EUR 4902 e

COMMISSION OF THE EUROPEAN COMMUNITIES

FRANCESCA BWR
A NUMERICAL PROGRAMME FOR THE STEADY STATE AND DYNAMIC CALCULATION OF PARALLEL COOLANT CHANNELS FOR BWR NUCLEAR REACTORS

by

G. FORTI

1972

Joint Nuclear Research Centre
Ispra Establishment - Italy
Nuclear Study

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ABSTRACT

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KEYWORDS

BWR TYPE REACTORS
REACTOR COOLING SYSTEMS
HEAT TRANSFER
TWO-PHASE FLOW
FLOW MODELS
F CODES
STEADY FLOW
TRANSIENTS
FINITE DIFFERENCE METHOD
SUBCOOLED BOILING
VAPOR CONDENSATION

Contents

1. Foreword

The code FRANCESCA BWR has been developed as the thermohydraulic module of a two dimensional-two groups reactor dynamics code for boiling water reactors of the COSTANZA series, which is operative at CCR Ispra but has not been published to this date.
In the present version, a special main programme has been written which gives the necessary power input to the problem, both in steady state and transient situation, replacing the neutronic part of the code.
It was felt that a thermohydraulics code for closed parallel channels might be useful in itself, both for reactor calculation and for the analysis of experimental rigs measurements; single channel calculation may of course be performed. The model of the single channel is extended and improved with respect to the original FRANCESCA code (ref.1). In the present version it applies to light water coolant only, as it includes water properties as fitting routines, and its validity is restricted to the pressure range between 30 and 100 bar. The single channel model is identical with that employed in COSTAX-BWR for axial dynamics of BWR (ref.2) and therefore the description of the model will not be repeated here. The reader is referred to the abstract of the present report for a compact definition of the model's nature.

2. Problem description

A number of parallel channels are considered, which are all identical in geometry and composition.
Each channel is considered to be composed of a fuel cylindrical rod, a cladding, and the water cooling the outer surface of the cladding pertaining to the fuel element. Local restrictions to the coolant flow may exist along the height of the channels, these restrictions being identical in all the channels. The only exception to this rule are the inlet orificing coefficients, which may be different for different groups of channels.
In the steady state problem, a power distribution is given for each group of parallel channels (up to 10 groups with different power distribution). The coolant flow distribution among the different groups of channels is obtained by an iterative procedure, varying the initial guessed distribution until the calculated pressure drops in each group of channels agree within 1%. Alternatively the pressure drop across channels may be imposed as well as the flow distribution, and the inlet gagging for each group of channels is

adjusted in order to obtain the prescribed pressure drop. In the latter case no iteration is necessary; instead of fixing the pressure drop it is also possible to determine it as the average among the different channel groups, weighted on coolant flows. In the dynamic part of the problem, the power level of the whole system is changed according to a given time table, keeping the steady state power distribution fixed. At the same time, the total inlet mass flow and the inlet enthalpy of the coolant water are also varied according to independent time tables. The programme calculates at each time step Δt the new flow distribution among groups of channels in the dynamic situation, as well as the temperatures inside the fuel rod, the cladding, the cooling water, and the void fractions at each axial level of the different channel groups. No DNB correlation is considered, and no special provision for calculation after DNB is made. The code in the present version is intended to foresee the occurring of boiling crisis, rather than predicting the evolution of a transient after this occurrence.

3. The flow redistribution calculation

During, transient, the coolant mass flows into the different groups of channels satisfy the following equations

1) $$A \sum_i n_i G_{o_i} = Q$$

where n_i are the number of identical channels in each group i, A is the flow area of the channels, Go_i are the inlet mass flow rates in each channel group i and Q is the total mass flow into the system.

2) $$\Delta p = \frac{d}{dt} \int_o^L G_i(z)\, dz + \Delta p_{fi} + \Delta p_{gi} + \Delta p_{si}$$

Δp is the pressure drop (common to all parallel channels) across the channels; Δp_{fi}, Δp_{gi}, Δp_{si} are respectively the frictional pressure drop, the gravity head, and the space acceleration pressure drop across the channels i, which are evaluated at each time t

according to the single channel model. The momentum derivative term may be written as

$$\frac{d}{dt}\int_0^L G_o(z)dz = L\ \frac{d\,G_o}{dt} + \frac{d}{dt}\int_0^L (G_i(z)-G_o)\,dz$$

The second term in the right hand side is very small in all practical cases (ree Ref.3 for a discussion). It is therefore neglected in the model, but it is calculated and printed as a check term in the output, to control the validity of the assumption.

Equation 2) is therefore rewritten

$$L\ \frac{d\,G_{oi}}{dt} = \Delta p - \Delta p_{fi} - \Delta p_{gi} - \Delta p_{si} = \Delta p - \Delta p_i$$

Δp is evaluated at each time t as the average value (weighted over the inlet mass flows) of the Δp_i.
Writing $\Delta p1_i$ for $\Delta p - \Delta p_{gi} - \Delta p_{si}$ the equation for each of the channel groups is transformed into:

$$L\ \frac{d\,G_{oi}}{dt} = \Delta p1_i - \frac{\Delta p_{fi}}{G^2_{oi}}\ G^2_{oi}$$

which is in the form of the Riccati equation and may be integrated anlytically in the time interval Δt, giving the solution

$$G_{oi}\ (t+\Delta t) = G_{oi}\ (t)\ R\ \frac{(1+1/R)-(1-1/R)\ e^{-2k\,\Delta t}}{(1+1/R)+(1-1/R)\ e^{-2k\,\Delta t}}$$

in which $R = \sqrt{\frac{\Delta p\ 1_i}{\Delta p_{fi}}}$ and $K = \frac{L}{Go_i(t)}\sqrt{\frac{\Delta p_{fi}}{\Delta p1_i}}$

The values obtained for Go_i $(t+\Delta t)$ for all i are then renormalized to yeld the prescribed total mass flow according to equation 1).

This method of solution offers the following advantages:
- The method is explicit and therefore very quick, but always stable, because of the braking term dependent on G_o^2.
- The effect of the dynamic redistribution of flow among the different channel groups is separated from the total mass flow variation, which depends essentially on the external loop. The total mass flow is given in input in the code, but a representation of the external loop may easily be implemented into the code, adding a routine for the recirculation loop in the place of the tabulation.
- Whenever R, is very near to 1 in any channel group, the redistribution calculation may be automatically skipped for that group and the error is automatically compensated in the further time steps if the tendency to pressure unbalance is continuing in time.

5. Input Form

Many problems can be executed in one run. For every problem the first input card is a title, in which any alphamerical information may appear in columns from 7 to 70 included. This title will appear in the output; a 1 in column 6 means that the problem is the last of the run.
A vector of 3500 memory positions DATA (1) to DATA (3500) contains all the data in floating point form (Internal conversion is performed by the code when needed). Since entire groups of memory positions are zero, it is possible to read different sets of significant data; each set must be preceeded by a card containing the integers Ki_1, Ki_2 defining the first and last datum of the set. Ki_1 and Ki_2 are given in integer form adjusted to the right at columns 12 and 24. The last set of a problem is indicated by - 1 in columns 1 and 2. The data of each set are all in floating form (FORTRAN FORMAT 6E 12.8). Any number of problems may be run in sequence and only the data changing from the preceding problem need to be given. A title card must be present for each problem. The key to the inPut is given in appendix A.

6. Output description and computer specifications

The output of the programme is largely selfexplanatory. The input data are first printed, then the results of the steady state calculation follow. During transient, two types of printout are made,

at a frequency specified in input: a summary of average values in the groups of channels and the complete map of results.
The map of channel results gives for each axial mesh the following items: Power/cm POW, Heat flux FI, vapour quality Q, void fraction VF, temperature of the cladding surface TSUR, inner temperature of the cladding TICL, average temperature of the fuel AVTF, maximum (central point) temperature of the fuel TMAXF and the liquid coolant temperature TL.
The programme is written in FORTRAN and has been assembled at CETIS, Euratom CCR Ispra in FORTRAN H level 2 under the control of IBM - 360/65 O.S..
The total length of the programme resulted in 17448 exadecimal bytes. The computer time required by the programme on IBM 360/65 may be roughly estimated in .1 to .2 minutes per axial node per 1000 time steps.

References

1) EUR 4241 FRANCESCA, A dynamic program for boiling cooling channels. G.Forti 1969

2) EUR 4837 COSTAX BWR, A numerical programme for the axial dynamics of BWR nuclear reactors. G.Forti 1972

3) EUR 4052 A dynamic model for the cooling channels of a boiling nuclear reactor. G.Forti 1968

Input key for FRANCESCA -BWR-

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
1	NCAN	Number of different groups of channels ($\leq$ 10)	-	
2	IMAX	Number of meshes in the channels ($\leq$ 30)	-	
3	POWER	Total power in all the channels	watt	
4	ZTOT	Height of the active channels	cm	
5	TF	Final time for the dinamic calculation	sec	if 0, only the static calculation will be made
6	DELT	Δt - time step for dynamic calculation	sec	
7	Zuber	Coefficient in Zuber's drift velocity correlation	-	2.5 is suggested 1.41 has also been proposed
11-20	CHANN(M)	Number of channels of each different group		
21-30	PØWF(M)	Relative power factor in the different channels groups		if omitted, the code will take uniform power
100	IPOT	Power perturbation indicator = 0 no power changement = 1 Power time table given in input = 2 Sinusoid Power=P_o(1.+C1 sin C2t) = 3 Polynome Power=P_o(1.+C1t+...+C6 t^6)		
101-150	POTAB	times for power tabulation (sec) first value given must be zero, any number of values may be given, and the power is kept constant at the corresponding value after the last time given		

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
151-200	POTAB	Corresponding values (relative to nominal)		
201-206	PCOEF	Coefficients in power perturbation C1-C6 (see DATA (100)) when IPOT > 1		
401	NF	Number of radial meshes in the fuel rod for thermal conduction calculation		
402	IVAR	Fuel thermal properties indicator 0 = constant properties 1 = temperature dependent properties		
403	IRED	0 = no flow redistribution in steady state 1 = coolant flow is redistributed among channels to match the pressure drops		
404	IPRESS	Pressure	Perturbation indicators 0 = no perturbation 1 = time table 2 = sinusoid $f(t)=f(o)\left[1+C1\ \mathrm{Sin}\ C2t\right]$ 3 = polynome $f(t)=f(o)\left[1+C1t...+C6\underline{t}\right]$	
405	ITIN	Inlet enthalphy		
406	IVINL	Mass flow		
407-416	KKC	Meshes of the channels in which a local flow resistance exists		
417-422		Dummy		
423	IP1	Detailed map print every IP1 restricted prints		see DATA (506)
501	PRESSO	Pressure in steady state	bar	

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
502	DIAH	Hydraulic diameter	cm	
503	FRDF	Fraction of power directly added to coolant (γ rays and neutron moderation)	-	
504	GR	Gravity cosinus (+1 for upwards flow)		if omitted, the code will take +1
505	ZE	Relaxation parameter for void profile in diabatic flow	cm	Omit lacking information
506	PS	Printing time step (restricted print)	sec	
507	A	Coolant cross section area	cm^2	
508	DIAF	Fuel pellet diameter	cm	
509	GAPTH	Thickness of the gap	cm	Omit if no gap
510	CLTH	Cladding thickness (must be positive)	cm	
511	ROF	Fuel density	gr/cm^3	
512	CPF	Fuel specific heat (Reference temperature value when variable)	Joule/gr °C	
513	AKF	Fuel thermal conductivity (Reference temperature value if variable)	watt/cm °C	
514	RGAP	Gap thermal resistance	cm^2°C/watt	

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
515	ROCL	Cladding density	gr/cm^3	
516	CPCL	Cladding specific heat	Joule/gr°C	
517	AKCL	Cladding thermal conductivity	watt/cm°C	
518	ZIN	Inlet pipe height	cm	
519	HLNO	Inlet enthalpy of water in steady state	Joule/gr	
520	QINLET	Total mass flow of water in all channels	Kg/sec	
521	FFK	Active channels friction coefficient (single phase) $\Delta p = \frac{1}{2} \frac{FFK}{D_h} \frac{G^2}{\rho} \Delta z$	-	
522	R1	Recondensation constant for subcooled water. If omitted, no recondensation is considered	$(sec°C)^{-1}$	5. is tentatively suggested
523	DPEQO	Imposed pressure drop for steady state (the code will calculate the orificing in the different channels to match this drop)	bar	Only if IRED = 0 If omitted, it will be evaluated by the code
524	TINERØ	Total inertia of the channels If omitted, the code will take the full lenghth including inlet pipe and risers	cm	
525	ZRIS1	Riser 1 height (if omitted, no riser)	cm	
526	ARIS1	Riser 1 flow area	cm^2	

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
527	CFRF1	Riser 1 friction coefficient ($\Delta p = \frac{1}{2}$ CFRF1 G^2/ρ) (liquid phase flow)	-	
528	ZRIS2	Same as above for riser 2	cm	If omitted, only 1 riser
529	ARIS2		cm^2	
530	CFRF2		-	
531	TKF	To in formula $K = K_o\ (1+a(T-To)+b(T-To)^2)$	°C	Only if IVAR > 0
532	AKF1	a for fuel variable heat conductivity	$°C^{-1}$	Omit when K is constant
533	AKF2	b	$°C^{-2}$	
534	TCPF	To In same formula as above for	°C	
535	CPF1	a variable specific heat	$°C^{-1}$	
536	CPF2	b	$°C^{-2}$	
537-540		Dummy		
541-550	VINP	inlet flow rate for the different channels/relative values, normalized by the code (First Guess when IRED > 0)	-	If omitted the code will them equal (i.e.1)
551-560	CFFI	Inlet friction coefficients ($\Delta p_{in} = \frac{1}{2}$ CFFI G^2/ρ)	-	Adjusted by the code if IRED > 0

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
		Perturbation coefficients Only if the corresponding options are checked indicators = 2 or 3		See DATA 404-406
561-66	CPRESS	Pressure coefficients		
567-72	CVIN	Inlet mass flow coefficients		
573-78	CTIN	Inlet enthalpy coefficients		
585-594	CKFF(I)	Local friction coefficients ($\Delta p_{loc} = \frac{1}{2}$ CKFF G^2/ρ) corresponding to the selected meshes		See DATA 407 ff
		Perturbation time tables		
601-650	HTAB	inlet enthalpy time table: times	sec	Each time table is built as 50 values of time followed by 50 values for the variable (relative value to nominal). Any number of times and values may be given. The variable is kept constant to the value corresponding to the last time given after it.
651-700		inlet enthalpy time table: values (relative to nominal)	-	
701-800	QTAB	Mass flow time table		
801-900	PTAB	Pressure time table		

DATA n°	NAME	DESCRIPTION	UNITS	NOTES
1000	-	Axial power shape indicator 0 flat power distribution 1 axial power shape input for all channels 2 axial power shape input for every channel group		
1001-1030	AXSH	Power shape for the first channel group (for all channels) (Relative values-Normalized by the code)		
1031-1060	"	Same for 2nd channel group if DATA (1000)=2		
etc				

SAMPLE PROBLEM FOR FRANCESCA-BWR

1	0.500000E 01	2	0.100000E 02	3	0.500000E 09	4	0.300000E 03	5	0.100000E 02	6	0.100000E 00				
7	0.250000E 01														
11	0.144000E 03	12	0.115200E 04	13	0.230400E 04	14	0.475200E 04	15	0.187200E 04						
21	0.510000E 01	22	0.600000E 01	23	0.500000E 01	24	0.490000E 01	25	0.380000E 01						
100	0.100000E 01														
101	0.0	102	0.100000E 02												
151	0.0	152	0.500000E 00												
401	0.300000E 01	402	0.0	403	0.100000E 01	404	0.0	405	0.0	406	0.100000E 01				
407	0.200000E 01	408	0.400000E 01	409	0.600000E 01	410	0.800000E 01	411	0.100000E 02	412	0.0				
423	0.400000E 01														
501	0.700000E 02	502	0.125000E 01	503	0.0	504	0.0	505	0.0	506	0.500000E 00				
507	0.175000E 01	508	0.125000E 01	509	0.100000E-01	510	0.800000E-01	511	0.100000E 04	512	0.350000E 00				
513	0.250000E-01	514	0.175000E 01	515	0.650000E 01	516	0.300000E 00	517	0.130000E 00	518	0.150000E 02				
519	0.120000E 04	520	0.400000E 04	521	0.150000E-01	522	0.0	523	0.0	524	0.0				
551	0.600000E 02	552	0.600000E 02	553	0.600000E 02	554	0.600000E 02	555	0.600000E 02						
585	0.150000E 01	586	0.150000E 01	587	0.150000E 01	588	0.150000E 01	589	0.150000E 01						
701	0.0	702	0.400000E 01	703	0.600000E 01										
751	0.100000E 01	752	0.800000E 00	753	0.700000E 00										

FUEL DATA

FUEL RADIUS	DENSITY	MASS/CM	CLAD RADIUS	EXT.RADIUS
0.62500E 00	0.10000E 04	0.12272E 04	0.63500E 00	0.71500E 00

TEMPERATURE INDEPENDENT CONSTANTS

CPF	KF	CPCL	KCL
0.350000E 00	0.250000E-01	0.300000E 00	0.130000E 00

CHANNEL DATA

HEIGHT 300.000 CM SECTION 1.750 CM2 COOLANT DENSITY 0.73970 G/CM3 PRESSURE 70.0000 BAR
INLET PIPE HEIGHT 15.0
NO RISER

CHANNEL 1 NUMBER OF CHANNELS 144.C

INLET VELOCITY /VINLET/= 301.25 CM/SEC
EXIT QUALITY /XOUT/= 0.04597
AVERAGE VOID FRACTION /AVF/= 0.20754
POWER FLOW TO COOLANT /THF/= 0.51448E 05 WATT
POWER OUTPUT 0.51448E 05
INLET RESTRICTION PARAM. /FFIN/= 0.22189E 02

CHANNEL 2 NUMBER OF CHANNELS 1152.C

INLET VELOCITY /VINLET/= 297.38 CM/SEC
EXIT QUALITY /XOUT/= 0.06273
AVERAGE VOID FRACTION /AVF/= 0.27879
POWER FLOW TO COOLANT /THF/= 0.60527E 05 WATT
POWER OUTPUT 0.60528E 05
INLET RESTRICTION PARAM. /FFIN/= 0.22145E 02

CHANNEL 3 NUMBER OF CHANNELS 2304.0

INLET VELOCITY /VINLET/= 301.59 CM/SEC
EXIT QUALITY /XOUT/= 0.04415
AVERAGE VOID FRACTION /AVF/= 0.20302
POWER FLOW TO COOLANT /THF/= 0.50439E 05 WATT
POWER OUTPUT 0.50439E 05
INLET RESTRICTION PARAM. /FFIN/= 0.22190E 02

CHANNEL 4 NUMEER OF CHANNELS 4752.0

INLET VELOCITY /VINLET/= 301.93 CM/SEC
EXIT QUALITY /XOUT/= 0.04235
AVERAGE VCID FRACTION /AVF/= 0.19819
PCWER FLCW TC COOLANT /THF/= 0.49430E 05 WATT
PCWER CUTPUT 0.49431E 05
INLET RESTRICTION PARAM. /FFIN/= 0.22194E 02

CHANNEL 5 NUMEER OF CHANNELS 1872.0

INLET VELOCITY /VINLET/= 306.89 CM/SEC
EXIT QUALITY /XOUT/= 0.02249
AVERAGE VOID FRACTION /AVF/= 0.09920
POWER FLCW TC COOLANT /THF/= 0.38334E 05 WATT
POWER OUTPUT 0.38334E 05
INLET RESTRICTION PARAM. /FFIN/= 0.22211E 02

TIME 0.0 TOTAL FLOW 5407.62LT/SEC PRESS.DROP 2.7963
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5145E 05	0.2075E 00	0.4597E-01	0.3012E 03	0.2797E 01	0.0	0.7098E 03	0.9446E 03	0.3175E 03	0.3817E 02
0.6053E 05	0.2788E 00	0.6273E-01	0.2974E 03	0.2800E 01	0.0	0.7838E 03	0.1059E 04	0.3217E 03	0.4491E 02
0.5044E 05	0.2030E 00	0.4415E-01	0.3016E 03	0.2796E 01	0.0	0.7016E 03	0.9314E 03	0.3166E 03	0.3742E 02
0.4943E 05	0.1982E 00	0.4235E-01	0.3019E 03	0.2796E 01	0.0	0.6933E 03	0.9185E 03	0.3160E 03	0.3668E 02
0.3833E 05	0.9920E-01	0.2249E-01	0.3069E 03	0.2794E 01	0.0	0.6022E 03	0.7775E 03	0.3103E 03	0.2844E 02

CHANNEL 1

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.17149E 03	0.38173E 02	-0.32694E-01	0.0	0.29260E 03	0.31749E 03	0.71026E 03	0.94460E 03	0.27642E 03
2	0.17149E 03	0.38173E 02	-0.23953E-01	0.57662E-01	0.29217E 03	0.31706E 03	0.70983E 03	0.94417E 03	0.27781E 03
3	0.17149E 03	0.38173E 02	-0.15213E-01	0.10851E 00	0.29217E 03	0.31706E 03	0.70983E 03	0.94417E 03	0.27921E 03
4	0.17149E 03	0.38173E 02	-0.64738E-02	0.15205E 00	0.29211E 03	0.31699E 03	0.70976E 03	0.94411E 03	0.28066E 03
5	0.17149E 03	0.38173E 02	0.22663E-02	0.19115E 00	0.29211E 03	0.31699E 03	0.70976E 03	0.94411E 03	0.28212E 03
6	0.17149E 03	0.38173E 02	0.11006E-01	0.22575E 00	0.29208E 03	0.31696E 03	0.70973E 03	0.94408E 03	0.28361E 03
7	0.17149E 03	0.38173E 02	0.19746E-01	0.25837E 00	0.29214E 03	0.31702E 03	0.70979E 03	0.94414E 03	0.28508E 03
8	0.17149E 03	0.38173E 02	0.28485E-01	0.30698E 00	0.29217E 03	0.31706E 03	0.70983E 03	0.94417E 03	0.28580E 03
9	0.17149E 03	0.38173E 02	0.37225E-01	0.36388E 00	0.29217E 03	0.31706E 03	0.70983E 03	0.94417E 03	0.28580E 03
10	0.17149E 03	0.38173E 02	0.45965E-01	0.41110E 00	0.29217E 03	0.31706E 03	0.70983E 03	0.94417E 03	0.28580E 03

PRESSURE CROP 2.79652 BAR
INLET 2.02470 CHANNEL 0.77182 RISERS -0.00000
FRICTICN 2.56749 GRAVITY 0.18545 SPACE ACCEL. 0.04359

CHANNEL 2

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.20176E 03	0.44910E 02	-0.31017E-01	0.67836E-01	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.27556E 03
2	0.20176E 03	0.44910E 02	-0.20601E-01	0.12635E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.27722E 03
3	0.20176E 03	0.44910E 02	-0.10184E-01	0.17733E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.27889E 03
4	0.20176E 03	0.44910E 02	0.23075E-03	0.22115E 00	0.29240E 03	0.32167E 03	0.78376E 03	0.10595E 04	0.28061E 03
5	0.20176E 03	0.44910E 02	0.10647E-01	0.25985E 00	0.29239E 03	0.32166E 03	0.78375E 03	0.10594E 04	0.28235E 03
6	0.20176E 03	0.44910E 02	0.21064E-01	0.29549E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.28407E 03
7	0.20176E 03	0.44910E 02	0.31480E-01	0.32752E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.28580E 03
8	0.20176E 03	0.44910E 02	0.41896E-01	0.38991E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.28580E 03
9	0.20176E 03	0.44910E 02	0.52311E-01	0.44040E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.28580E 03
10	0.20176E 03	0.44910E 02	0.62727E-01	0.48209E 00	0.29244E 03	0.32171E 03	0.78380E 03	0.10595E 04	0.28580E 03

PRESSURE DROP 2.80036 BAR

INLET	1.97329	CHANNEL	0.82707	RISERS	-0.00000
FRICTION	2.57333	GRAVITY	0.17072	SPACE ACCEL.	0.05632

CHANNEL 3

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.16813E 03	0.37425E 02	-0.32875E-01	0.0	0.29222E 03	0.31662E 03	0.70169E 03	0.93144E 03	0.27637E 03
2	0.16813E 03	0.37425E 02	-0.24316E-01	0.56546E-01	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.27773E 03
3	0.16813E 03	0.37425E 02	-0.15758E-01	0.10654E 00	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.27910E 03
4	0.16813E 03	0.37425E 02	-0.71984E-02	0.14962E 00	0.29209E 03	0.31648E 03	0.70155E 03	0.93130E 03	0.28051E 03
5	0.16813E 03	0.37425E 02	0.13604E-02	0.18715E 00	0.29204E 03	0.31643E 03	0.70150E 03	0.93125E 03	0.28197E 03
6	0.16813E 03	0.37425E 02	0.99194E-02	0.22243E 00	0.29209E 03	0.31649E 03	0.70156E 03	0.93131E 03	0.28340E 03
7	0.16813E 03	0.37425E 02	0.18478E-01	0.25541E 00	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.28481E 03
8	0.16813E 03	0.37425E 02	0.27037E-01	0.29642E 00	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.28580E 03
9	0.16813E 03	0.37425E 02	0.35595E-01	0.35411E 00	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.28580E 03
10	0.16813E 03	0.37425E 02	0.44154E-01	0.40201E 00	0.29214E 03	0.31654E 03	0.70161E 03	0.93136E 03	0.28580E 03

PRESSURE DROP 2.79636 BAR

INLET	2.02923	CHANNEL	0.76713	RISERS	0.0
FRICTION	2.56788	GRAVITY	0.18638	SPACE ACCEL.	0.04210

CHANNEL 4

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.16477E 03	0.36676E 02	-0.33056E-01	0.0	0.29184E 03	0.31575E 03	0.69311E 03	0.91827E 03	0.27632E 03
2	0.16477E 03	0.36676E 02	-0.24676E-01	0.55429E-01	0.29211E 03	0.31602E 03	0.69339E 03	0.91854E 03	0.27765E 03
3	0.16477E 03	0.36676E 02	-0.16298E-01	0.10455E 00	0.29211E 03	0.31602E 03	0.69339E 03	0.91854E 03	0.27899E 03
4	0.16477E 03	0.36676E 02	-0.79195E-02	0.14723E 00	0.29207E 03	0.31597E 03	0.69334E 03	0.91850E 03	0.28036E 03
5	0.16477E 03	0.36676E 02	0.45833E-03	0.18408E 00	0.29200E 03	0.31590E 03	0.69327E 03	0.91843E 03	0.28180E 03
6	0.16477E 03	0.36676E 02	0.88365E-02	0.21852E 00	0.29204E 03	0.31595E 03	0.69332E 03	0.91847E 03	0.28321E 03
7	0.16477E 03	0.36676E 02	0.17215E-01	0.24987E 00	0.29204E 03	0.31595E 03	0.69332E 03	0.91847E 03	0.28463E 03
8	0.16477E 03	0.36676E 02	0.25594E-01	0.28554E 00	0.29211E 03	0.31602E 03	0.69339E 03	0.91854E 03	0.28580E 03
9	0.16477E 03	0.36676E 02	0.33972E-01	0.34402E 00	0.29211E 03	0.31602E 03	0.69339E 03	0.91854E 03	0.28580E 03
10	0.16477E 03	0.36676E 02	0.42350E-01	0.39262E 00	0.29211E 03	0.31602E 03	0.69339E 03	0.91854E 03	0.28580E 03

PRESSURE DROP 2.79608 BAR

INLET	2.03377	CHANNEL	0.76232	RISERS	-0.00000
FRICTION	2.56810	GRAVITY	0.18738	SPACE ACCEL.	0.04060

CHANNEL 5

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.12778E 03	0.28443E 02	-0.35042E-01	0.0	0.28763E 03	0.30617E 03	0.59882E 03	0.77343E 03	0.27575E 03
2	0.12778E 03	0.28443E 02	-0.28650E-01	0.0	0.28946E 03	0.30800E 03	0.60065E 03	0.77526E 03	0.27758E 03
3	0.12778E 03	0.28443E 02	-0.22257E-01	0.0	0.29130E 03	0.30984E 03	0.60249E 03	0.77710E 03	0.27942E 03
4	0.12778E 03	0.28443E 02	-0.15865E-01	0.40498E-01	0.29163E 03	0.31017E 03	0.60282E 03	0.77743E 03	0.28049E 03
5	0.12778E 03	0.28443E 02	-0.94730E-02	0.75033E-01	0.29152E 03	0.31006E 03	0.60272E 03	0.77733E 03	0.28162E 03
6	0.12778E 03	0.28443E 02	-0.30809E-02	0.10687E 00	0.29152E 03	0.31006E 03	0.60271E 03	0.77732E 03	0.28275E 03
7	0.12778E 03	0.28443E 02	0.33113E-02	0.13821E 00	0.29161E 03	0.31015E 03	0.60280E 03	0.77741E 03	0.28385E 03
8	0.12778E 03	0.28443E 02	0.97043E-02	0.16722E 00	0.29161E 03	0.31015E 03	0.60280E 03	0.77741E 03	0.28496E 03
9	0.12778E 03	0.28443E 02	0.16097E-01	0.20319E 00	0.29172E 03	0.31026E 03	0.60291E 03	0.77752E 03	0.28580E 03
10	0.12778E 03	0.28443E 02	0.22489E-01	0.26097E 00	0.29172E 03	0.31026E 03	0.60291E 03	0.77752E 03	0.28580E 03

PRESSURE DROP 2.79439 BAR

INLET	2.10090	CHANNEL	0.69349	RISERS	-0.00000
FRICTION	2.56342	GRAVITY	0.20784	SPACE ACCEL.	0.02313

DYNAMIC CALCULATION

TIME 0.50 TOTAL FLOW 5272.42LT/SEC PRESS.DROP 2.6510
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5153E 05	0.2040E 00	0.4647E-01	0.2949E 03	0.2693E 01	0.3232E-01	0.7096E 03	0.9444E 03	0.3172E 03	0.3883E 02
0.6047E 05	0.2830E 00	0.6417E-01	0.2872E 03	0.2636E 01	0.5457E-03	0.7836E 03	0.1059E 04	0.3217E 03	0.4487E 02
0.5052E 05	0.1955E 00	0.4447E-01	0.2948E 03	0.2693E 01	0.3187E-01	0.7014E 03	0.9312E 03	0.3167E 03	0.3808E 02
0.4936E 05	0.1827E 00	0.4351E-01	0.2949E 03	0.2639E 01	0.4338E-02	0.6931E 03	0.9183E 03	0.3167E 03	0.3685E 02
0.3848E 05	0.8267E-01	0.2115E-01	0.2985E 03	0.2637E 01	0.2678E-02	0.6020E 03	0.7774E 03	0.3102E 03	0.2905E 02

TIME 1.00 TOTAL FLOW 5137.23LT/SEC PRESS.DROP 2.5488
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5136E 05	0.2025E 00	0.4495E-01	0.2851E 03	0.2537E 01	0.4591E-03	0.7095E 03	0.9442E 03	0.3171E 03	0.3818E 02
0.6042E 05	0.2888E 00	0.6664E-01	0.2809E 03	0.2535E 01	-0.4356E-03	0.7833E 03	0.1059E 04	0.3217E 03	0.4483E 02
0.5022E 05	0.1899E 00	0.4361E-01	0.2848E 03	0.2481E 01	-0.2947E-01	0.7012E 03	0.9311E 03	0.3170E 03	0.3736E 02
0.4947E 05	0.1817E 00	0.4078E-01	0.2879E 03	0.2593E 01	0.3058E-01	0.6930E 03	0.9182E 03	0.3162E 03	0.3751E 02
0.3836E 05	0.7737E-01	0.1697E-01	0.2920E 03	0.2530E 01	0.6117E-04	0.6019E 03	0.7772E 03	0.3102E 03	0.2877E 02

TIME 1.50 TOTAL FLOW 5002.04LT/SEC PRESS.DROP 2.4100
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5131E 05	0.2106E 00	0.4557E-01	0.2789E 03	0.2434E 01	-0.1552E-02	0.7093E 03	0.9440E 03	0.3170E 03	0.3810E 02
0.6036E 05	0.2945E 00	0.6923E-01	0.2745E 03	0.2435E 01	-0.9217E-03	0.7831E 03	0.1059E 04	0.3216E 03	0.4479E 02
0.5030E 05	0.2036E 00	0.4335E-01	0.2787E 03	0.2433E 01	-0.2832E-02	0.7010E 03	0.9309E 03	0.3165E 03	0.3734E 02
0.4916E 05	0.1872E 00	0.4227E-01	0.2783E 03	0.2381E 01	-0.3115E-01	0.6928E 03	0.9180E 03	0.3165E 03	0.3658E 02
0.3834E 05	0.6061E-01	0.1449E-01	0.2872E 03	0.2439E 01	0.1761E-02	0.6017E 03	0.7771E 03	0.3104E 03	0.2870E 02

TIME 2.00 TOTAL FLOW 4866.85LT/SEC PRESS.DROP 2.3148
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5125E 05	0.2163E 00	0.4775E-01	0.2714E 03	0.2317E 01	0.5060E-04	0.7091E 03	0.9438E 03	0.3173E 03	0.3804E 02
0.6031E 05	0.3006E 00	0.7202E-01	0.2667E 03	0.2318E 01	0.1510E-03	0.7829E 03	0.1059E 04	0.3216E 03	0.4475E 02
0.5025E 05	0.2120E 00	0.4599E-01	0.2715E 03	0.2316E 01	-0.4199E-03	0.7008E 03	0.9307E 03	0.3164E 03	0.3729E 02
0.4924E 05	0.2037E 00	0.4345E-01	0.2709E 03	0.2313E 01	-0.2202E-02	0.6926E 03	0.9178E 03	0.3159E 03	0.3655E 02
0.3822E 05	0.5806E-01	0.1293E-01	0.2788E 03	0.2317E 01	0.2546E-03	0.6016E 03	0.7770E 03	0.3105E 03	0.2858E 02

CHANNEL 1

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.17149E 02	0.37954E 02	-0.37567E-01	0.0	0.29251E 03	0.31729E 03	0.70949E 03	0.94384E 03	0.27502E 03
2	0.17149E 02	0.38036E 02	-0.27981E-01	0.62591E-01	0.29217E 03	0.31696E 03	0.70907E 03	0.94341E 03	0.27654E 03
3	0.17149E 02	0.38036E 02	-0.18413E-01	0.11702E 00	0.29217E 03	0.31696E 03	0.70906E 03	0.94341E 03	0.27806E 03
4	0.17149E 02	0.38025E 02	-0.88809E-02	0.16477E 00	0.29217E 03	0.31695E 03	0.70900E 03	0.94335E 03	0.27959E 03
5	0.17149E 02	0.38036E 02	0.62304E-03	0.20544E 00	0.29211E 03	0.31690E 03	0.70900E 03	0.94335E 03	0.28117E 03
6	0.17149E 02	0.38026E 02	0.10096E-01	0.24197E 00	0.29211E 03	0.31690E 03	0.70897E 03	0.94331E 03	0.28276E 03
7	0.17149E 02	0.38029E 02	0.19538E-01	0.27592E 00	0.29217E 03	0.31696E 03	0.70903E 03	0.94337E 03	0.28432E 03
8	0.17149E 02	0.38036E 02	0.28972E-01	0.30873E 00	0.29217E 03	0.31696E 03	0.70906E 03	0.94341E 03	0.28580E 03
9	0.17149E 02	0.38036E 02	0.38376E-01	0.36877E 00	0.29217E 03	0.31696E 03	0.70906E 03	0.94341E 03	0.28580E 03
10	0.17149E 02	0.38036E 02	0.47753E-01	0.41795E 00	0.29217E 03	0.31696E 03	0.70906E 03	0.94341E 03	0.28580E 03

PRESSURE DROP 2.31729 BAR

INLET	1.64490	CHANNEL	0.67239	RISERS	-0.00000
FRICTION	2.09524	GRAVITY	0.18363	SPACE ACCEL.	0.03842

CHANNEL 2

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.20176E 02	0.44749E 02	-0.29919E-01	0.73823E-01	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.27573E 03
2	0.20176E 02	0.44749E 02	-0.18455E-01	0.13646E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.27755E 03
3	0.20176E 02	0.44749E 02	-0.70365E-02	0.19029E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.27939E 03
4	0.20176E 02	0.44747E 02	0.43382E-02	0.23599E 00	0.29239E 03	0.32156E 03	0.78286E 03	0.10586E 04	0.28127E 03
5	0.20176E 02	0.44735E 02	0.15671E-01	0.27709E 00	0.29243E 03	0.32159E 03	0.78285E 03	0.10585E 04	0.28312E 03
6	0.20176E 02	0.44749E 02	0.26967E-01	0.31344E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.28499E 03
7	0.20176E 02	0.44749E 02	0.38273E-01	0.36780E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.28580E 03
8	0.20176E 02	0.44749E 02	0.49548E-01	0.42598E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.28580E 03
9	0.20176E 02	0.44749E 02	0.60796E-01	0.47296E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.28580E 03
10	0.20176E 02	0.44749E 02	0.72020E-01	0.51170E 00	0.29243E 03	0.32160E 03	0.78290E 03	0.10586E 04	0.28580E 03

PRESSURE DROP 2.31778 BAR

INLET	1.58609	CHANNEL	0.73169	RISERS	-0.00000
FRICTION	2.09791	GRAVITY	0.16622	SPACE ACCEL.	0.05365

CHANNEL 3

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.16813E 02	0.37215E 02	-0.37621E-01	0.0	0.29215E 03	0.31644E 03	0.70094E 03	0.93069E 03	0.27501E 03
2	0.16813E 02	0.37291E 02	-0.28202E-01	0.61433E-01	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.27650E 03
3	0.16813E 02	0.37291E 02	-0.18814E-01	0.11496E 00	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.27799E 03
4	0.16813E 02	0.37281E 02	-0.94566E-02	0.16198E 00	0.29214E 03	0.31644E 03	0.70081E 03	0.93056E 03	0.27949E 03
5	0.16813E 02	0.37281E 02	-0.12690E-03	0.20202E 00	0.29207E 03	0.31638E 03	0.70075E 03	0.93050E 03	0.28106E 03
6	0.16813E 02	0.37292E 02	0.91730E-02	0.23777E 00	0.29207E 03	0.31638E 03	0.70081E 03	0.93056E 03	0.28263E 03
7	0.16813E 02	0.37291E 02	0.18433E-01	0.27119E 00	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.28417E 03
8	0.16813E 02	0.37291E 02	0.27647E-01	0.30126E 00	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.28572E 03
9	0.16813E 02	0.37291E 02	0.36836E-01	0.35980E 00	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.28580E 03
10	0.16813E 02	0.37291E 02	0.45986E-01	0.40941E 00	0.29214E 03	0.31644E 03	0.70086E 03	0.93061E 03	0.28580E 03

PRESSURE DROP 2.31565 BAR

INLET	1.64662	CHANNEL	0.66903	RISERS	0.0
FRICTION	2.09373	GRAVITY	0.18453	SPACE ACCEL.	0.03740

CHANNEL 4

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL

1	0.16477E 02	0.36453E 02	-0.37652E-01	0.0	0.29182E 03	0.31562E 03	0.69238E 03	0.91754E 03	0.27500E 03
2	0.16477E 02	0.36547E 02	-0.28365E-01	0.59711E-01	0.29210E 03	0.31593E 03	0.69265E 03	0.91781E 03	0.27649E 03
3	0.16477E 02	0.36545E 02	-0.19112E-01	0.11100E 00	0.29210E 03	0.31593E 03	0.69265E 03	0.91781E 03	0.27800E 03
4	0.16477E 02	0.36536E 02	-0.99400E-02	0.15557E 00	0.29210E 03	0.31592E 03	0.69261E 03	0.91776E 03	0.27953E 03
5	0.16477E 02	0.36533E 02	-0.86685E-03	0.19307E 00	0.29204E 03	0.31585E 03	0.69254E 03	0.91770E 03	0.28111E 03
6	0.16477E 02	0.36544E 02	0.81112E-02	0.22687E 00	0.29204E 03	0.31586E 03	0.69259E 03	0.91774E 03	0.28269E 03
7	0.16477E 02	0.36532E 02	0.17007E-01	0.25884E 00	0.29210E 03	0.31592E 03	0.69259E 03	0.91774E 03	0.28421E 03
8	0.16477E 02	0.36545E 02	0.25844E-01	0.28797E 00	0.29210E 03	0.31593E 03	0.69265E 03	0.91781E 03	0.28572E 03
9	0.16477E 02	0.36545E 02	0.34653E-01	0.34681E 00	0.29210E 03	0.31593E 03	0.69265E 03	0.91781E 03	0.28580E 03
10	0.16477E 02	0.36545E 02	0.43449E-01	0.39688E 00	0.29210E 03	0.31593E 03	0.69265E 03	0.91781E 03	0.28580E 03

PRESSURE DROP 2.31265 BAR

INLET	1.63967	CHANNEL	0.67298	RISERS	-0.00000
FRICTION	2.08775	GRAVITY	0.18625	SPACE ACCEL.	0.03866

CHANNEL 5

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.12778E 02	0.28267E 02	-0.38102E-01	0.0	0.28762E 03	0.30608E 03	0.59825E 03	0.77286E 03	0.27487E 03
2	0.12778E 02	0.28419E 02	-0.34926E-01	0.0	0.28860E 03	0.30716E 03	0.60008E 03	0.77469E 03	0.27578E 03
3	0.12778E 02	0.28579E 02	-0.31859E-01	0.0	0.28954E 03	0.30820E 03	0.60191E 03	0.77653E 03	0.27665E 03
4	0.12778E 02	0.28500E 02	-0.29017E-01	0.0	0.29033E 03	0.30894E 03	0.60225E 03	0.77686E 03	0.27748E 03
5	0.12778E 02	0.28154E 02	-0.22125E-01	0.0	0.29214E 03	0.31052E 03	0.60215E 03	0.77676E 03	0.27946E 03
6	0.12778E 02	0.28314E 02	-0.15167E-01	0.44223E-01	0.29164E 03	0.31010E 03	0.60214E 03	0.77675E 03	0.28061E 03
7	0.12778E 02	0.28346E 02	-0.81885E-02	0.82041E-01	0.29156E 03	0.31003E 03	0.60223E 03	0.77684E 03	0.28182E 03
8	0.12778E 02	0.28344E 02	-0.11856E-02	0.11724E 00	0.29157E 03	0.31005E 03	0.60223E 03	0.77684E 03	0.28304E 03
9	0.12778E 02	0.28349E 02	0.58515E-02	0.15208E 00	0.29168E 03	0.31016E 03	0.60235E 03	0.77696E 03	0.28421E 03
10	0.12778E 02	0.28341E 02	0.12928E-01	0.18500E 00	0.29172E 03	0.31019E 03	0.60235E 03	0.77696E 03	0.28537E 03

PRESSURE DROP 2.31699 BAR

INLET	1.73687	CHANNEL	0.58012	RISERS	-0.00000
FRICTION	2.08828	GRAVITY	0.21634	SPACE ACCEL.	0.01237

TIME 2.50 TOTAL FLOW 4731.66LT/SEC PRESS.DROP 2.1993
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5119E 05	0.2218E 00	0.5006E-01	0.2635E 03	0.2202E 01	-0.2059E-04	0.7089E 03	0.9437E 03	0.3176E 03	0.3800E 02
0.6026E 05	0.3070E 00	0.7510E-01	0.2588E 03	0.2201E 01	0.4730E-04	0.7827E 03	0.1058E 04	0.3216E 03	0.4471E 02
0.5019E 05	0.2173E 00	0.4825E-01	0.2637E 03	0.2201E 01	0.2839E-04	0.7007E 03	0.9305E 03	0.3167E 03	0.3726E 02
0.4918E 05	0.2128E 00	0.4645E-01	0.2637E 03	0.2198E 01	-0.5028E-03	0.6924E 03	0.9176E 03	0.3159E 03	0.3651E 02
0.3818E 05	0.5980E-01	0.1190E-01	0.2708E 03	0.2201E 01	-0.8592E-04	0.6015E 03	0.7768E 03	0.3102E 03	0.2849E 02

TIME 3.00 TOTAL FLOW 4596.47LT/SEC PRESS.DROP 2.1040
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5118E 05	0.2532E 00	0.5186E-01	0.2524E 03	0.2088E 01	-0.4386E-02	0.7087E 03	0.9435E 03	0.3170E 03	0.3805E 02
0.6021E 05	0.3136E 00	0.7841E-01	0.2512E 03	0.2092E 01	0.8637E-04	0.7825E 03	0.1058E 04	0.3215E 03	0.4467E 02
0.5027E 05	0.2273E 00	0.4963E-01	0.2562E 03	0.2149E 01	0.3290E-01	0.7005E 03	0.9303E 03	0.3166E 03	0.3798E 02
0.4913E 05	0.2185E 00	0.4888E-01	0.2563E 03	0.2091E 01	-0.7151E-05	0.6923E 03	0.9175E 03	0.3162E 03	0.3648E 02
0.3810E 05	0.6163E-01	0.1118E-01	0.2630E 03	0.2090E 01	-0.3159E-04	0.6013E 03	0.7767E 03	0.3102E 03	0.2840E 02

TIME 3.50 TOTAL FLOW 4461.28LT/SEC PRESS.DROP 2.0238
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5114E 05	0.2730E 00	0.5966E-01	0.2471E 03	0.1998E 01	-0.1635E-02	0.7086E 03	0.9433E 03	0.3170E 03	0.3802E 02
0.6016E 05	0.3201E 00	0.8161E-01	0.2446E 03	0.2001E 01	-0.1135E-03	0.7823E 03	0.1058E 04	0.3215E 03	0.4464E 02
0.5013E 05	0.2578E 00	0.5322E-01	0.2465E 03	0.1997E 01	-0.3919E-02	0.7003E 03	0.9302E 03	0.3164E 03	0.3721E 02
0.4922E 05	0.2279E 00	0.5011E-01	0.2498E 03	0.2054E 01	0.3220E-01	0.6921E 03	0.9173E 03	0.3160E 03	0.3715E 02
0.3802E 05	0.7210E-01	0.1163E-01	0.2547E 03	0.1998E 01	-0.3322E-02	0.6012E 03	0.7766E 03	0.3101E 03	0.2828E 02

TIME 4.00 TOTAL FLOW 4326.09LT/SEC PRESS.DROP 1.9082
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5110E 05	0.2813E 00	0.6421E-01	0.2409E 03	0.1911E 01	0.1517E-04	0.7084E 03	0.9432E 03	0.3169E 03	0.3799E 02
0.6011E 05	0.3264E 00	0.8472E-01	0.2381E 03	0.1911E 01	0.2624E-03	0.7821E 03	0.1058E 04	0.3215E 03	0.4460E 02
0.5009E 05	0.2741E 00	0.6056E-01	0.2411E 03	0.1910E 01	-0.9129E-03	0.7002E 03	0.9300E 03	0.3164E 03	0.3718E 02
0.4908E 05	0.2575E 00	0.5336E-01	0.2402E 03	0.1906E 01	-0.3486E-02	0.6919E 03	0.9172E 03	0.3158E 03	0.3643E 02
0.3798E 05	0.8603E-01	0.1598E-01	0.2490E 03	0.1908E 01	-0.9993E-03	0.6011E 03	0.7764E 03	0.3101E 03	0.2825E 02

CHANNEL 1

I	FCW	FI	Q	VF	TSLR	TICL	AVTF	TMAXF	TL
1	0.34298E 02	0.37990E 02	-0.30628E-01	0.69C11E-01	0.29217E 03	0.31693E 03	0.70881E 03	0.94316E 03	0.27562E 03
2	0.34298E 02	0.37912E 02	-0.19903E-01	0.12802E 00	0.29216E 03	0.31688E 03	0.70839E 03	0.94273E 03	0.27732E 03
3	0.34298E 02	0.37912E 02	-0.92295E-02	0.17918E 00	0.29216E 03	0.31688E 03	0.70839E 03	0.94273E 03	0.27903E 03
4	0.34298E 02	0.37908E 02	0.13922E-02	0.22327E 00	0.29214E 03	0.31685E 03	0.70832E 03	0.94267E 03	0.28077E 03
5	0.34298E 02	0.37904E 02	0.11965E-01	0.26196E 00	0.29212E 03	0.31683E 03	0.70832E 03	0.94267E 03	0.28253E 03
6	0.34298E 02	0.37895E 02	0.22481E-01	0.29726E 00	0.29216E 03	0.31686E 03	0.70829E 03	0.94263E 03	0.28426E 03
7	0.34298E 02	0.37906E 02	0.32589E-01	0.33352E 00	0.29216E 03	0.31687E 03	0.70835E 03	0.94269E 03	0.28580E 03
8	0.34298E 02	0.37912E 02	0.43444E-01	0.39400E 00	0.29216E 03	0.31688E 03	0.70839E 03	0.94273E 03	0.28580E 03
9	0.34298E 02	0.37912E 02	0.53849E-01	0.44295E 00	0.29216E 03	0.31688E 03	0.70839E 03	0.94273E 03	0.28580E 03
10	0.34298E 02	0.37912E 02	0.64205E-01	0.48340E 00	0.29216E 03	0.31688E 03	0.70839E 03	0.94273E 03	0.28580E 03

PRESSURE DROP 1.91067 BAR

INLET	1.29899	CHANNEL	0.61168	RISERS	-0.00000
FRICTION	1.70029	GRAVITY	0.17021	SPACE ACCEL.	0.04017

CHANNEL 2

I	FCW	FI	Q	VF	TSLR	TICL	AVTF	TMAXF	TL
1	0.40351E 02	0.44602E 02	-0.28598E-01	0.80749E-01	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.27594E 03
2	0.40351E 02	0.44602E 02	-0.15835E-01	0.14817E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.27797E 03
3	0.40351E 02	0.44602E 02	-0.31347E-02	0.20534E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28002E 03
4	0.40351E 02	0.44596E 02	0.95084E-02	0.25386E 00	0.29241E 03	0.32148E 03	0.78206E 03	0.10578E 04	0.28210E 03
5	0.40351E 02	0.44593E 02	0.22099E-01	0.29657E 00	0.29243E 03	0.32149E 03	0.78205E 03	0.10577E 04	0.28417E 03
6	0.40351E 02	0.44602E 02	0.34695E-01	0.34404E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28580E 03
7	0.40351E 02	0.44602E 02	0.47249E-01	0.41269E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28580E 03
8	0.40351E 02	0.44602E 02	0.59769E-01	0.46659E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28580E 03
9	0.40351E 02	0.44602E 02	0.72257E-01	0.51C03E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28580E 03
10	0.40351E 02	0.44602E 02	0.84717E-01	0.54580E 00	0.29243E 03	0.32150E 03	0.78210E 03	0.10578E 04	0.28580E 03

PRESSURE DROP 1.91145 BAR
INLET 1.26641 CHANNEL 0.64504 RISERS -0.00000
FRICTION 1.70096 GRAVITY 0.16088 SPACE ACCEL. 0.04961

CHANNEL 3

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.33626E 02	0.37183E 02	-0.30859E-01	0.67639E-01	0.29213E 03	0.31637E 03	0.70027E 03	0.93002E 03	0.27558E 03
2	0.33626E 02	0.37170E 02	-0.20350E-01	0.12572E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.27725E 03
3	0.33626E 02	0.37169E 02	-0.99118E-02	0.17610E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.27892E 03
4	0.33626E 02	0.37166E 02	0.43864E-03	0.21971E 00	0.29211E 03	0.31634E 03	0.70014E 03	0.92989E 03	0.28061E 03
5	0.33626E 02	0.37154E 02	0.10686E-01	0.25745E 00	0.29208E 03	0.31630E 03	0.70009E 03	0.92983E 03	0.28232E 03
6	0.33626E 02	0.37160E 02	0.20819E-01	0.29200E 00	0.29213E 03	0.31635E 03	0.70015E 03	0.92989E 03	0.28399E 03
7	0.33626E 02	0.37169E 02	0.30830E-01	0.32278E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.28565E 03
8	0.33626E 02	0.37169E 02	0.40838E-01	0.38023E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.28580E 03
9	0.33626E 02	0.37169E 02	0.50745E-01	0.42950E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.28580E 03
10	0.33626E 02	0.37169E 02	0.60561E-01	0.47020E 00	0.29213E 03	0.31636E 03	0.70019E 03	0.92994E 03	0.28580E 03

PRESSURE DROP 1.90998 BAR
INLET 1.30086 CHANNEL 0.60912 RISERS -0.00000
FRICTION 1.69867 GRAVITY 0.17168 SPACE ACCEL. 0.03963

CHANNEL 4

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.32953E 02	0.36376E 02	-0.31139E-01	0.65786E-01	0.29210E 03	0.31581E 03	0.69173E 03	0.91688E 03	0.27554E 03
2	0.32953E 02	0.36426E 02	-0.21076E-01	0.12137E 00	0.29210E 03	0.31584E 03	0.69200E 03	0.91715E 03	0.27715E 03
3	0.32953E 02	0.36426E 02	-0.11298E-01	0.16863E 00	0.29210E 03	0.31584E 03	0.69200E 03	0.91715E 03	0.27873E 03
4	0.32953E 02	0.36418E 02	-0.17841E-02	0.20934E 00	0.29210E 03	0.31584E 03	0.69196E 03	0.91711E 03	0.28030E 03
5	0.32953E 02	0.36415E 02	0.75240E-02	0.24367E 00	0.29204E 03	0.31578E 03	0.69189E 03	0.91704E 03	0.28189E 03
6	0.32953E 02	0.36404E 02	0.16699E-01	0.27519E 00	0.29209E 03	0.31582E 03	0.69193E 03	0.91708E 03	0.28345E 03
7	0.32953E 02	0.36413E 02	0.25802E-01	0.30389E 00	0.29210E 03	0.31584E 03	0.69193E 03	0.91708E 03	0.28499E 03
8	0.32953E 02	0.36426E 02	0.34988E-01	0.34689E 00	0.29210E 03	0.31584E 03	0.69200E 03	0.91715E 03	0.28580E 03
9	0.32953E 02	0.36426E 02	0.44169E-01	0.39863E 00	0.29210E 03	0.31584E 03	0.69200E 03	0.91715E 03	0.28580E 03
10	0.32953E 02	0.36426E 02	0.53363E-01	0.44187E 00	0.29210E 03	0.31584E 03	0.69200E 03	0.91715E 03	0.28580E 03

PRESSURE DROP 1.90642 BAR
INLET 1.29130 CHANNEL 0.61512 RISERS -0.00000
FRICTION 1.69002 GRAVITY 0.17511 SPACE ACCEL. 0.04129

CHANNEL 5

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.25556E 02	0.27957E 02	-0.37813E-01	0.0	0.28876E 03	0.30701E 03	0.59775E 03	0.77235E 03	0.27496E 03
2	0.25556E 02	0.28093E 02	-0.34379E-01	0.0	0.28981E 03	0.30815E 03	0.59957E 03	0.77419E 03	0.27594E 03
3	0.25556E 02	0.28238E 02	-0.31118E-01	0.0	0.29082E 03	0.30926E 03	0.60140E 03	0.77602E 03	0.27688E 03
4	0.25556E 02	0.28145E 02	-0.28034E-01	0.0	0.29165E 03	0.31004E 03	0.60174E 03	0.77635E 03	0.27776E 03
5	0.25556E 02	0.28213E 02	-0.20353E-01	0.50605E-01	0.29171E 03	0.31010E 03	0.60164E 03	0.77624E 03	0.27897E 03
6	0.25556E 02	0.28211E 02	-0.12791E-01	0.95192E-01	0.29171E 03	0.31010E 03	0.60163E 03	0.77624E 03	0.28018E 03
7	0.25556E 02	0.28248E 02	-0.53753E-02	0.13201E 00	0.29161E 03	0.31002E 03	0.60172E 03	0.77633E 03	0.28144E 03
8	0.25556E 02	0.28243E 02	0.18770E-02	0.16437E 00	0.29159E 03	0.31001E 03	0.60172E 03	0.77633E 03	0.28269E 03
9	0.25556E 02	0.28243E 02	0.89867E-02	0.19479E 00	0.29166E 03	0.31008E 03	0.60184E 03	0.77644E 03	0.28390E 03
10	0.25556E 02	0.28248E 02	0.15982E-01	0.22330E 00	0.29171E 03	0.31013E 03	0.60184E 03	0.77644E 03	0.28506E 03

PRESSURE DROP 1.90834 BAR

INLET	1.38805	CHANNEL	0.52030	RISERS	-0.00000
FRICTION	1.66317	GRAVITY	0.21056	SPACE ACCEL.	0.01461

TIME 4.50 TOTAL FLOW 4190.9CLT/SEC PRESS.DROP 1.8016
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDRCP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5106E 05	0.2888E 00	0.6763E-01	0.2328E 03	0.1802E 01	0.9357E-04	0.7082E 03	0.9430E 03	0.3169E 03	0.3796E 02
0.6006E 05	0.3343E 00	0.8858E-01	0.2299E 03	0.1803E 01	0.1274E-03	0.7819E 03	0.1058E 04	0.3215E 03	0.4457E 02
0.5005E 05	0.2832E 00	0.6514E-01	0.2331E 03	0.1802E 01	-0.4165E-04	0.7000E 03	0.9299E 03	0.3164E 03	0.3715E 02
0.4904E 05	0.2755E 00	0.6121E-01	0.2331E 03	0.1801E 01	-0.1141E-02	0.6918E 03	0.9170E 03	0.3158E 03	0.3640E 02
0.3791E 05	0.9024E-01	0.1907E-01	0.2412E 03	0.1803E 01	-0.1084E-03	0.6010E 03	0.7763E 03	0.3104E 03	0.2823E 02

TIME 5.00 TOTAL FLOW 4055.71LT/SEC PRESS.DROP 1.7070
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDRCP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5103E 05	0.2962E 00	0.7108E-01	0.2256E 03	0.1709E 01	0.5021E-04	0.7081E 03	0.9428E 03	0.3169E 03	0.3793E 02
0.6002E 05	0.3422E 00	0.9278E-01	0.2225E 03	0.1708E 01	0.1015E-03	0.7817E 03	0.1057E 04	0.3215E 03	0.4454E 02
0.5002E 05	0.2907E 00	0.6869E-01	0.2259E 03	0.1708E 01	0.4155E-04	0.6999E 03	0.9297E 03	0.3163E 03	0.3713E 02
0.4901E 05	0.2850E 00	0.6613E-01	0.2260E 03	0.1707E 01	-0.1080E-03	0.6916E 03	0.9169E 03	0.3158E 03	0.3637E 02
0.3788E 05	0.1125E 00	0.2186E-01	0.2319E 03	0.1704E 01	-0.2486E-02	0.6009E 03	0.7762E 03	0.3101E 03	0.2821E 02

TIME 5.50 TOTAL FLOW 3920.52LT/SEC PRESS.DROP 1.6115
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDRCP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5099E 05	0.3038E 00	0.7476E-01	0.2179E 03	0.1612E 01	0.1794E-04	0.7079E 03	0.9427E 03	0.3169E 03	0.3791E 02
0.5998E 05	0.3502E 00	0.9724E-01	0.2149E 03	0.1612E 01	0.1123E-03	0.7816E 03	0.1057E 04	0.3214E 03	0.4451E 02
0.4998E 05	0.2983E 00	0.7227E-01	0.2181E 03	0.1612E 01	0.2594E-04	0.6997E 03	0.9296E 03	0.3163E 03	0.3710E 02
0.4897E 05	0.2928E 00	0.6983E-01	0.2184E 03	0.1612E 01	0.2888E-04	0.6915E 03	0.9167E 03	0.3158E 03	0.3635E 02
0.3782E 05	0.1240E 00	0.2715E-01	0.2247E 03	0.1610E 01	-0.5391E-03	0.6007E 03	0.7761E 03	0.3103E 03	0.2819E 02

TIME 6.00 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5236
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDRCP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5096E 05	0.3112E 00	0.7859E-01	0.2107E 03	0.1524E 01	0.9491E-04	0.7078E 03	0.9426E 03	0.3169E 03	0.3788E 02
0.5994E 05	0.3580E 00	0.1019E 00	0.2078E 03	0.1525E 01	0.8990E-04	0.7814E 03	0.1057E 04	0.3214E 03	0.4448E 02
0.4995E 05	0.3058E 00	0.7603E-01	0.2110E 03	0.1524E 01	0.8918E-04	0.6996E 03	0.9294E 03	0.3163E 03	0.3708E 02
0.4894E 05	0.3004E 00	0.7349E-01	0.2113E 03	0.1524E 01	0.7808E-04	0.6914E 03	0.9166E 03	0.3158E 03	0.3632E 02
0.3779E 05	0.1457E 00	0.2967E-01	0.2154E 03	0.1521E 01	-0.3057E-02	0.6006E 03	0.7760E 03	0.3101E 03	0.2817E 02

CHANNEL 1

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.51448E 02	0.37881E 02	-0.29126E-01	0.76801E-01	0.29216E 03	0.31685E 03	0.70822E 03	0.94256E 03	0.27586E 03

2	0.51448E 02	0.37805E 02	-0.16928E-01	0.14131E 00	0.29216E 03	0.31680E 03	0.70779E 03	0.94213E 03	0.27780E 03
3	0.51448E 02	0.37805E 02	-0.48082E-02	0.19639E 00	0.29216E 03	0.31680E 03	0.70779E 03	0.94213E 03	0.27974E 03
4	0.51448E 02	0.37797E 02	0.72363E-02	0.24313E 00	0.29213E 03	0.31677E 03	0.70773E 03	0.94206E 03	0.28173E 03
5	0.51448E 02	0.37793E 02	0.19208E-01	0.28474E 00	0.29216E 03	0.31679E 03	0.70773E 03	0.94206E 03	0.28369E 03
6	0.51448E 02	0.37788E 02	0.31113E-01	0.32137E 00	0.29216E 03	0.31679E 03	0.70770E 03	0.94203E 03	0.28566E 03
7	0.51448E 02	0.37798E 02	0.43052E-01	0.38873E 00	0.29216E 03	0.31680E 03	0.70775E 03	0.94209E 03	0.28580E 03
8	0.51448E 02	0.37805E 02	0.54942E-01	0.44429E 00	0.29216E 03	0.31680E 03	0.70779E 03	0.94213E 03	0.28580E 03
9	0.51448E 02	0.37805E 02	0.66788E-01	0.48917E 00	0.29216E 03	0.31680E 03	0.70779E 03	0.94213E 03	0.28580E 03
10	0.51448E 02	0.37805E 02	0.78593E-01	0.52621E 00	0.29216E 03	0.31680E 03	0.70779E 03	0.94213E 03	0.28580E 03

PRESSURE DROP 1.52429 BAR

INLET	0.99574	CHANNEL	0.52855	RISERS	-0.00000
FRICTION	1.32378	GRAVITY	0.16402	SPACE ACCEL.	0.03649

CHANNEL 2

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.60527E 02	0.44475E 02	-0.26786E-01	0.89853E-01	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.27623E 03
2	0.60527E 02	0.44475E 02	-0.12237E-01	0.16334E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.27855E 03
3	0.60527E 02	0.44479E 02	0.22179E-02	0.22431E 00	0.29241E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28089E 03
4	0.60527E 02	0.44468E 02	0.16583E-01	0.27620E 00	0.29242E 03	0.32141E 03	0.78136E 03	0.10571E 04	0.28324E 03
5	0.60527E 02	0.44466E 02	0.30865E-01	0.32070E 00	0.29242E 03	0.32141E 03	0.78135E 03	0.10570E 04	0.28560E 03
6	0.60527E 02	0.44475E 02	0.45179E-01	0.39921E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28580E 03
7	0.60527E 02	0.44475E 02	0.59431E-01	0.46194E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28580E 03
8	0.60527E 02	0.44475E 02	0.73630E-01	0.51102E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28580E 03
9	0.60527E 02	0.44475E 02	0.87782E-01	0.55049E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28580E 03
10	0.60527E 02	0.44475E 02	0.10189E 00	0.58291E 00	0.29242E 03	0.32141E 03	0.78140E 03	0.10571E 04	0.28580E 03

PRESSURE DROP 1.52477 BAR

INLET	0.96734	CHANNEL	0.55744	RISERS	-0.00000
FRICTION	1.32594	GRAVITY	0.15435	SPACE ACCEL.	0.04449

CHANNEL 3

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.50439E 02	0.37076E 02	-0.29404E-01	0.75216E-01	0.29213E 03	0.31630E 03	0.69968E 03	0.92943E 03	0.27581E 03
2	0.50439E 02	0.37063E 02	-0.17463E-01	0.13871E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.27771E 03
3	0.50439E 02	0.37063E 02	-0.55971E-02	0.19307E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.27962E 03
4	0.50439E 02	0.37058E 02	0.61941E-02	0.23926E 00	0.29210E 03	0.31625E 03	0.69955E 03	0.92930E 03	0.28156E 03
5	0.50439E 02	0.37043E 02	0.17912E-01	0.28051E 00	0.29213E 03	0.31627E 03	0.69950E 03	0.92924E 03	0.28347E 03
6	0.50439E 02	0.37054E 02	0.29568E-01	0.31690E 00	0.29213E 03	0.31628E 03	0.69956E 03	0.92930E 03	0.28540E 03
7	0.50439E 02	0.37063E 02	0.41255E-01	0.37923E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.28580E 03
8	0.50439E 02	0.37063E 02	0.52891E-01	0.43559E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.28580E 03
9	0.50439E 02	0.37063E 02	0.64481E-01	0.48116E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.28580E 03
10	0.50439E 02	0.37063E 02	0.76031E-01	0.51878E 00	0.29213E 03	0.31629E 03	0.69961E 03	0.92935E 03	0.28580E 03

PRESSURE DROP 1.52421 BAR

INLET	0.99859	CHANNEL	0.52563	RISERS	-0.00000
FRICTION	1.32350	GRAVITY	0.16513	SPACE ACCEL.	0.03558

CHANNEL 4

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.49436E 02	0.36273E 02	-0.29681E-01	0.73633E-01	0.29209E 03	0.31574E 03	0.69116E 03	0.91630E 03	0.27577E 03
2	0.49436E 02	0.36323E 02	-0.17954E-01	0.13611E 00	0.29210E 03	0.31577E 03	0.69143E 03	0.91657E 03	0.27763E 03

3	0.49430E 02	0.36321E 02	-0.63817E-02	0.18574E 00	0.29210E 03	0.31577E 03	0.69143E 03	0.91657E 03	0.27949E 03
4	0.49430E 02	0.36319E 02	0.51586E-02	0.23541E 00	0.29206E 03	0.31574E 03	0.69138E 03	0.91653E 03	0.28139E 03
5	0.49430E 02	0.36301E 02	0.16628E-01	0.27627E 00	0.29209E 03	0.31576E 03	0.69131E 03	0.91646E 03	0.28326E 03
6	0.49430E 02	0.36310E 02	0.28037E-01	0.31237E 00	0.29209E 03	0.31576E 03	0.69136E 03	0.91650E 03	0.28515E 03
7	0.49430E 02	0.36310E 02	0.39466E-01	0.36943E 00	0.29209E 03	0.31576E 03	0.69136E 03	0.91650E 03	0.28580E 03
8	0.49430E 02	0.36321E 02	0.50849E-01	0.42662E 00	0.29210E 03	0.31577E 03	0.69143E 03	0.91657E 03	0.28580E 03
9	0.49430E 02	0.36321E 02	0.62187E-01	0.47289E 00	0.29210E 03	0.31577E 03	0.69143E 03	0.91657E 03	0.28580E 03
10	0.49430E 02	0.36321E 02	0.73486E-01	0.51110E 00	0.29210E 03	0.31577E 03	0.69143E 03	0.91657E 03	0.28580E 03

PRESSURE DROP 1.52419 BAR

INLET	1.00147	CHANNEL	0.52272	RISERS	-0.00000
FRICTION	1.32327	GRAVITY	0.16626	SPACE ACCEL.	0.03467

CHANNEL 5

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.38334E 02	0.27554E 02	-0.37421E-01	0.0	0.29034E 03	0.30834E 03	0.59730E 03	0.77190E 03	0.27507E 03
2	0.38334E 02	0.27669E 02	-0.33645E-01	0.0	0.29149E 03	0.30957E 03	0.59913E 03	0.77374E 03	0.27615E 03
3	0.38334E 02	0.28088E 02	-0.25165E-01	0.53689E-01	0.29170E 03	0.31001E 03	0.60095E 03	0.77557E 03	0.27751E 03
4	0.38334E 02	0.28148E 02	-0.17119E-01	0.98243E-01	0.29171E 03	0.31005E 03	0.60129E 03	0.77590E 03	0.27883E 03
5	0.38334E 02	0.28132E 02	-0.93433E-02	0.13674E 00	0.29171E 03	0.31004E 03	0.60119E 03	0.77580E 03	0.28013E 03
6	0.38334E 02	0.28145E 02	-0.16549E-02	0.16975E 00	0.29164E 03	0.30999E 03	0.60119E 03	0.77579E 03	0.28147E 03
7	0.38334E 02	0.28154E 02	0.60577E-02	0.20014E 00	0.29164E 03	0.30999E 03	0.60128E 03	0.77588E 03	0.28283E 03
8	0.38334E 02	0.28145E 02	0.13834E-01	0.23022E 00	0.29171E 03	0.31005E 03	0.60128E 03	0.77588E 03	0.28414E 03
9	0.38334E 02	0.28167E 02	0.21689E-01	0.25839E 00	0.29171E 03	0.31007E 03	0.60139E 03	0.77599E 03	0.28547E 03
10	0.38334E 02	0.28167E 02	0.29670E-01	0.31010E 00	0.29171E 03	0.31007E 03	0.60139E 03	0.77599E 03	0.28580E 03

PRESSURE DROP 1.52062 BAR

INLET	1.04157	CHANNEL	0.47905	RISERS	-0.00000
FRICTION	1.30144	GRAVITY	0.19822	SPACE ACCEL.	0.02096

TIME 6.50 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5188
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5092E 05	0.3156E 00	0.8117E-01	0.2106E 03	0.1520E 01	-0.4493E-03	0.7077E 03	0.9424E 03	0.3168E 03	0.3786E 02
0.5990E 05	0.3622E 00	0.1049E 00	0.2077E 03	0.1519E 01	-0.1991E-03	0.7812E 03	0.1057E 04	0.3214E 03	0.4445E 02
0.4992E 05	0.3100E 00	0.7859E-01	0.2108E 03	0.1519E 01	-0.3703E-03	0.6995E 03	0.9293E 03	0.3163E 03	0.3705E 02
0.4891E 05	0.3046E 00	0.7599E-01	0.2111E 03	0.1519E 01	-0.3710E-03	0.6912E 03	0.9164E 03	0.3158E 03	0.3630E 02
0.3779E 05	0.1612E 00	0.3485E-01	0.2160E 03	0.1517E 01	-0.1344E-02	0.6005E 03	0.7759E 03	0.3101E 03	0.2815E 02

TIME 7.00 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5169
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5089E 05	0.3167E 00	0.8210E-01	0.2105E 03	0.1517E 01	-0.8843E-04	0.7075E 03	0.9423E 03	0.3168E 03	0.3783E 02
0.5986E 05	0.3632E 00	0.1059E 00	0.2076E 03	0.1516E 01	-0.8651E-04	0.7811E 03	0.1057E 04	0.3214E 03	0.4442E 02
0.4989E 05	0.3110E 00	0.7948E-01	0.2108E 03	0.1517E 01	-0.7020E-04	0.6993E 03	0.9292E 03	0.3163E 03	0.3703E 02
0.4888E 05	0.3056E 00	0.7687E-01	0.2111E 03	0.1517E 01	-0.7072E-04	0.6911E 03	0.9163E 03	0.3157E 03	0.3628E 02
0.3777E 05	0.1655E 00	0.3754E-01	0.2162E 03	0.1516E 01	-0.2864E-03	0.6004E 03	0.7758E 03	0.3100E 03	0.2813E 02

TIME 7.50 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5165
PRESS 70.000 HINLET 1200.CO TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5086E 05	C.3168E 00	C.8225E-01	0.2105E 03	0.1517E 01	-0.1785E-04	0.7074E 03	0.9422E 03	0.3168E 03	0.3781E 02
0.5983E 05	0.3633E 00	0.1061E 00	0.2076E 03	0.1516E 01	-0.1446E-04	0.7809E 03	0.1057E 04	0.3214E 03	0.4440E 02
0.4986E 05	0.3111E 00	0.7963E-01	0.2108E 03	0.1517E 01	-0.1429E-04	0.6992E 03	0.9290E 03	0.3162E 03	0.3701E 02
0.4885E 05	C.3057E 00	0.7702E-01	0.2111E 03	0.1517E 01	-0.1672E-04	0.6910E 03	0.9162E 03	0.3157E 03	0.3625E 02
0.3775E 05	0.1661E 00	0.3807E-01	0.2162E 03	0.1516E 01	-0.2898E-04	0.6003E 03	0.7757E 03	0.3100E 03	0.2811E 02

TIME 8.00 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5163
PRESS 70.000 HINLET 1200.CO TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5083E 05	0.3167E 00	C.8221E-01	0.2105E 03	0.1517E 01	0.8059E-06	0.7073E 03	0.9420E 03	0.3168E 03	0.3779E 02
0.5980E 05	0.3631E 00	C.1060E 00	0.2076E 03	0.1516E 01	-0.1585E-05	0.7808E 03	0.1056E 04	0.3213E 03	0.4437E 02
0.4983E 05	0.3110E 00	0.7960E-01	0.2108E 03	0.1517E 01	-0.2181E-05	0.6991E 03	0.9289E 03	0.3162E 03	0.3699E 02
0.4882E 05	0.3056E 00	0.7699E-01	0.2111E 03	0.1517E 01	0.1026E-05	0.6909E 03	0.9161E 03	0.3157E 03	0.3623E 02
0.3773E 05	0.1661E 00	0.3811E-01	0.2162E 03	0.1516E 01	-0.2167E-05	0.6003E 03	0.7756E 03	0.3100E 03	0.2810E 02

CHANNEL 1

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.68597E 02	0.37788E 02	-0.29051E-01	0.77112E-01	0.29216E 03	0.31679E 03	0.70770E 03	0.94203E 03	0.27587E 03
2	0.68597E 02	0.37712E 02	-0.16691E-01	0.14217E 00	0.29215E 03	0.31674E 03	0.70727E 03	0.94160E 03	0.27784E 03
3	0.68597E 02	0.37711E 02	-0.43258E-02	0.19790E 00	0.29215E 03	0.31674E 03	0.70727E 03	0.94160E 03	0.27983E 03
4	0.68597E 02	0.37706E 02	0.80310E-02	0.24538E 00	0.29213E 03	0.31671E 03	0.70721E 03	0.94154E 03	0.28188E 03
5	0.68597E C2	0.37701E 02	0.2C391E-01	0.28768E 00	0.29215E 03	0.31673E 03	0.70721E 03	0.94154E 03	0.28391E 03
6	0.68597E C2	0.37695E 02	0.32749E-01	0.32872E 00	0.29215E 03	0.31673E 03	0.70718E 03	0.94151E 03	0.28580E 03
7	0.68597E 02	0.37706E 02	0.45112E-01	0.35894E 00	0.29215E 03	0.31673E 03	0.70724E 03	0.94157E 03	0.28580E 03
8	0.68597E 02	0.37711E 02	0.57478E-01	0.45425E 00	0.29215E 03	0.31674E 03	0.70727E 03	0.94160E 03	0.28580E 03
9	0.68597E 02	0.37711E 02	0.69843E-01	0.49892E 00	0.29215E 03	0.31674E 03	0.70727E 03	0.94160E 03	0.28580E 03
10	0.68597E 02	0.37711E 02	0.82210E-01	0.53576E 00	0.29215E 03	0.31674E 03	0.70727E 03	0.94160E 03	0.28580E 03

PRESSURE DROP 1.51681 BAR

INLET	0.99409	CHANNEL	0.52273	RISERS	-0.00000
FRICTION	1.31894	GRAVITY	0.16289	SPACE ACCEL.	0.03499

CHANNEL 2

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.807C2E 02	0.44369E 02	-0.26695E-01	0.90215E-01	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.27624E 03
2	0.807C2E 02	0.44369E 02	-0.11953E-01	0.16431E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.27860E 03
3	0.807C2E 02	0.44371E C2	0.279C5E-02	0.22588E C0	0.29241E 03	0.32133E 03	0.78080E 03	0.10565E 04	0.28100E 03
4	0.807C2E 02	0.44361E 02	0.17532E-01	0.27847E 00	0.29242E 03	0.32133E 03	0.78076E 03	0.10564E 04	0.28342E 03
5	0.807C2E 02	0.44359E 02	0.32274E-01	0.32531E 00	0.29242E 03	0.32133E 03	0.78075E 03	0.10564E 04	0.28580E 03
6	0.807C2E 02	0.44369E 02	0.47020E-01	0.40796E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.28580E 03
7	0.807C2E 02	0.44369E 02	0.61766E-01	0.47042E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.28580E 03
8	0.807C2E 02	0.44369E 02	0.76514E-01	0.51928E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.28580E 03
9	0.807C2E 02	0.44369E 02	0.91262E-01	0.55854E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.28580E 03
10	0.807C2E 02	0.44369E 02	0.106C1E 00	0.59C78E 00	0.29242E 03	0.32134E 03	0.78080E 03	0.10565E 04	0.28580E 03

PRESSURE DROP 1.51569 BAR

INLET	0.96574	CHANNEL	0.54996	RISERS	-0.00000
FRICTION	1.31982	GRAVITY	0.15329	SPACE ACCEL.	0.04258

CHANNEL 3

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.67252E 02	0.36987E 02	-0.29330E-01	0.75524E-01	0.29212E 03	0.31623E 03	0.69918E 03	0.92892E 03	0.27583E 03
2	0.67252E 02	0.36974E 02	-0.17230E-01	0.13956E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.27775E 03
3	0.67252E 02	0.36973E 02	-0.51281E-02	0.19457E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.27970E 03
4	0.67252E 02	0.36969E 02	0.69742E-02	0.24144E 00	0.29209E 03	0.31619E 03	0.69905E 03	0.92878E 03	0.28171E 03
5	0.67252E 02	0.36953E 02	0.19072E-01	0.28338E 00	0.29212E 03	0.31621E 03	0.69900E 03	0.92873E 03	0.28370E 03
6	0.67252E 02	0.36964E 02	0.31175E-01	0.32045E 00	0.29212E 03	0.31622E 03	0.69906E 03	0.92879E 03	0.28571E 03
7	0.67252E 02	0.36973E 02	0.43280E-01	0.38965E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.28580E 03
8	0.67252E 02	0.36973E 02	0.55385E-01	0.44577E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.28580E 03
9	0.67252E 02	0.36973E 02	0.67491E-01	0.49113E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.28580E 03
10	0.67252E 02	0.36973E 02	0.79598E-01	0.52856E 00	0.29212E 03	0.31622E 03	0.69910E 03	0.92884E 03	0.28580E 03

PRESSURE DROP 1.51660 BAR

INLET	0.99693	CHANNEL	0.51968	RISERS	-0.00000
FRICTION	1.31844	GRAVITY	0.16406	SPACE ACCEL.	0.03410

CHANNEL 4

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.65907E 02	0.36184E 02	-0.29610E-01	0.73934E-01	0.29209E 03	0.31568E 03	0.69066E 03	0.91580E 03	0.27578E 03
2	0.65907E 02	0.36234E 02	-0.17768E-01	0.13694E 00	0.29209E 03	0.31571E 03	0.69093E 03	0.91607E 03	0.27767E 03
3	0.65907E 02	0.36233E 02	-0.59242E-02	0.19122E 00	0.29209E 03	0.31571E 03	0.69093E 03	0.91607E 03	0.27958E 03
4	0.65907E 02	0.36231E 02	0.59200E-02	0.23751E 00	0.29206E 03	0.31568E 03	0.69089E 03	0.91603E 03	0.28153E 03
5	0.65907E 02	0.36214E 02	0.17760E-01	0.27908E 00	0.29209E 03	0.31570E 03	0.69082E 03	0.91596E 03	0.28348E 03
6	0.65907E 02	0.36222E 02	0.29603E-01	0.31588E 00	0.29209E 03	0.31570E 03	0.69086E 03	0.91600E 03	0.28545E 03
7	0.65907E 02	0.36222E 02	0.41446E-01	0.38000E 00	0.29209E 03	0.31570E 03	0.69086E 03	0.91600E 03	0.28580E 03
8	0.65907E 02	0.36233E 02	0.53292E-01	0.43697E 00	0.29209E 03	0.31571E 03	0.69093E 03	0.91607E 03	0.28580E 03
9	0.65907E 02	0.36233E 02	0.65140E-01	0.48305E 00	0.29209E 03	0.31571E 03	0.69093E 03	0.91607E 03	0.28580E 03
10	0.65907E 02	0.36233E 02	0.76987E-01	0.52109E 00	0.29209E 03	0.31571E 03	0.69093E 03	0.91607E 03	0.28580E 03

PRESSURE DROP 1.51663 BAR

INLET	0.99981	CHANNEL	0.51681	RISERS	-0.00000
FRICTION	1.31824	GRAVITY	0.16518	SPACE ACCEL.	0.03320

CHANNEL 5

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.51111E 02	0.27607E 02	-0.37399E-01	0.0	0.29033E 03	0.30833E 03	0.59693E 03	0.77151E 03	0.27507E 03
2	0.51111E 02	0.27725E 02	-0.33574E-01	0.0	0.29149E 03	0.30957E 03	0.59875E 03	0.77334E 03	0.27617E 03
3	0.51111E 02	0.28015E 02	-0.24635E-01	0.57153E-01	0.29170E 03	0.30996E 03	0.60057E 03	0.77518E 03	0.27759E 03
4	0.51111E 02	0.28079E 02	-0.15675E-01	0.10773E 00	0.29170E 03	0.31001E 03	0.60091E 03	0.77551E 03	0.27902E 03
5	0.51111E 02	0.28064E 02	-0.67185E-02	0.15253E 00	0.29170E 03	0.30999E 03	0.60081E 03	0.77541E 03	0.28046E 03
6	0.51111E 02	0.28076E 02	0.22432E-02	0.19072E 00	0.29162E 03	0.30992E 03	0.60080E 03	0.77540E 03	0.28198E 03
7	0.51111E 02	0.28084E 02	0.11208E-01	0.22636E 00	0.29167E 03	0.30997E 03	0.60089E 03	0.77549E 03	0.28347E 03
8	0.51111E 02	0.28078E 02	0.20171E-01	0.25942E 00	0.29170E 03	0.31001E 03	0.60089E 03	0.77549E 03	0.28495E 03
9	0.51111E 02	0.28098E 02	0.29139E-01	0.30510E 00	0.29170E 03	0.31002E 03	0.60100E 03	0.77561E 03	0.28580E 03
10	0.51111E 02	0.28098E 02	0.38106E-01	0.36201E 00	0.29170E 03	0.31002E 03	0.60100E 03	0.77561E 03	0.28580E 03

PRESSURE DROP 1.51567 BAR

INLET	1.04913	CHANNEL	0.46654	RISERS	-0.00000
FRICTION	1.30331	GRAVITY	0.19401	SPACE ACCEL.	0.01835

TIME 8.50 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5162
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5080E 05	0.3165E 00	0.8214E-01	0.2105E 03	0.1517E 01	-0.3555E-06	0.7072E 03	0.9419E 03	0.3168E 03	0.3777E 02
0.5976E 05	0.3630E 00	0.1059E 00	0.2076E 03	0.1516E 01	0.3972E-05	0.7807E 03	0.1056E 04	0.3213E 03	0.4435E 02
0.4980E 05	0.3109E 00	0.7953E-01	0.2108E 03	0.1517E 01	0.1524E-06	0.6990E 03	0.9288E 03	0.3162E 03	0.3697E 02
0.4879E 05	0.3054E 00	0.7693E-01	0.2111E 03	0.1517E 01	-0.4368E-06	0.6908E 03	0.9160E 03	0.3157E 03	0.3621E 02
0.3771E 05	0.1660E 00	0.3807E-01	0.2162E 03	0.1516E 01	-0.4402E-06	0.6002E 03	0.7755E 03	0.3100E 03	0.2808E 02

TIME 9.00 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5162
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5078E 05	0.3164E 00	0.8208E-01	0.2105E 03	0.1517E 01	-0.1659E-06	0.7071E 03	0.9418E 03	0.3168E 03	0.3775E 02
0.5973E 05	0.3628E 00	0.1059E 00	0.2076E 03	0.1515E 01	0.2783E-05	0.7805E 03	0.1056E 04	0.3213E 03	0.4432E 02
0.4977E 05	0.3107E 00	0.7947E-01	0.2108E 03	0.1516E 01	0.1023E-05	0.6989E 03	0.9287E 03	0.3162E 03	0.3695E 02
0.4877E 05	0.3053E 00	0.7686E-01	0.2111E 03	0.1516E 01	-0.1354E-07	0.6907E 03	0.9158E 03	0.3157E 03	0.3620E 02
0.3769E 05	0.1659E 00	0.3803E-01	0.2162E 03	0.1516E 01	-0.5079E-06	0.6001E 03	0.7754E 03	0.3100E 03	0.2807E 02

TIME 9.50 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5161
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5075E 05	0.3162E 00	0.8201E-01	0.2105E 03	0.1517E 01	-0.2844E-06	0.7070E 03	0.9417E 03	0.3167E 03	0.3773E 02
0.5970E 05	0.3627E 00	0.1058E 00	0.2076E 03	0.1515E 01	0.4930E-05	0.7804E 03	0.1056E 04	0.3213E 03	0.4430E 02
0.4975E 05	0.3106E 00	0.7941E-01	0.2108E 03	0.1516E 01	0.4503E-06	0.6988E 03	0.9286E 03	0.3162E 03	0.3693E 02
0.4874E 05	0.3052E 00	0.7680E-01	0.2111E 03	0.1516E 01	0.2512E-05	0.6906E 03	0.9157E 03	0.3157E 03	0.3618E 02
0.3767E 05	0.1658E 00	0.3799E-01	0.2162E 03	0.1516E 01	-0.4064E-07	0.6000E 03	0.7753E 03	0.3100E 03	0.2805E 02

TIME 10.00 TOTAL FLOW 3785.33LT/SEC PRESS.DROP 1.5160
PRESS 70.000 HINLET 1200.00 TINLET 273.918 TSAT 285.800

THF	AVF	XOUT	VINLET	PDROP	CHECK	AFT	TFMAX	TCMAX	FIMAX
0.5073E 05	0.3161E 00	0.8195E-01	0.2105E 03	0.1516E 01	-0.1270E-05	0.7069E 03	0.9416E 03	0.3167E 03	0.3771E 02
0.5967E 05	0.3625E 00	0.1057E 00	0.2076E 03	0.1515E 01	-0.6433E-07	0.7803E 03	0.1056E 04	0.3213E 03	0.4428E 02
0.4973E 05	0.3105E 00	0.7935E-01	0.2108E 03	0.1516E 01	-0.1260E-05	0.6987E 03	0.9285E 03	0.3162E 03	0.3691E 02
0.4872E 05	0.3050E 00	0.7674E-01	0.2111E 03	0.1516E 01	0.1141E-05	0.6905E 03	0.9156E 03	0.3157E 03	0.3616E 02
0.3765E 05	0.1658E 00	0.3796E-01	0.2162E 03	0.1515E 01	-0.1761E-06	0.5999E 03	0.7753E 03	0.3100E 03	0.2804E 02

CHANNEL 1

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.85746E 02	0.37710E 02	-0.29077E-01	0.76565E-01	0.29215E 03	0.31674E 03	0.70726E 03	0.94159E 03	0.27587E 03
2	0.85746E 02	0.37635E 02	-0.16743E-01	0.14192E 00	0.29215E 03	0.31668E 03	0.70684E 03	0.94116E 03	0.27783E 03

3	0.85746E 02	0.37635E 02	-0.44079E-02	0.19758E 00	0.29215E 03	0.31668E 03	0.70684E 03	0.94116E 03	0.27982E 03
4	0.85746E 02	0.37630E 02	0.79275E-02	0.24499E 00	0.29212E 03	0.31665E 03	0.70678E 03	0.94110E 03	0.28186E 03
5	0.85746E 02	0.37624E 02	0.20262E-01	0.28726E 00	0.29215E 03	0.31668E 03	0.70678E 03	0.94110E 03	0.28389E 03
6	0.85746E 02	0.37619E 02	0.32594E-01	0.32772E 00	0.29215E 03	0.31667E 03	0.70675E 03	0.94106E 03	0.28580E 03
7	0.85746E 02	0.37630E 02	0.44931E-01	0.36804E 00	0.29215E 03	0.31668E 03	0.70680E 03	0.94112E 03	0.28580E 03
8	0.85746E 02	0.37635E 02	0.57276E-01	0.45342E 00	0.29215E 03	0.31668E 03	0.70684E 03	0.94116E 03	0.28580E 03
9	0.85746E 02	0.37635E 02	0.69610E-01	0.49816E 00	0.29215E 03	0.31668E 03	0.70684E 03	0.94116E 03	0.28580E 03
10	0.85746E 02	0.37635E 02	0.81951E-01	0.53506E 00	0.29215E 03	0.31668E 03	0.70684E 03	0.94116E 03	0.28580E 03

PRESSURE DROP 1.51642 BAR

INLET	0.99409	CHANNEL	0.52233	RISERS	-0.00000
FRICTION	1.31852	GRAVITY	0.16301	SPACE ACCEL.	0.03490

CHANNEL 2

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.10088E 03	0.44279E 02	-0.26725E-01	0.90048E-01	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.27624E 03
2	0.10088E 03	0.44279E 02	-0.12014E-01	0.16403E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.27859E 03
3	0.10088E 03	0.44279E 02	0.26989E-02	0.22553E 00	0.29240E 03	0.32127E 03	0.78029E 03	0.10560E 04	0.28099E 03
4	0.10088E 03	0.44272E 02	0.17410E-01	0.27807E 00	0.29241E 03	0.32127E 03	0.78025E 03	0.10559E 04	0.28340E 03
5	0.10088E 03	0.44269E 02	0.32121E-01	0.32431E 00	0.29241E 03	0.32127E 03	0.78024E 03	0.10559E 04	0.28580E 03
6	0.10088E 03	0.44279E 02	0.46836E-01	0.40708E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.28580E 03
7	0.10088E 03	0.44279E 02	0.61551E-01	0.46962E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.28580E 03
8	0.10088E 03	0.44279E 02	0.76268E-01	0.51855E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.28580E 03
9	0.10088E 03	0.44279E 02	0.90985E-01	0.55787E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.28580E 03
10	0.10088E 03	0.44279E 02	0.10570E 00	0.59016E 00	0.29241E 03	0.32128E 03	0.78029E 03	0.10560E 04	0.28580E 03

PRESSURE DROP 1.51523 BAR

INLET	0.96574	CHANNEL	0.54950	RISERS	-0.00000
FRICTION	1.31934	GRAVITY	0.15341	SPACE ACCEL.	0.04248

CHANNEL 3

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.84065E 02	0.36911E 02	-0.29356E-01	0.75382E-01	0.29212E 03	0.31618E 03	0.69875E 03	0.92848E 03	0.27582E 03
2	0.84065E 02	0.36898E 02	-0.17281E-01	0.13932E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.27775E 03
3	0.84065E 02	0.36897E 02	-0.52037E-02	0.19425E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.27969E 03
4	0.84065E 02	0.36895E 02	0.68731E-02	0.24106E 00	0.29209E 03	0.31614E 03	0.69863E 03	0.92835E 03	0.28169E 03
5	0.84065E 02	0.36879E 02	0.18946E-01	0.28297E 00	0.29212E 03	0.31616E 03	0.69857E 03	0.92830E 03	0.28368E 03
6	0.84065E 02	0.36889E 02	0.31024E-01	0.32001E 00	0.29212E 03	0.31617E 03	0.69863E 03	0.92836E 03	0.28568E 03
7	0.84065E 02	0.36897E 02	0.43103E-01	0.38873E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.28580E 03
8	0.84065E 02	0.36897E 02	0.55184E-01	0.44493E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.28580E 03
9	0.84065E 02	0.36897E 02	0.67265E-01	0.49037E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.28580E 03
10	0.84065E 02	0.36897E 02	0.79346E-01	0.52785E 00	0.29212E 03	0.31617E 03	0.69868E 03	0.92840E 03	0.28580E 03

PRESSURE DROP 1.51625 BAR

INLET	0.99693	CHANNEL	0.51932	RISERS	-0.00000
FRICTION	1.31807	GRAVITY	0.16417	SPACE ACCEL.	0.03401

CHANNEL 4

I	FCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.82384E 02	0.36111E 02	-0.29634E-01	0.73795E-01	0.29209E 03	0.31563E 03	0.69024E 03	0.91537E 03	0.27578E 03
2	0.82384E 02	0.36160E 02	-0.17817E-01	0.13670E 00	0.29209E 03	0.31566E 03	0.69052E 03	0.91565E 03	0.27766E 03
3	0.82384E 02	0.36160E 02	-0.59978E-02	0.19090E 00	0.29209E 03	0.31566E 03	0.69051E 03	0.91565E 03	0.27956E 03

4	0.82384E 02	0.36157E 02	0.58217E-02	0.23714E 00	0.29205E 03	0.31562E 03	0.69047E 03	0.91560E 03	0.28152E 03
5	0.82384E 02	0.36140E 02	0.17636E-01	0.27867E 00	0.29209E 03	0.31565E 03	0.69040E 03	0.91553E 03	0.28346E 03
6	0.82384E 02	0.36148E 02	0.29455E-01	0.31544E 00	0.29209E 03	0.31565E 03	0.69045E 03	0.91558E 03	0.28542E 03
7	0.82384E 02	0.36148E 02	0.41272E-01	0.37906E 00	0.29209E 03	0.31565E 03	0.69045E 03	0.91558E 03	0.28580E 03
8	0.82384E 02	0.36160E 02	0.53094E-01	0.43612E 00	0.29209E 03	0.31566E 03	0.69051E 03	0.91565E 03	0.28580E 03
9	0.82384E 02	0.36160E 02	0.64917E-01	0.48227E 00	0.29209E 03	0.31566E 03	0.69051E 03	0.91565E 03	0.28580E 03
10	0.82384E 02	0.36160E 02	0.76741E-01	0.52037E 00	0.29209E 03	0.31566E 03	0.69051E 03	0.91565E 03	0.28580E 03

PRESSURE DROP 1.51627 BAR

INLET	0.99981	CHANNEL	0.51646	RISERS	-0.00000
FRICTION	1.31788	GRAVITY	0.16529	SPACE ACCEL.	0.03311

CHANNEL 5

I	PCW	FI	Q	VF	TSUR	TICL	AVTF	TMAXF	TL
1	0.63889E 02	0.27559E 02	-0.37402E-01	0.0	0.29031E 03	0.30827E 03	0.59661E 03	0.77118E 03	0.27507E 03
2	0.63889E 02	0.27676E 02	-0.33580E-01	0.0	0.29147E 03	0.30951E 03	0.59843E 03	0.77301E 03	0.27617E 03
3	0.63889E 02	0.27959E 02	-0.24659E-01	0.57044E-01	0.29170E 03	0.30992E 03	0.60024E 03	0.77484E 03	0.27758E 03
4	0.63889E 02	0.28022E 02	-0.15718E-01	0.10753E 00	0.29170E 03	0.30997E 03	0.60058E 03	0.77518E 03	0.27901E 03
5	0.63889E 02	0.28007E 02	-0.67801E-02	0.15230E 00	0.29170E 03	0.30995E 03	0.60048E 03	0.77507E 03	0.28045E 03
6	0.63889E 02	0.28021E 02	0.21634E-02	0.19043E 00	0.29162E 03	0.30988E 03	0.60048E 03	0.77507E 03	0.28197E 03
7	0.63889E 02	0.28027E 02	0.11109E-01	0.22599E 00	0.29166E 03	0.30993E 03	0.60057E 03	0.77516E 03	0.28346E 03
8	0.63889E 02	0.28021E 02	0.20054E-01	0.25901E 00	0.29170E 03	0.30997E 03	0.60057E 03	0.77516E 03	0.28493E 03
9	0.63889E 02	0.28040E 02	0.29005E-01	0.30416E 00	0.29170E 03	0.30998E 03	0.60068E 03	0.77527E 03	0.28580E 03
10	0.63889E 02	0.28041E 02	0.37956E-01	0.36114E 00	0.29170E 03	0.30998E 03	0.60068E 03	0.77527E 03	0.28580E 03

PRESSURE DROP 1.51548 BAR

INLET	1.04913	CHANNEL	0.46636	RISERS	-0.00000
FRICTION	1.30313	GRAVITY	0.19408	SPACE ACCEL.	0.01828

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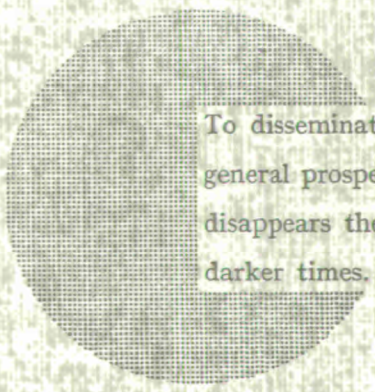

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Alfred Nobel

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