.627E 02	2.753E 02
25	1.200E 00	6.668E 08	5.062E-01	8.983E-01	5.935E 00	2.161E 01	0.000E 00	F	2.627E 02	2.753E 02
26	1.250E 00	6.668E 08	5.209E-01	9.023E-01	6.064E 00	2.240E 01	0.000E 00	F	2.627E 02	2.753E 02
27	1.300E 00	6.668E 08	5.353E-01	9.061E-01	6.190E 00	2.319E 01	0.000E 00	F	2.627E 02	2.753E 02
28	1.350E 00	6.668E 08	5.494E-01	9.097E-01	6.313E 00	2.398E 01	0.000E 00	F	2.627E 02	2.753E 02
29	1.400E 00	6.668E 08	5.634E-01	9.132E-01	6.432E 00	2.476E 01	0.000E 00	F	2.627E 02	2.753E 02
30	1.450E 00	6.668E 08	5.772E-01	9.165E-01	6.549E 00	2.555E 01	0.000E 00	F	2.627E 02	2.753E 02
31	1.500E 00	6.668E 08	5.907E-01	9.198E-01	6.663E 00	2.633E 01	0.000E 00	F	2.627E 02	2.753E 02
32	1.550E 00	6.668E 08	6.041E-01	9.229E-01	6.774E 00	2.711E 01	0.000E 00	F	2.627E 02	2.753E 02
33	1.600E 00	6.668E 08	6.173E-01	9.259E-01	6.882E 00	2.789E 01	0.000E 00	F	2.627E 02	2.753E 02
34	1.650E 00	6.668E 08	6.304E-01	9.288E-01	6.987E 00	2.866E 01	0.000E 00	F	2.627E 02	2.753E 02
35	1.700E 00	6.668E 08	6.433E-01	9.316E-01	7.089E 00	2.944E 01	0.000E 00	F	2.627E 02	2.753E 02
36	1.750E 00	6.668E 08	6.561E-01	9.344E-01	7.189E 00	3.021E 01	0.000E 00	F	2.627E 02	2.753E 02
37	1.800E 00	6.668E 08	6.687E-01	9.371E-01	7.285E 00	3.098E 01	0.000E 00	F	2.627E 02	2.753E 02
38	1.850E 00	6.668E 08	6.812E-01	9.397E-01	7.379E 00	3.175E 01	0.000E 00	F	2.627E 02	2.753E 02
39	1.900E 00	6.668E 08	6.936E-01	9.423E-01	7.470E 00	3.251E 01	0.000E 00	F	2.627E 02	2.753E 02
40	1.950E 00	6.668E 08	7.058E-01	9.448E-01	7.558E 00	3.328E 01	0.000E 00	F	2.627E 02	2.753E 02
41	2.000E 00	6.668E 08	7.221E-01	9.480E-01	7.609E 00	3.402E 01	0.000E 00	F	2.627E 02	2.753E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BO	MAX X (POINT.X)		MAX TSTEAM (P.TS)		MAX TWALL (P.TW)	
11	5.500E-01	5.800E 02	1.000E-02	0	41	7.834E-01	41	2.627E 02	41	2.753E 02
12	6.000E-01	5.500E 02	1.000E-02	0	41	8.530E-01	41	2.627E 02	41	2.753E 02
13	6.500E-01	5.300E 02	1.000E-02	0	41	9.241E-01	41	2.627E 02	41	2.753E 02
14	7.000E-01	5.200E 02	1.000E-02	0	41	9.929E-01	41	2.627E 02	41	2.753E 02
15	7.500E-01	5.100E 02	1.000E-02	0	36	9.868E-01	41	3.038E 02	41	7.636E 02
16	8.000E-01	5.000E 02	1.000E-02	0	32	9.754E-01	41	3.437E 02	41	8.370E 02
17	8.500E-01	5.000E 02	1.000E-02	0	30	9.831E-01	41	3.848E 02	41	8.934E 02
18	9.000E-01	5.000E 02	1.000E-02	0	41	9.798E-01	41	4.236E 02	41	9.507E 02
19	9.500E-01	5.000E 02	1.000E-02	0	41	9.840E-01	41	4.581E 02	41	9.929E 02

TIME STEP 20 TIME (SEC) 0.10000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	6.668E 08	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.753E 02
2	5.000E-02	6.668E 08	5.052E-02	4.948E-01	1.205E 00	2.055E 00	0.000E 00	F	2.627E 02	2.753E 02
3	1.000E-01	6.668E 08	9.103E-02	6.161E-01	1.518E 00	2.974E 00	0.000E 00	F	2.627E 02	2.753E 02
4	1.500E-01	6.668E 08	1.315E-01	6.862E-01	1.775E 00	3.858E 00	0.000E 00	F	2.627E 02	2.753E 02
5	2.000E-01	6.668E 08	1.720E-01	7.338E-01	1.995E 00	4.719E 00	0.000E 00	F	2.627E 02	2.753E 02
6	2.500E-01	6.668E 08	2.125E-01	7.692E-01	2.188E 00	5.561E 00	0.000E 00	F	2.627E 02	2.753E 02
7	3.000E-01	6.668E 08	2.529E-01	7.970E-01	2.361E 00	6.390E 00	0.000E 00	F	2.627E 02	2.753E 02
8	3.500E-01	6.668E 08	2.933E-01	8.197E-01	2.517E 00	7.207E 00	0.000E 00	F	2.627E 02	2.753E 02
9	4.000E-01	6.668E 08	3.335E-01	8.389E-01	2.658E 00	8.014E 00	0.000E 00	F	2.627E 02	2.753E 02
10	4.500E-01	6.668E 08	3.736E-01	8.555E-01	2.787E 00	8.811E 00	0.000E 00	F	2.627E 02	2.753E 02
11	5.000E-01	6.668E 08	4.138E-01	8.700E-01	2.903E 00	9.600E 00	0.000E 00	F	2.627E 02	2.753E 02
12	5.500E-01	6.668E 08	4.533E-01	8.829E-01	3.009E 00	1.038E 01	0.000E 00	F	2.627E 02	2.753E 02
13	6.000E-01	6.668E 08	4.929E-01	8.946E-01	3.106E 00	1.116E 01	0.000E 00	F	2.627E 02	2.753E 02
14	6.500E-01	6.668E 08	5.322E-01	9.053E-01	3.192E 00	1.192E 01	0.000E 00	F	2.627E 02	2.753E 02
15	7.000E-01	6.668E 08	5.713E-01	9.151E-01	3.270E 00	1.269E 01	0.000E 00	F	2.627E 02	2.753E 02
16	7.500E-01	6.668E 08	6.101E-01	9.242E-01	3.340E 00	1.344E 01	0.000E 00	F	2.627E 02	2.753E 02
17	8.000E-01	6.668E 08	6.485E-01	9.328E-01	3.401E 00	1.419E 01	0.000E 00	F	2.627E 02	2.753E 02
18	8.500E-01	6.668E 08	6.866E-01	9.408E-01	3.458E 00	1.493E 01	0.000E 00	F	2.627E 02	2.753E 02
19	9.000E-01	6.668E 08	7.242E-01	9.484E-01	3.499E 00	1.567E 01	0.000E 00	F	2.627E 02	2.753E 02
20	9.500E-01	6.668E 08	7.614E-01	9.557E-01	3.536E 00	1.640E 01	0.000E 00	F	2.627E 02	2.753E 02
21	1.000E 00	6.668E 08	7.980E-01	9.627E-01	3.564E 00	1.713E 01	0.000E 00	F	2.627E 02	2.753E 02
22	1.050E 00	6.668E 08	8.346E-01	9.695E-01	3.583E 00	1.785E 01	0.000E 00	F	2.627E 02	2.753E 02
23	1.100E 00	6.668E 08	8.704E-01	9.761E-01	3.593E 00	1.856E 01	0.000E 00	F	2.627E 02	2.753E 02
24	1.150E 00	6.668E 08	9.050E-01	9.824E-01	3.597E 00	1.927E 01	0.000E 00	F	2.627E 02	2.753E 02
25	1.200E 00	6.668E 08	9.388E-01	9.886E-01	3.592E 00	1.997E 01	0.000E 00	F	2.627E 02	2.753E 02
26	1.250E 00	6.668E 08	9.717E-01	9.947E-01	3.577E 00	2.046E 01	9.822E-05	F	2.627E 02	8.600E 02
27	1.300E 00	6.668E 08	9.657E-01	9.989E-01	2.066E 01	2.160E 01	1.045E-04	F	2.778E 02	8.783E 02
28	1.350E 00	6.668E 08	9.666E-01	9.989E-01	2.009E 01	2.273E 01	1.036E-04	F	2.897E 02	8.865E 02
29	1.400E 00	6.668E 08	9.673E-01	9.990E-01	2.094E 01	2.387E 01	1.029E-04	F	3.046E 02	8.975E 02
30	1.450E 00	6.668E 08	9.682E-01	9.990E-01	2.183E 01	2.494E 01	1.019E-04	F	3.199E 02	9.094E 02
31	1.500E 00	6.668E 08	9.693E-01	9.991E-01	2.278E 01	2.599E 01	1.007E-04	F	3.357E 02	9.216E 02
32	1.550E 00	6.668E 08	9.705E-01	9.992E-01	2.376E 01	2.701E 01	9.927E-05	F	3.518E 02	9.339E 02
33	1.600E 00	6.668E 08	9.719E-01	9.992E-01	2.476E 01	2.801E 01	9.765E-05	F	3.677E 02	9.458E 02
34	1.650E 00	6.668E 08	9.735E-01	9.993E-01	2.576E 01	2.898E 01	9.583E-05	F	3.834E 02	9.575E 02
35	1.700E 00	6.668E 08	9.751E-01	9.994E-01	2.677E 01	2.994E 01	9.384E-05	F	3.989E 02	9.688E 02
36	1.750E 00	6.668E 08	9.768E-01	9.994E-01	2.777E 01	3.088E 01	9.167E-05	F	4.143E 02	9.800E 02
37	1.800E 00	6.668E 08	9.785E-01	9.995E-01	2.877E 01	3.181E 01	8.933E-05	F	4.295E 02	9.909E 02
38	1.850E 00	6.668E 08	9.803E-01	9.996E-01	2.977E 01	3.273E 01	8.683E-05	F	4.445E 02	1.002E 03
39	1.900E 00	6.668E 08	9.821E-01	9.996E-01	3.077E 01	3.364E 01	8.417E-05	F	4.595E 02	1.012E 03
40	1.950E 00	6.668E 08	9.838E-01	9.997E-01	3.178E 01	3.455E 01	8.176E-05	F	4.743E 02	1.023E 03
41	2.000E 00	6.668E 08	9.855E-01	9.997E-01	3.279E 01	3.545E 01	7.838E-05	F	4.890E 02	1.034E 03

T.STEP	TIME	INLET G	INLET X	ABOVE BO	MAX X (POINT.X)		MAX TSTEAM (P.TS)		MAX TWALL (P.TW)	
21	1.050E 00	5.000E 02	1.000E-02	0	41	9.830E-01	41	5.157E 02	41	1.072E 03
22	1.100E 00	5.000E 02	1.000E-02	0	41	9.858E-01	41	5.372E 02	41	1.090E 03
23	1.150E 00	5.000E 02	1.000E-02	2	41	9.906E-01	41	5.550E 02	41	1.107E 03
24	1.200E 00	5.000E 02	1.000E-02	5	41	9.940E-01	41	5.679E 02	41	1.118E 03
25	1.250E 00	5.000E 02	1.000E-02	6	41	1.000E 00	41	5.761E 02	41	1.127E 03
26	1.300E 00	5.000E 02	1.000E-02	7	41	1.000E 00	41	5.787E 02	41	1.127E 03
27	1.350E 00	5.000E 02	1.000E-02	7	41	1.000E 00	41	5.805E 02	41	1.126E 03
28	1.400E 00	5.000E 02	1.000E-02	7	41	1.000E 00	41	5.802E 02	41	1.123E 03
29	1.450E 00	5.000E 02	1.000E-02	5	41	1.000E 00	41	5.781E 02	41	1.117E 03

TIME STEP 30 TIME (SEC) 0.15000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	5.602E 08	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.748E 02
2	5.000E-02	5.602E 08	4.439E-02	4.673E-01	1.145E 00	1.903E 00	0.000E 00	F	2.627E 02	2.748E 02
3	1.000E-01	5.602E 08	7.965E-02	5.894E-01	1.417E 00	2.681E 00	0.000E 00	F	2.627E 02	2.748E 02
4	1.500E-01	5.602E 08	1.156E-01	6.622E-01	1.639E 00	3.430E 00	0.000E 00	F	2.627E 02	2.748E 02
5	2.000E-01	5.602E 08	1.522E-01	7.124E-01	1.829E 00	4.158E 00	0.000E 00	F	2.627E 02	2.748E 02
6	2.500E-01	5.602E 08	1.893E-01	7.501E-01	1.994E 00	4.870E 00	0.000E 00	F	2.627E 02	2.748E 02
7	3.000E-01	5.602E 08	2.270E-01	7.798E-01	2.141E 00	5.569E 00	0.000E 00	F	2.627E 02	2.748E 02
8	3.500E-01	5.602E 08	2.652E-01	8.043E-01	2.272E 00	6.257E 00	0.000E 00	F	2.627E 02	2.748E 02
9	4.000E-01	5.602E 08	3.038E-01	8.251E-01	2.389E 00	6.936E 00	0.000E 00	F	2.627E 02	2.748E 02
10	4.500E-01	5.602E 08	3.428E-01	8.430E-01	2.494E 00	7.606E 00	0.000E 00	F	2.627E 02	2.748E 02
11	5.000E-01	5.602E 08	3.823E-01	8.588E-01	2.589E 00	8.269E 00	0.000E 00	F	2.627E 02	2.748E 02
12	5.500E-01	5.602E 08	4.221E-01	8.729E-01	2.674E 00	8.924E 00	0.000E 00	F	2.627E 02	2.748E 02
13	6.000E-01	5.602E 08	4.623E-01	8.857E-01	2.749E 00	9.573E 00	0.000E 00	F	2.627E 02	2.748E 02
14	6.500E-01	5.602E 08	5.028E-01	8.974E-01	2.815E 00	1.022E 01	0.000E 00	F	2.627E 02	2.748E 02
15	7.000E-01	5.602E 08	5.436E-01	9.082E-01	2.873E 00	1.085E 01	0.000E 00	F	2.627E 02	2.748E 02
16	7.500E-01	5.602E 08	5.846E-01	9.183E-01	2.922E 00	1.148E 01	0.000E 00	F	2.627E 02	2.748E 02
17	8.000E-01	5.602E 08	6.259E-01	9.278E-01	2.963E 00	1.211E 01	0.000E 00	F	2.627E 02	2.748E 02
18	8.500E-01	5.602E 08	6.674E-01	9.368E-01	2.996E 00	1.272E 01	0.000E 00	F	2.627E 02	2.748E 02
19	9.000E-01	5.602E 08	7.091E-01	9.454E-01	3.020E 00	1.333E 01	0.000E 00	F	2.627E 02	2.748E 02
20	9.500E-01	5.602E 08	7.509E-01	9.537E-01	3.035E 00	1.394E 01	0.000E 00	F	2.627E 02	2.748E 02
21	1.000E 00	5.602E 08	7.929E-01	9.617E-01	3.040E 00	1.454E 01	0.000E 00	F	2.627E 02	2.748E 02
22	1.050E 00	5.602E 08	8.351E-01	9.696E-01	3.035E 00	1.513E 01	0.000E 00	F	2.627E 02	2.748E 02
23	1.100E 00	5.602E 08	8.780E-01	9.775E-01	3.017E 00	1.571E 01	0.000E 00	F	2.627E 02	2.748E 02
24	1.150E 00	5.602E 08	9.205E-01	9.852E-01	2.989E 00	1.628E 01	0.000E 00	F	2.627E 02	2.748E 02
25	1.200E 00	5.602E 08	9.630E-01	9.930E-01	2.946E 00	1.685E 01	1.005E-04	F	2.627E 02	8.585E 02
26	1.250E 00	5.602E 08	9.655E-01	9.989E-01	1.685E 01	1.756E 01	9.754E-05	F	2.783E 02	8.807E 02
27	1.300E 00	5.602E 08	9.662E-01	9.989E-01	1.711E 01	1.878E 01	9.685E-05	F	2.966E 02	8.946E 02
28	1.350E 00	5.602E 08	9.673E-01	9.990E-01	1.778E 01	1.990E 01	9.575E-05	F	3.166E 02	9.109E 02
29	1.400E 00	5.602E 08	9.686E-01	9.991E-01	1.866E 01	2.095E 01	9.425E-05	F	3.372E 02	9.279E 02
30	1.450E 00	5.602E 08	9.704E-01	9.992E-01	1.963E 01	2.196E 01	9.238E-05	F	3.579E 02	9.446E 02
31	1.500E 00	5.602E 08	9.724E-01	9.993E-01	2.062E 01	2.293E 01	9.018E-05	F	3.785E 02	9.608E 02
32	1.550E 00	5.602E 08	9.745E-01	9.994E-01	2.163E 01	2.388E 01	8.768E-05	F	3.988E 02	9.766E 02
33	1.600E 00	5.602E 08	9.768E-01	9.995E-01	2.263E 01	2.481E 01	8.491E-05	F	4.189E 02	9.920E 02
34	1.650E 00	5.602E 08	9.792E-01	9.995E-01	2.363E 01	2.573E 01	8.187E-05	F	4.388E 02	1.007E 03
35	1.700E 00	5.602E 08	9.816E-01	9.996E-01	2.463E 01	2.663E 01	7.856E-05	F	4.586E 02	1.022E 03
36	1.750E 00	5.602E 08	9.840E-01	9.997E-01	2.563E 01	2.752E 01	7.499E-05	F	4.782E 02	1.037E 03
37	1.800E 00	5.602E 08	9.863E-01	9.997E-01	2.663E 01	2.841E 01	7.116E-05	F	4.977E 02	1.052E 03
38	1.850E 00	5.602E 08	9.885E-01	9.998E-01	2.763E 01	2.929E 01	6.705E-05	T	5.171E 02	1.067E 03
39	1.900E 00	5.602E 08	9.906E-01	9.998E-01	2.864E 01	3.016E 01	6.267E-05	T	5.364E 02	1.082E 03
40	1.950E 00	5.602E 08	9.926E-01	9.999E-01	2.966E 01	3.103E 01	5.798E-05	T	5.557E 02	1.096E 03
41	2.000E 00	5.602E 08	9.944E-01	9.999E-01	3.068E 01	3.189E 01	5.296E-05	T	5.750E 02	1.112E 03

T.STEP	TIME	INLET G	INLET X	ABOVE BO	MAX X (POINT,X)		MAX TSTEAM (P,TS)		MAX TWALL (P,TW)	
31	1.550E 00	5.000E 02	1.000E-02	2	41	9.910E-01	41	5.719E 02	41	1.106E 03
32	1.600E 00	5.000E 02	1.000E-02	2	41	9.919E-01	41	5.684E 02	41	1.089E 03
33	1.650E 00	5.000E 02	1.000E-02	2	41	9.916E-01	41	5.655E 02	41	1.081E 03
34	1.700E 00	5.000E 02	1.000E-02	2	41	9.921E-01	41	5.611E 02	41	1.066E 03
35	1.750E 00	5.000E 02	1.000E-02	4	41	9.950E-01	41	5.530E 02	41	1.037E 03
36	1.800E 00	5.000E 02	1.000E-02	3	41	9.938E-01	41	5.437E 02	41	1.029E 03
37	1.850E 00	5.000E 02	1.000E-02	2	41	9.917E-01	41	5.310E 02	41	1.008E 03
38	1.900E 00	5.000E 02	1.000E-02	2	41	9.917E-01	41	5.153E 02	41	9.733E 02
39	1.950E 00	5.000E 02	1.000E-02	3	41	9.932E-01	41	5.000E 02	41	9.428E 02

TIME STEP 40 TIME (SEC) 0.20000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN-OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	3.468E 08	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.734E 02
2	5.000E-02	3.468E 08	3.148E-02	3.947E-01	1.020E 00	1.595E 00	0.000E 00	F	2.627E 02	2.734E 02
3	1.000E-01	3.468E 08	5.389E-02	5.085E-01	1.209E 00	2.090E 00	0.000E 00	F	2.627E 02	2.734E 02
4	1.500E-01	3.468E 08	7.706E-02	5.827E-01	1.369E 00	2.568E 00	0.000E 00	F	2.627E 02	2.734E 02
5	2.000E-01	3.468E 08	1.009E-01	6.362E-01	1.506E 00	3.033E 00	0.000E 00	F	2.627E 02	2.734E 02
6	2.500E-01	3.468E 08	1.254E-01	6.774E-01	1.628E 00	3.489E 00	0.000E 00	F	2.627E 02	2.734E 02
7	3.000E-01	3.468E 08	1.506E-01	7.105E-01	1.737E 00	3.935E 00	0.000E 00	F	2.627E 02	2.734E 02
8	3.500E-01	3.468E 08	1.763E-01	7.380E-01	1.835E 00	4.375E 00	0.000E 00	F	2.627E 02	2.734E 02
9	4.000E-01	3.468E 08	2.027E-01	7.614E-01	1.924E 00	4.808E 00	0.000E 00	F	2.627E 02	2.734E 02
10	4.500E-01	3.468E 08	2.296E-01	7.817E-01	2.004E 00	5.236E 00	0.000E 00	F	2.627E 02	2.734E 02
11	5.000E-01	3.468E 08	2.572E-01	7.996E-01	2.078E 00	5.658E 00	0.000E 00	F	2.627E 02	2.734E 02
12	5.500E-01	3.468E 08	2.853E-01	8.156E-01	2.145E 00	6.076E 00	0.000E 00	F	2.627E 02	2.734E 02
13	6.000E-01	3.468E 08	3.139E-01	8.300E-01	2.208E 00	6.490E 00	0.000E 00	F	2.627E 02	2.734E 02
14	6.500E-01	3.468E 08	3.432E-01	8.431E-01	2.262E 00	6.900E 00	0.000E 00	F	2.627E 02	2.734E 02
15	7.000E-01	3.468E 08	3.730E-01	8.552E-01	2.312E 00	7.306E 00	0.000E 00	F	2.627E 02	2.734E 02
16	7.500E-01	3.468E 08	4.034E-01	8.665E-01	2.357E 00	7.708E 00	0.000E 00	F	2.627E 02	2.734E 02
17	8.000E-01	3.468E 08	4.344E-01	8.769E-01	2.397E 00	8.106E 00	0.000E 00	F	2.627E 02	2.734E 02
18	8.500E-01	3.468E 08	4.661E-01	8.868E-01	2.432E 00	8.501E 00	0.000E 00	F	2.627E 02	2.734E 02
19	9.000E-01	3.468E 08	4.983E-01	8.961E-01	2.462E 00	8.892E 00	0.000E 00	F	2.627E 02	2.734E 02
20	9.500E-01	3.468E 08	5.313E-01	9.050E-01	2.487E 00	9.280E 00	0.000E 00	F	2.627E 02	2.734E 02
21	1.000E 00	3.468E 08	5.649E-01	9.136E-01	2.507E 00	9.664E 00	0.000E 00	F	2.627E 02	2.734E 02
22	1.050E 00	3.468E 08	5.993E-01	9.218E-01	2.521E 00	1.004E 01	0.000E 00	F	2.627E 02	2.734E 02
23	1.100E 00	3.468E 08	6.344E-01	9.297E-01	2.531E 00	1.042E 01	0.000E 00	F	2.627E 02	2.734E 02
24	1.150E 00	3.468E 08	6.704E-01	9.374E-01	2.534E 00	1.079E 01	0.000E 00	F	2.627E 02	2.734E 02
25	1.200E 00	3.468E 08	7.072E-01	9.450E-01	2.532E 00	1.116E 01	0.000E 00	F	2.627E 02	2.734E 02
26	1.250E 00	3.468E 08	7.450E-01	9.525E-01	2.523E 00	1.152E 01	0.000E 00	F	2.627E 02	2.734E 02
27	1.300E 00	3.468E 08	7.840E-01	9.600E-01	2.506E 00	1.188E 01	0.000E 00	F	2.627E 02	2.734E 02
28	1.350E 00	3.468E 08	8.243E-01	9.676E-01	2.481E 00	1.223E 01	0.000E 00	F	2.627E 02	2.734E 02
29	1.400E 00	3.468E 08	8.665E-01	9.754E-01	2.445E 00	1.258E 01	0.000E 00	F	2.627E 02	2.734E 02
30	1.450E 00	3.468E 08	9.097E-01	9.832E-01	2.399E 00	1.292E 01	0.000E 00	F	2.627E 02	2.734E 02
31	1.500E 00	3.468E 08	9.536E-01	9.913E-01	2.342E 00	1.324E 01	1.003E-04	F	2.627E 02	7.269E 02
32	1.550E 00	3.468E 08	9.690E-01	9.990E-01	1.324E 01	1.347E 01	8.639E-05	F	2.750E 02	7.500E 02
33	1.600E 00	3.468E 08	9.702E-01	9.991E-01	1.339E 01	1.522E 01	8.529E-05	F	3.101E 02	7.780E 02
34	1.650E 00	3.468E 08	9.721E-01	9.992E-01	1.475E 01	1.628E 01	8.308E-05	F	3.404E 02	8.075E 02
35	1.700E 00	3.468E 08	9.743E-01	9.993E-01	1.584E 01	1.713E 01	8.050E-05	F	3.656E 02	8.305E 02
36	1.750E 00	3.468E 08	9.768E-01	9.994E-01	1.674E 01	1.789E 01	7.767E-05	F	3.881E 02	8.499E 02
37	1.800E 00	3.468E 08	9.793E-01	9.995E-01	1.756E 01	1.859E 01	7.462E-05	F	4.090E 02	8.676E 02
38	1.850E 00	3.468E 08	9.819E-01	9.996E-01	1.832E 01	1.927E 01	7.132E-05	F	4.290E 02	8.841E 02
39	1.900E 00	3.468E 08	9.844E-01	9.997E-01	1.905E 01	1.992E 01	6.777E-05	F	4.483E 02	9.000E 02
40	1.950E 00	3.468E 08	9.869E-01	9.997E-01	1.976E 01	2.055E 01	6.395E-05	F	4.672E 02	9.154E 02
41	2.000E 00	3.468E 08	9.892E-01	9.998E-01	2.046E 01	2.118E 01	5.984E-05	F	4.858E 02	9.305E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BO	MAX X (POINT,X)		MAX TSTEAM (P,TS)		MAX TWALL (P,TW)	
41	2.050E 00	5.000E 02	1.000E-02	0	41	9.835E-01	41	4.710E 02	41	9.128E 02
42	2.100E 00	5.000E 02	1.000E-02	0	41	9.810E-01	41	4.567E 02	41	8.769E 02
43	2.150E 00	5.000E 02	1.000E-02	0	41	9.808E-01	41	4.486E 02	41	8.513E 02
44	2.200E 00	5.000E 02	1.000E-02	0	41	9.813E-01	41	4.453E 02	41	8.323E 02
45	2.250E 00	5.000E 02	1.000E-02	0	41	9.824E-01	41	4.418E 02	41	8.137E 02
46	2.300E 00	5.000E 02	1.000E-02	0	41	9.836E-01	41	4.358E 02	41	7.926E 02
47	2.350E 00	5.000E 02	1.000E-02	0	41	9.850E-01	41	4.284E 02	41	7.696E 02
48	2.400E 00	5.000E 02	1.000E-02	0	39	9.885E-01	41	4.210E 02	41	7.448E 02
49	2.450E 00	5.000E 02	1.000E-02	0	40	9.941E-01	41	3.900E 02	41	6.847E 02

TIME STEP 50 TIME (SEC) 0.25000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN -OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	1.334E 08	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.712E 02
2	5.000E-02	1.334E 08	1.860E-02	2.896E-01	8.775E-01	1.280E 00	0.000E 00	F	2.627E 02	2.712E 02
3	1.000E-01	1.334E 08	2.821E-02	3.719E-01	9.597E-01	1.476E 00	0.000E 00	F	2.627E 02	2.712E 02
4	1.500E-01	1.334E 08	3.871E-02	4.383E-01	1.030E 00	1.668E 00	0.000E 00	F	2.627E 02	2.712E 02
5	2.000E-01	1.334E 08	5.004E-02	4.928E-01	1.091E 00	1.856E 00	0.000E 00	F	2.627E 02	2.712E 02
6	2.500E-01	1.334E 08	6.215E-02	5.384E-01	1.144E 00	2.039E 00	0.000E 00	F	2.627E 02	2.712E 02
7	3.000E-01	1.334E 08	7.500E-02	5.772E-01	1.190E 00	2.218E 00	0.000E 00	F	2.627E 02	2.712E 02
8	3.500E-01	1.334E 08	8.863E-02	6.108E-01	1.231E 00	2.394E 00	0.000E 00	F	2.627E 02	2.712E 02
9	4.000E-01	1.334E 08	1.030E-01	6.401E-01	1.267E 00	2.567E 00	0.000E 00	F	2.627E 02	2.712E 02
10	4.500E-01	1.334E 08	1.181E-01	6.662E-01	1.300E 00	2.737E 00	0.000E 00	F	2.627E 02	2.712E 02
11	5.000E-01	1.334E 08	1.339E-01	6.894E-01	1.329E 00	2.904E 00	0.000E 00	F	2.627E 02	2.712E 02
12	5.500E-01	1.334E 08	1.504E-01	7.103E-01	1.355E 00	3.069E 00	0.000E 00	F	2.627E 02	2.712E 02
13	6.000E-01	1.334E 08	1.677E-01	7.294E-01	1.378E 00	3.232E 00	0.000E 00	F	2.627E 02	2.712E 02
14	6.500E-01	1.334E 08	1.857E-01	7.468E-01	1.399E 00	3.393E 00	0.000E 00	F	2.627E 02	2.712E 02
15	7.000E-01	1.334E 08	2.045E-01	7.629E-01	1.417E 00	3.553E 00	0.000E 00	F	2.627E 02	2.712E 02
16	7.500E-01	1.334E 08	2.240E-01	7.777E-01	1.433E 00	3.710E 00	0.000E 00	F	2.627E 02	2.712E 02
17	8.000E-01	1.334E 08	2.443E-01	7.915E-01	1.447E 00	3.866E 00	0.000E 00	F	2.627E 02	2.712E 02
18	8.500E-01	1.334E 08	2.652E-01	8.043E-01	1.460E 00	4.021E 00	0.000E 00	F	2.627E 02	2.712E 02
19	9.000E-01	1.334E 08	2.868E-01	8.164E-01	1.471E 00	4.174E 00	0.000E 00	F	2.627E 02	2.712E 02
20	9.500E-01	1.334E 08	3.092E-01	8.277E-01	1.480E 00	4.326E 00	0.000E 00	F	2.627E 02	2.712E 02
21	1.000E 00	1.334E 08	3.323E-01	8.384E-01	1.487E 00	4.477E 00	0.000E 00	F	2.627E 02	2.712E 02
22	1.050E 00	1.334E 08	3.562E-01	8.486E-01	1.493E 00	4.626E 00	0.000E 00	F	2.627E 02	2.712E 02
23	1.100E 00	1.334E 08	3.808E-01	8.582E-01	1.497E 00	4.774E 00	0.000E 00	F	2.627E 02	2.712E 02
24	1.150E 00	1.334E 08	4.063E-01	8.675E-01	1.500E 00	4.920E 00	0.000E 00	F	2.627E 02	2.712E 02
25	1.200E 00	1.334E 08	4.326E-01	8.764E-01	1.501E 00	5.066E 00	0.000E 00	F	2.627E 02	2.712E 02
26	1.250E 00	1.334E 08	4.597E-01	8.849E-01	1.500E 00	5.210E 00	0.000E 00	F	2.627E 02	2.712E 02
27	1.300E 00	1.334E 08	4.878E-01	8.932E-01	1.498E 00	5.353E 00	0.000E 00	F	2.627E 02	2.712E 02
28	1.350E 00	1.334E 08	5.167E-01	9.012E-01	1.493E 00	5.494E 00	0.000E 00	F	2.627E 02	2.712E 02
29	1.400E 00	1.334E 08	5.466E-01	9.090E-01	1.487E 00	5.634E 00	0.000E 00	F	2.627E 02	2.712E 02
30	1.450E 00	1.334E 08	5.775E-01	9.166E-01	1.479E 00	5.772E 00	0.000E 00	F	2.627E 02	2.712E 02
31	1.500E 00	1.334E 08	6.095E-01	9.241E-01	1.469E 00	5.909E 00	0.000E 00	F	2.627E 02	2.712E 02
32	1.550E 00	1.334E 08	6.427E-01	9.315E-01	1.457E 00	6.044E 00	0.000E 00	F	2.627E 02	2.712E 02
33	1.600E 00	1.334E 08	6.775E-01	9.389E-01	1.441E 00	6.177E 00	0.000E 00	F	2.627E 02	2.712E 02
34	1.650E 00	1.334E 08	7.133E-01	9.463E-01	1.423E 00	6.308E 00	0.000E 00	F	2.627E 02	2.712E 02
35	1.700E 00	1.334E 08	7.513E-01	9.538E-01	1.401E 00	6.437E 00	0.000E 00	F	2.627E 02	2.712E 02
36	1.750E 00	1.334E 08	7.907E-01	9.613E-01	1.375E 00	6.562E 00	0.000E 00	F	2.627E 02	2.712E 02
37	1.800E 00	1.334E 08	8.332E-01	9.692E-01	1.344E 00	6.684E 00	0.000E 00	F	2.627E 02	2.712E 02
38	1.850E 00	1.334E 08	8.778E-01	9.774E-01	1.307E 00	6.801E 00	0.000E 00	F	2.427E 02	2.712E 02
39	1.900E 00	1.334E 08	9.245E-01	9.860E-01	1.264E 00	6.915E 00	0.000E 00	F	2.627E 02	2.712E 02
40	1.950E 00	1.334E 08	9.695E-01	9.943E-01	1.220E 00	7.026E 00	7.033E-05	F	2.627E 02	5.740E 02
41	2.000E 00	1.334E 08	9.904E-01	9.997E-01	7.026E 00	7.125E 00	4.714E-05	F	2.725E 02	5.906E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BD	MAX X (POINT.X)		MAX TSTEAM (P.TS)		MAX TWALL (P.TW)	
51	2.550E 00	5.000E 02	1.000E-02	0	41	9.768E-01	41	2.627E 02	41	2.712E 02
52	2.600E 00	5.000E 02	1.000E-02	0	41	9.387E-01	41	2.627E 02	41	2.712E 02
53	2.650E 00	5.000E 02	1.000E-02	0	41	8.919E-01	41	2.627E 02	41	2.712E 02
54	2.700E 00	5.000E 02	1.000E-02	0	41	8.399E-01	41	2.627E 02	41	2.712E 02
55	2.750E 00	5.000E 02	1.000E-02	0	41	7.849E-01	41	2.627E 02	41	2.712E 02
56	2.800E 00	5.000E 02	1.000E-02	0	41	7.255E-01	41	2.627E 02	41	2.712E 02
57	2.850E 00	5.000E 02	1.000E-02	0	41	6.641E-01	41	2.627E 02	41	2.712E 02
58	2.900E 00	5.000E 02	1.000E-02	0	41	6.029E-01	41	2.627E 02	41	2.712E 02
59	2.950E 00	5.000E 02	1.000E-02	0	41	5.447E-01	41	2.627E 02	41	2.712E 02

TIME STEP 60 TIME (SEC) 0.30000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN -OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	1.334E 08	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.712E 02
2	5.000E-02	1.334E 08	1.810E-02	2.846E-01	8.802E-01	1.280E 00	0.000E 00	F	2.627E 02	2.712E 02
3	1.000E-01	1.334E 08	2.621E-02	3.568E-01	9.709E-01	1.478E 00	0.000E 00	F	2.627E 02	2.712E 02
4	1.500E-01	1.334E 08	3.431E-02	4.128E-01	1.055E 00	1.673E 00	0.000E 00	F	2.627E 02	2.712E 02
5	2.000E-01	1.334E 08	4.243E-02	4.577E-01	1.132E 00	1.865E 00	0.000E 00	F	2.627E 02	2.712E 02
6	2.500E-01	1.334E 08	5.053E-02	4.949E-01	1.205E 00	2.055E 00	0.000E 00	F	2.627E 02	2.712E 02
7	3.000E-01	1.334E 08	5.864E-02	5.262E-01	1.274E 00	2.242E 00	0.000E 00	F	2.627E 02	2.712E 02
8	3.500E-01	1.334E 08	6.674E-02	5.532E-01	1.339E 00	2.427E 00	0.000E 00	F	2.627E 02	2.712E 02
9	4.000E-01	1.334E 08	7.487E-02	5.768E-01	1.401E 00	2.611E 00	0.000E 00	F	2.627E 02	2.712E 02
10	4.500E-01	1.334E 08	8.301E-02	5.977E-01	1.461E 00	2.793E 00	0.000E 00	F	2.627E 02	2.712E 02
11	5.000E-01	1.334E 08	9.118E-02	6.164E-01	1.518E 00	2.973E 00	0.000E 00	F	2.627E 02	2.712E 02
12	5.500E-01	1.334E 08	9.938E-02	6.333E-01	1.572E 00	3.152E 00	0.000E 00	F	2.627E 02	2.712E 02
13	6.000E-01	1.334E 08	1.076E-01	6.486E-01	1.624E 00	3.330E 00	0.000E 00	F	2.627E 02	2.712E 02
14	6.500E-01	1.334E 08	1.160E-01	6.628E-01	1.674E 00	3.506E 00	0.000E 00	F	2.627E 02	2.712E 02
15	7.000E-01	1.334E 08	1.244E-01	6.759E-01	1.722E 00	3.681E 00	0.000E 00	F	2.627E 02	2.712E 02
16	7.500E-01	1.334E 08	1.329E-01	6.881E-01	1.768E 00	3.855E 00	0.000E 00	F	2.627E 02	2.712E 02
17	8.000E-01	1.334E 08	1.416E-01	6.995E-01	1.812E 00	4.028E 00	0.000E 00	F	2.627E 02	2.712E 02
18	8.500E-01	1.334E 08	1.504E-01	7.103E-01	1.854E 00	4.199E 00	0.000E 00	F	2.627E 02	2.712E 02
19	9.000E-01	1.334E 08	1.594E-01	7.206E-01	1.894E 00	4.370E 00	0.000E 00	F	2.627E 02	2.712E 02
20	9.500E-01	1.334E 08	1.686E-01	7.303E-01	1.932E 00	4.539E 00	0.000E 00	F	2.627E 02	2.712E 02
21	1.000E 00	1.334E 08	1.781E-01	7.397E-01	1.967E 00	4.707E 00	0.000E 00	F	2.627E 02	2.712E 02
22	1.050E 00	1.334E 08	1.879E-01	7.488E-01	2.001E 00	4.873E 00	0.000E 00	F	2.627E 02	2.712E 02
23	1.100E 00	1.334E 08	1.980E-01	7.575E-01	2.032E 00	5.038E 00	0.000E 00	F	2.627E 02	2.712E 02
24	1.150E 00	1.334E 08	2.084E-01	7.660E-01	2.061E 00	5.202E 00	0.000E 00	F	2.627E 02	2.712E 02
25	1.200E 00	1.334E 08	2.192E-01	7.742E-01	2.088E 00	5.365E 00	0.000E 00	F	2.627E 02	2.712E 02
26	1.250E 00	1.334E 08	2.304E-01	7.822E-01	2.113E 00	5.524E 00	0.000E 00	F	2.627E 02	2.712E 02
27	1.300E 00	1.334E 08	2.421E-01	7.901E-01	2.135E 00	5.686E 00	0.000E 00	F	2.627E 02	2.712E 02
28	1.350E 00	1.334E 08	2.543E-01	7.978E-01	2.155E 00	5.844E 00	0.000E 00	F	2.627E 02	2.712E 02
29	1.400E 00	1.334E 08	2.671E-01	8.055E-01	2.173E 00	6.001E 00	0.000E 00	F	2.627E 02	2.712E 02
30	1.450E 00	1.334E 08	2.805E-01	8.130E-01	2.188E 00	6.157E 00	0.000E 00	F	2.627E 02	2.712E 02
31	1.500E 00	1.334E 08	2.946E-01	8.205E-01	2.200E 00	6.310E 00	0.000E 00	F	2.627E 02	2.712E 02
32	1.550E 00	1.334E 08	3.095E-01	8.278E-01	2.209E 00	6.442E 00	0.000E 00	F	2.627E 02	2.712E 02
33	1.600E 00	1.334E 08	3.252E-01	8.352E-01	2.216E 00	6.612E 00	0.000E 00	F	2.627E 02	2.712E 02
34	1.650E 00	1.334E 08	3.418E-01	8.425E-01	2.220E 00	6.761E 00	0.000E 00	F	2.627E 02	2.712E 02
35	1.700E 00	1.334E 08	3.594E-01	8.499E-01	2.221E 00	6.907E 00	0.000E 00	F	2.627E 02	2.712E 02
36	1.750E 00	1.334E 08	3.781E-01	8.572E-01	2.218E 00	7.052E 00	0.000E 00	F	2.627E 02	2.712E 02
37	1.800E 00	1.334E 08	3.981E-01	8.646E-01	2.213E 00	7.194E 00	0.000E 00	F	2.627E 02	2.712E 02
38	1.850E 00	1.334E 08	4.194E-01	8.720E-01	2.204E 00	7.334E 00	0.000E 00	F	2.627E 02	2.712E 02
39	1.900E 00	1.334E 08	4.422E-01	8.794E-01	2.191E 00	7.472E 00	0.000E 00	F	2.627E 02	2.712E 02
40	1.950E 00	1.334E 08	4.666E-01	8.870E-01	2.175E 00	7.607E 00	0.000E 00	F	2.627E 02	2.712E 02
41	2.000E 00	1.334E 08	4.930E-01	8.947E-01	2.154E 00	7.739E 00	0.000E 00	F	2.627E 02	2.712E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BD	MAX X (POINT.X)		MAX TSTEAM (P.TS)		MAX TWALL (P.TW)	
61	3.050E 00	5.000E 02	1.000E-02	0	41	4.498E-01	41	2.627E 02	41	2.712E 02
62	3.100E 00	5.000E 02	1.000E-02	0	41	4.158E-01	41	2.627E 02	41	2.712E 02
63	3.150E 00	5.000E 02	1.000E-02	0	41	3.903E-01	41	2.627E 02	41	2.712E 02
64	3.200E 00	5.000E 02	1.000E-02	0	41	3.719E-01	41	2.627E 02	41	2.712E 02
65	3.250E 00	5.000E 02	1.000E-02	0	41	3.590E-01	41	2.627E 02	41	2.712E 02
66	3.300E 00	5.000E 02	1.000E-02	0	41	3.502E-01	41	2.627E 02	41	2.712E 02
67	3.350E 00	5.000E 02	1.000E-02	0	41	3.443E-01	41	2.627E 02	41	2.712E 02
68	3.400E 00	5.000E 02	1.000E-02	0	41	3.405E-01	41	2.627E 02	41	2.712E 02
69	3.450E 00	5.000E 02	1.000E-02	0	41	3.381E-01	41	2.627E 02	41	2.712E 02

TIME STEP 70 TIME (SEC) 0.35000E 01 INLET CONDITIONS G= 0.50000E 03 X= 0.10000E-01

POINT	Z (M)	HEAT FLUX (W/M3)	QUALITY	VOID FR.	V-WATER (M/S)	V-STEAM (M/S)	DROP.DIAM. (M)	BURN -OUT	T-STEAM (GRAD C)	T-WALL (GRAD C)
1	0.000E 00	1.334E 06	1.000E-02	1.865E-01	7.804E-01	1.079E 00	0.000E 00	F	2.627E 02	2.712E 02
2	5.000E-02	1.334E 08	1.810E-02	2.846E-01	8.802E-01	1.280E 00	0.000E 00	F	2.627E 02	2.712E 02
3	1.000E-01	1.334E 08	2.621E-02	3.568E-01	9.710E-01	1.478E 00	0.000E 00	F	2.627E 02	2.712E 02
4	1.500E-01	1.334E 08	3.432E-02	4.128E-01	1.055E 00	1.673E 00	0.000E 00	F	2.627E 02	2.712E 02
5	2.000E-01	1.334E 08	4.242E-02	4.577E-01	1.132E 00	1.865E 00	0.000E 00	F	2.627E 02	2.712E 02
6	2.500E-01	1.334E 08	5.053E-02	4.948E-01	1.205E 00	2.055E 00	0.000E 00	F	2.627E 02	2.712E 02
7	3.000E-01	1.334E 08	5.863E-02	5.262E-01	1.274E 00	2.242E 00	0.000E 00	F	2.627E 02	2.712E 02
8	3.500E-01	1.334E 08	6.673E-02	5.532E-01	1.339E 00	2.427E 00	0.000E 00	F	2.627E 02	2.712E 02
9	4.000E-01	1.334E 08	7.482E-02	5.767E-01	1.402E 00	2.611E 00	0.000E 00	F	2.627E 02	2.712E 02
10	4.500E-01	1.334E 08	8.292E-02	5.975E-01	1.461E 00	2.793E 00	0.000E 00	F	2.627E 02	2.712E 02
11	5.000E-01	1.334E 08	9.102E-02	6.160E-01	1.518E 00	2.974E 00	0.000E 00	F	2.627E 02	2.712E 02
12	5.500E-01	1.334E 08	9.912E-02	6.327E-01	1.573E 00	3.153E 00	0.000E 00	F	2.627E 02	2.712E 02
13	6.000E-01	1.334E 08	1.072E-01	6.479E-01	1.626E 00	3.331E 00	0.000E 00	F	2.627E 02	2.712E 02
14	6.500E-01	1.334E 08	1.153E-01	6.617E-01	1.677E 00	3.507E 00	0.000E 00	F	2.627E 02	2.712E 02
15	7.000E-01	1.334E 08	1.234E-01	6.744E-01	1.727E 00	3.683E 00	0.000E 00	F	2.627E 02	2.712E 02
16	7.500E-01	1.334E 08	1.315E-01	6.862E-01	1.775E 00	3.858E 00	0.000E 00	F	2.627E 02	2.712E 02
17	8.000E-01	1.334E 08	1.396E-01	6.970E-01	1.821E 00	4.032E 00	0.000E 00	F	2.627E 02	2.712E 02
18	8.500E-01	1.334E 08	1.477E-01	7.072E-01	1.867E 00	4.205E 00	0.000E 00	F	2.627E 02	2.712E 02
19	9.000E-01	1.334E 08	1.558E-01	7.166E-01	1.910E 00	4.377E 00	0.000E 00	F	2.627E 02	2.712E 02
20	9.500E-01	1.334E 08	1.640E-01	7.255E-01	1.953E 00	4.548E 00	0.000E 00	F	2.627E 02	2.712E 02
21	1.000E 00	1.334E 08	1.721E-01	7.339E-01	1.995E 00	4.718E 00	0.000E 00	F	2.627E 02	2.712E 02
22	1.050E 00	1.334E 08	1.802E-01	7.417E-01	2.035E 00	4.888E 00	0.000E 00	F	2.627E 02	2.712E 02
23	1.100E 00	1.334E 08	1.884E-01	7.493E-01	2.074E 00	5.057E 00	0.000E 00	F	2.627E 02	2.712E 02
24	1.150E 00	1.334E 08	1.965E-01	7.563E-01	2.113E 00	5.226E 00	0.000E 00	F	2.627E 02	2.712E 02
25	1.200E 00	1.334E 08	2.048E-01	7.631E-01	2.150E 00	5.393E 00	0.000E 00	F	2.627E 02	2.712E 02
26	1.250E 00	1.334E 08	2.129E-01	7.695E-01	2.187E 00	5.561E 00	0.000E 00	F	2.627E 02	2.712E 02
27	1.300E 00	1.334E 08	2.210E-01	7.756E-01	2.223E 00	5.727E 00	0.000E 00	F	2.627E 02	2.712E 02
28	1.350E 00	1.334E 08	2.293E-01	7.814E-01	2.257E 00	5.893E 00	0.000E 00	F	2.627E 02	2.712E 02
29	1.400E 00	1.334E 08	2.374E-01	7.870E-01	2.292E 00	6.059E 00	0.000E 00	F	2.627E 02	2.712E 02
30	1.450E 00	1.334E 08	2.455E-01	7.923E-01	2.325E 00	6.224E 00	0.000E 00	F	2.627E 02	2.712E 02
31	1.500E 00	1.334E 08	2.537E-01	7.974E-01	2.358E 00	6.389E 00	0.000E 00	F	2.627E 02	2.712E 02
32	1.550E 00	1.334E 08	2.618E-01	8.024E-01	2.390E 00	6.553E 00	0.000E 00	F	2.627E 02	2.712E 02
33	1.600E 00	1.334E 08	2.700E-01	8.071E-01	2.422E 00	6.716E 00	0.000E 00	F	2.627E 02	2.712E 02
34	1.650E 00	1.334E 08	2.782E-01	8.117E-01	2.452E 00	6.879E 00	0.000E 00	F	2.627E 02	2.712E 02
35	1.700E 00	1.334E 08	2.864E-01	8.162E-01	2.482E 00	7.042E 00	0.000E 00	F	2.627E 02	2.712E 02
36	1.750E 00	1.334E 08	2.947E-01	8.205E-01	2.511E 00	7.204E 00	0.000E 00	F	2.627E 02	2.712E 02
37	1.800E 00	1.334E 08	3.030E-01	8.247E-01	2.540E 00	7.366E 00	0.000E 00	F	2.627E 02	2.712E 02
38	1.850E 00	1.334E 08	3.113E-01	8.287E-01	2.567E 00	7.527E 00	0.000E 00	F	2.627E 02	2.712E 02
39	1.900E 00	1.334E 08	3.197E-01	8.327E-01	2.594E 00	7.687E 00	0.000E 00	F	2.627E 02	2.712E 02
40	1.950E 00	1.334E 08	3.281E-01	8.365E-01	2.621E 00	7.848E 00	0.000E 00	F	2.627E 02	2.712E 02
41	2.000E 00	1.334E 08	3.366E-01	8.403E-01	2.646E 00	8.007E 00	0.000E 00	F	2.627E 02	2.712E 02

T.STEP	TIME	INLET G	INLET X	ABOVE BD	MAX X (POINT,X)	MAX TSTEAM (P,TS)	MAX TWALL (P,TW)