

付属資料 5.3.3-7

Run 8における総括伝熱係数 (U) と汚れ係数 (f)



(5.2)

## RUN 8 における運転条件

1. 運転期間	11/16~12/5
2. 運転時間	472h
3. スケール抑制方法	PPN(M)添加
4. 運転方式	再循環
5. ボールクリーニング時期	BHのFF:0.34-0.36m <sup>2</sup> K/kWのとき
6. ブライン最高温度	112°C
7. 流量	
-補給海水量	2.42 m <sup>3</sup> /h
-再循環ブライン量	6.5 m <sup>3</sup> /h
-生産水量	0.9 m <sup>3</sup> /h
-ブローブライン量	1.52 m <sup>3</sup> /h
8. ブライン水質	
-pH at 25°C	8.52
-M-アルカリ度 as CaCO <sub>3</sub>	180 mg/L
-塩素イオン	33,100 mg/L
-濃縮度 as Cl <sup>-</sup>	1.40
9. 薬剤添加	
-スケール抑制剤(PPN(M))	2 mg/L
-酸(98% H <sub>2</sub> SO <sub>4</sub> )	--

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: November 16, 94      Time: 20:00      Total Operation Time: 8 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.962	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.8	62	48.2	35	30.2	26.5
Outlet Temp. (deg. C)	112	76.1	62	48.2	34.5	30.2
Temp. Rise (deg. C)	22.2	14.1	13.8	13.2	4.3	3.7
Flashing Temp. (deg. C)	114.5	80.8	67.6	54.1	39.1	33.4
Heat Transfer Rate (kJ/s)	158.794	99.916	97.440	92.908	87.646	75.374
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	9.692	10.171	11.107	11.237	6.515	4.815
U (kW/sq.m/°C)	3.507	5.072	4.529	4.269	2.715	3.159
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kw)	0.0288	0.0011	0.0247	0.0382	0.1723	0.1205

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 17, 94      Time: 00:00      Total Operation Time: 12 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.962	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.9	62	48.1	34.8	30	26
Outlet Temp. (deg. C)	112	76.1	62	48.1	34	30
Temp. Rise (deg. C)	22.1	14.1	13.9	13.3	4	4
Flashing Temp. (deg. C)	114.5	80.9	67.7	54.1	38.9	33.3
Heat Transfer Rate (KJ/S)	158.081	99.916	98.145	93.609	81.527	81.481
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	9.666	10.288	11.254	11.384	6.702	5.038
U (kW/sq.m/K)	3.500	5.014	4.502	4.245	2.455	3.264
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0293	0.0034	0.0260	0.0395	0.2113	0.1103

Brine Heater

Evaporator Stages

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 17, 94      Time: 04:00      Total Operation Time: 16 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.962	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.8	62.1	48.1	35	29.9	26
Outlet Temp. (deg. C)	112	76.2	62.1	48.1	34	29.9
Temp. Rise (deg. C)	22.2	14.1	14	13.1	4.1	3.9
Flashing Temp. (deg. C)	114	92.3	67.6	54.3	38.9	33.3
Heat Transfer Rate (kJ/s)	158.794	99.919	98.852	92.203	83.565	79.444
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	8.904	10.054	11.061	11.536	6.744	5.104
U (kW/sq.m/°C)	3.817	5.131	4.614	4.126	2.501	3.141
Clean-U value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0056	-0.0012	0.0207	0.0463	0.2038	0.1223

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: November 17, 94      Time: 08:00      Total Operation Time: 20 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.962	3.925	3.911	3.898	3.967	3.964
Inlet Temp. (deg. C)	89.8	62.2	48.3	35.1	30.2	27
Outlet Temp. (deg. C)	112	76.2	62.2	48.3	35	30.2
Temp. Rise (deg. C)	22.2	14	13.9	13.2	4.8	3.2
Flashing Temp. (deg. C)	115	80.9	67.7	54.4	39.1	33.4
Heat Transfer Rate (kJ/s)	158.794	99.212	98.150	92.910	97.841	65.190
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	10.431	10.138	11.027	11.460	6.193	4.617
U (kW/sq.m/°C)	3.258	5.052	4.595	4.185	3.188	2.849
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0505	0.0019	0.0215	0.0428	0.1176	0.1549

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 17, 84      Time: 12:00      Total Operation Time: 24 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.940	3.925	3.911	3.899	3.967	3.964
Inlet Temp. (deg. C)	89.8	62.2	48.5	35.6	30.4	27.5
Outlet Temp. (deg. C)	112	76.2	62.2	48.5	35	30.4
Temp. Rise (deg. C)	22.2	14	13.7	12.9	4.6	2.9
Flashing Temp. (deg. C)	115	80.7	67.6	54.5	39.4	33.8
Heat Transfer Rate (KJ/S)	156.794	99.212	96.740	90.806	93.766	59.082
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	10.431	9.903	10.845	11.243	6.428	4.702
U (kW/sq.m/K)	3.258	5.172	4.605	4.170	2.944	2.536
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0505	-0.0027	0.0211	0.0437	0.1436	0.1983



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 17, 94      Time: 16:00      Total Operation Time: 28 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.962	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.8	61.6	48	34.8	30.1	26
Outlet Temp. (deg. C)	112	75.5	61.6	48	33.5	30.1
Temp. Rise (deg. C)	22.2	13.9	13.6	13.2	3.4	4.1
Flashing Temp. (deg. C)	115.5	80.7	67.6	54.3	39.1	33.4
Heat Transfer Rate (kJ/s)	158.794	98.486	96.021	92.904	69.296	83.519
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	11.135	10.684	11.489	11.683	7.166	5.077
U (kW/sq.m/°C)	3.052	4.759	4.315	4.105	1.951	3.320
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0712	0.0140	0.0357	0.0475	0.3164	0.1052

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 17, 94      Time: 20:00      Total Operation Time: 32 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.5	47.7	34.4	29.6	25.5
Outlet Temp. (deg. C)	112	75.5	61.5	47.7	33	29.6
Temp. Rise (deg. C)	22.5	14	13.8	13.3	3.4	4.1
Flashing Temp. (deg. C)	115.8	81.2	67.7	54.2	38.8	33
Heat Transfer Rate (KJ/S)	160.932	99.193	97.428	93.600	69.291	83.513
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.631	11.289	11.783	11.940	7.370	5.182
U (kW/sq.m/K)	2.962	4.536	4.269	4.047	1.897	3.252
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0813	0.0244	0.0382	0.0510	0.3310	0.1114

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 18, 94      Time: 00:00      Total Operation Time: 36 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.5	47.6	34.4	29.4	25.5
Outlet Temp. (deg. C)	112	75.5	61.5	47.6	33	29.4
Temp. Rise (deg. C)	22.5	14	13.9	13.2	3.6	3.9
Flashing Temp. (deg. C)	116	81.3	67.8	54.1	38.7	32.8
Heat Transfer Rate (KJ/S)	160.932	99.193	98.133	92.895	73.366	79.438
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.899	11.402	11.930	11.905	7.354	5.104
U (kW/sq.m/K)	2.895	4.491	4.247	4.029	2.013	3.141
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0891	0.0266	0.0394	0.0521	0.3006	0.1223

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8 Date: November 18, 84 Time: 04:00 Total Operation Time: 40 hr.

Evaporator Stages

Variables	Brine Heater						Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	6500	18500	6500	6500	6500	6500	6500	18500
Specific Heat (KJ/kg/K)	3.961	3.924	3.910	3.898	3.866	3.964	3.939	3.924	3.910	3.898	3.866	3.964
Inlet Temp. (deg. C)	89.5	61.3	47.4	34.2	29.2	25.5	75.4	61.3	47.4	34.2	29.2	25.5
Outlet Temp. (deg. C)	112	75.4	61.3	47.4	33	29.2	89.5	75.4	61.3	47.4	33	29.2
Temp. Rise (deg. C)	22.5	14.1	13.9	13.2	3.8	3.7	14.1	14.1	13.9	13.2	3.8	3.7
Flashing Temp. (deg. C)	116	81.2	67.7	54	38.5	32.7	92.3	81.2	67.7	54	38.5	32.7
Heat Transfer Rate (KJ/S)	160.932	99.897	98.128	92.891	77.441	75.363	100.291	99.897	98.128	92.891	77.441	75.363
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.899	11.437	12.042	12.015	7.234	5.129	7.843	11.437	12.042	12.015	7.234	5.129
U (KW/sq.m/K)	2.895	4.509	4.207	3.991	2.160	2.965	6.601	4.509	4.207	3.991	2.160	2.965
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0891	0.0257	0.0416	0.0545	0.2669	0.1412	-0.0000	0.0257	0.0416	0.0545	0.2669	0.1412

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 18, 94      Time: 08:00      Total Operation Time: 44 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.7	47.7	34.4	29	26
Outlet Temp. (deg. C)	112	75.9	61.7	47.7	33.5	29
Temp. Rise (deg. C)	22.5	14.2	14	13.3	4.5	3
Flashing Temp. (deg. C)	116	81.4	68	54.2	38.6	32.4
Heat Transfer Rate (KJ/S)	160.932	100.618	98.842	93.600	91.708	61.107
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.899	11.130	11.965	11.940	7.114	4.743
U (kW/sq.m/K)	2.895	4.667	4.265	4.047	2.601	2.600
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0891	0.0182	0.0384	0.0510	0.1884	0.1886

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 18, 94      Time: 12:00      Total Operation Time: 48 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.5	47.8	34.5	29.2	25.5
Outlet Temp. (deg. C)	112	75.8	61.5	47.8	33	29.2
Temp. Rise (deg. C)	22.5	14.3	13.7	13.3	3.8	3.7
Flashing Temp. (deg. C)	116.5	81.4	68	54.3	38.7	32.7
Heat Transfer Rate (kJ/s)	160.932	101.323	96.723	93.602	77.441	75.363
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.557	11.278	12.082	11.940	7.439	5.129
U (kW/sq.m/K)	2.743	4.638	4.133	4.047	2.101	2.965
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1082	0.0195	0.0459	0.0510	0.2800	0.1412

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 18, 94      Time: 16:00      Total Operation Time: 52 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.962	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89.8	61.2	47.3	34	28.8	25
Outlet Temp. (deg. C)	112	75.5	61.2	47.3	32.5	28.8
Temp. Rise (deg. C)	22.2	14.3	13.9	13.3	3.7	3.8
Flashing Temp. (deg. C)	116.5	81.2	67.6	54	38.4	32.3
Heat Transfer Rate (KJ/S)	158.794	101.314	98.125	93.592	75.398	77.396
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.468	11.392	12.042	12.161	7.600	5.169
U (kW/sq.m/K)	2.726	4.591	4.207	3.973	2.002	3.021
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1104	0.0217	0.0416	0.0556	0.3035	0.1349

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8

Date: November 18, 94

Time: 20:00

Total Operation Time: 56 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89.5	61	46.9	33.6	28.3	24
Outlet Temp. (deg. C)	112	75.4	61	46.9	32	28.3
Temp. Rise (deg. C)	22.5	14.4	14.1	13.3	3.7	4.3
Flashing Temp. (deg. C)	116	81.1	67.4	53.6	37.9	31.7
Heat Transfer Rate (KJ/S)	160.932	102.019	99.530	93.584	75.393	87.570
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.899	11.426	12.112	12.161	7.600	5.260
U (kW/sq.m/K)	2.895	4.609	4.242	3.973	2.002	3.359
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0891	0.0209	0.0396	0.0536	0.3035	0.1016



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 19, 94      Time: 00:00      Total Operation Time: 80 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.939	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	61	46.9	33.6	28.2	24
Outlet Temp. (deg. C)	112	75.4	61	46.9	32.5	28.2
Temp. Rise (deg. C)	23	14.4	14.1	13.3	4.3	4.2
Flashing Temp. (deg. C)	117	80.8	67.1	53.5	37.7	31.7
Heat Transfer Rate (kJ/s)	164.495	102.019	99.530	93.594	87.621	85.533
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	13.351	11.083	11.776	12.051	7.135	5.327
U (kW/sq. m/°C)	2.637	4.752	4.364	4.009	2.478	3.240
Clean-U Value (kW/sq. m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.1228	0.0144	0.0331	0.0534	0.2075	0.1125

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 19, 94      Time: 04:00      Total Operation Time: 64 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	60.9	46.9	33.5	27.8	23.5
Outlet Temp. (deg. C)	112	75.3	60.9	46.9	32	27.8
Temp. Rise (deg. C)	23	14.4	14	13.4	4.2	4.3
Flashing Temp. (deg. C)	116.5	81.5	67.6	53.6	37.7	31.7
Heat Transfer Rate (K/S)	164.495	102.016	98.823	94.286	85.578	87.565
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.706	11.993	12.411	12.197	7.608	5.786
U (kW/sq.m/°C)	2.771	4.392	4.111	3.991	2.270	3.054
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1045	0.0316	0.0472	0.0545	0.2445	0.1314

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 19, 94      Time: 08:00      Total Operation Time: 88 hr.

Variables	Brine Heater			Evaporator Stages							
	#1	#2	#3	#4	#5	#6	#7	#8	#9		
Flowrate (kg/h)	6500	6500	6500	6500	6500	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.938	3.924	3.910	3.897	3.883	3.869	3.855	3.841	3.827	3.813
Inlet Temp. (deg. C)	87	75.6	61.2	47.1	33.6	27.6	24	21	18	15	12
Outlet Temp. (deg. C)	112	87	75.6	61.2	47.1	32	27.6	24	21	18	15
Temp. Rise (deg. C)	25	11.4	14.4	14.1	13.5	4.4	3.6	3.6	3.6	3.6	3.6
Flashing Temp. (deg. C)	117.5	93.1	81.5	67.8	53.9	37.6	31.6	27.6	24	21	18
Heat Transfer Rate (KJ/S)	178.743	81.059	102.024	99.335	94.993	89.652	84.311	78.970	73.629	68.288	62.947
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	1.937	1.937	1.937	1.937	1.937	1.937	1.937
L.M.T.D. (deg. K)	14.594	10.817	11.654	12.335	12.343	7.589	5.609	4.629	3.649	2.669	1.689
U (kW/sq.m/K)	2.621	3.869	4.520	4.166	3.973	2.384	2.638	2.638	2.638	2.638	2.638
Clean-U value (kw/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1251	0.1070	0.0252	0.0440	0.0556	0.2234	0.1831	0.1831	0.1831	0.1831	0.1831

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 19, 94

Time: 12:00

Total Operation Time: 72 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.924	3.910	3.898	3.965	3.963
Inlet Temp. (deg. C)	87.5	61.3	47.4	34.2	28.1	24
Outlet Temp. (deg. C)	112	75.7	61.3	47.4	32	28.1
Temp. Rise (deg. C)	24.5	14.4	13.9	13.2	3.9	4.1
Flashing Temp. (deg. C)	117.5	81.7	68	54.1	38	32.1
Heat Transfer Rate (KJ/S)	175.182	102.027	98.128	92.891	79.467	83.496
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.442	11.767	12.376	12.126	7.788	5.811
U (KW/sq.m/K)	2.596	4.476	4.094	3.955	2.059	2.900
Clean-U Value (KW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1288	0.0273	0.0482	0.0568	0.2896	0.1488

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 19, 94

Time: 16:00

Total Operation Time: 76 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.960	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	87	61.3	47.4	34.1	28.2	25
Outlet Temp. (deg. C)	112	75.6	61.3	47.4	32.5	28.2
Temp. Rise (deg. C)	25	14.3	13.9	13.3	4.3	3.2
Flashing Temp. (deg. C)	116.5	81.7	68	54.1	38	32.2
Heat Transfer Rate (KJ/S)	178.743	101.317	98.128	93.594	87.621	65.173
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	13.296	11.845	12.376	12.161	7.444	5.444
U (kW/sq.m/°C)	2.977	4.416	4.094	3.973	2.375	2.416
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0911	0.0304	0.0482	0.0556	0.2249	0.2179

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 19, 94      Time: 20:00      Total Operation Time: 80 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.939	3.924	3.910	3.898	3.965	3.963
Inlet Temp. (deg. C)	87.5	61.5	47.6	34.3	28.4	25
Outlet Temp. (deg. C)	112	75.9	61.5	47.6	33	28.4
Temp. Rise (deg. C)	24.5	14.4	13.9	13.3	4.6	3.4
Flashing Temp. (deg. C)	118	81.7	68	54.3	38.3	32.4
Heat Transfer Rate (KJ/S)	175.182	102.032	98.133	93.598	93.739	69.247
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	15.068	11.540	12.153	12.161	7.362	5.527
U (kW/sq.m/K)	2.488	4.565	4.169	3.973	2.569	2.528
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1455	0.0230	0.0438	0.0556	0.1931	0.1994

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 20, 94      Time: 00:00      Total Operation Time: 84 hr.

Variables	Evaporator Stages				
	# 1	# 2	# 3	# 4	# 5
Flowrate (kg/h)	6500	6500	6500	6500	18500
Specific Heat (kJ/kg/K)	3.939	3.924	3.910	3.898	3.965
Inlet Temp. (deg. C)	75.9	61.5	47.6	34.4	28.4
Outlet Temp. (deg. C)	89	75.9	61.5	47.6	33
Temp. Rise (deg. C)	13.1	14.4	13.9	13.2	4.6
Flashing Temp. (deg. C)	92.8	81.5	67.9	54.3	38.2
Heat Transfer Rate (kJ/S)	93.178	102.032	98.133	92.895	93.739
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556
L.M.T.D. (deg. K)	14.352	11.312	12.042	12.126	7.259
U (kW/sq.m/K)	2.453	4.657	4.207	3.955	2.606
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1513	0.0187	0.0416	0.0568	0.1877

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 20, 94      Time: 04:00      Total Operation Time: 88 hr.

Evaporator Stages

Variables	Brine Heater					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.5	61.5	47.4	34.1	28.3	24.5
Outlet Temp. (deg. C)	112	75.8	61.5	47.4	32.5	28.3
Temp. Rise (deg. C)	23.5	14.3	14.1	13.3	4.2	3.8
Flashing Temp. (deg. C)	117	81.4	67.9	54.1	38	32.2
Heat Transfer Rate (kJ/s)	168.058	101.323	99.542	93.594	85.594	77.390
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	13.502	11.278	12.112	12.161	7.402	5.586
U (kW/sq.m/°C)	2.664	4.638	4.243	3.973	2.333	2.796
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1190	0.0195	0.0396	0.0556	0.2326	0.1616



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: November 20, 94      Time: 08:00      Total Operation Time: 92 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (K/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.6	47.7	34.5	28.5	26
Outlet Temp. (deg. C)	112	75.9	61.6	47.7	34	28.5
Temp. Rise (deg. C)	23	14.3	13.9	13.2	5.5	2.5
Flashing Temp. (deg. C)	118	81.6	68.2	54.4	38.3	32.4
Heat Transfer Rate (K/S)	164,495	101,325	98,135	92,898	112,088	50,921
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.598	11.392	12.264	12.126	6.677	5.047
U (kW/sq.m/K)	2,412	4,592	4,131	3,955	3,388	2,056
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1582	0.0217	0.0460	0.0568	0.0991	0.2951

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 20, 94      Time: 12:00      Total Operation Time: 98 hr.

Variables	Brine Heater			Evaporator Singas		
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.9	48.1	35.1	29	26
Outlet Temp. (deg. C)	112	75.8	61.9	48.1	34	29
Temp. Rise (deg. C)	22.5	13.7	13.8	13	5	3
Flashing Temp. (deg. C)	118	81.9	68.3	54.8	38.8	33
Heat Transfer Rate (KJ/S)	160.932	98.494	97.437	91.500	101.901	61.107
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.440	11.706	12.006	12.054	7.005	5.361
U (kW/sq.m/K)	2.385	4.344	4.190	3.919	2.935	2.300
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1628	0.0341	0.0426	0.0591	0.1446	0.2387

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: November 20, 94      Time: 16:00      Total Operation Time: 100 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.7	48	35	29.2	26
Outlet Temp. (deg. C)	112	75.8	61.7	48	33	29.2
Temp. Rise (deg. C)	23	14.1	13.7	13	3.8	3.2
Flashing Temp. (deg. C)	118	81.9	68.2	54.7	38.9	33.1
Heat Transfer Rate (kJ/s)	164.495	99.908	96.728	91.498	77.441	65.181
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.598	11.776	12.082	12.054	7.643	5.341
U (kW/sq.m/°C)	2.412	4.380	4.133	3.919	2.045	2.463
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1582	0.0322	0.0459	0.0591	0.2930	0.2100

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: November 20, 94      Time: 20:00      Total Operation Time: 104 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89.5	61.6	47.8	34.7	29	25.5
Outlet Temp. (deg. C)	112	75.8	61.6	47.8	33	29
Temp. Rise (deg. C)	22.5	14.2	13.8	13.1	4	3.5
Flashing Temp. (deg. C)	118	81.6	67.9	54.6	38.8	32.9
Heat Transfer Rate (kJ/s)	160.932	100.615	97.430	92.197	81.515	71.289
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.440	11.471	11.895	12.200	7.626	5.464
U (kW/sq.m/K)	2.385	4.528	4.229	3.902	2.157	2.633
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1628	0.0248	0.0404	0.0602	0.2675	0.1838

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 21, 94      Time: 00:00      Total Operation Time: 108 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.925	3.910	3.898	3.966	3.963
Inlet Temp. (deg. C)	89.5	61.9	48	35	29	25
Outlet Temp. (deg. C)	112	76	61.9	48	33.5	29
Temp. Rise (deg. C)	22.5	14.1	13.9	13	4.5	4
Flashing Temp. (deg. C)	118	82	68.3	54.8	38.9	33
Heat Transfer Rate (kJ/s)	160.932	99.913	98.142	91.498	91.708	81.470
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	14.440	11.663	12.042	12.164	7.424	5.771
U (kW/sq.m/°C)	2.385	4.423	4.208	3.883	2.493	2.849
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1628	0.0300	0.0416	0.0614	0.2051	0.1549

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: November 21, 94      Time: 04:00      Total Operation Time: 112 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.963
Inlet Temp. (deg. C)	89	61.8	47.9	34.7	29	25
Outlet Temp. (deg. C)	112	75.9	61.8	47.9	33	29
Temp. Rise (deg. C)	23	14.1	13.9	13.2	4	4
Flashing Temp. (deg. C)	118	81.6	68.2	54.7	38.7	32.7
Heat Transfer Rate (kJ/s)	164.495	99.911	98.140	92.902	81.515	81.470
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M. T.D. (deg. K)	14.598	11.323	12.042	12.236	7.524	5.458
U (kW/sq.m/K)	2.412	4.555	4.208	3.920	2.186	3.012
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1582	0.0235	0.0416	0.0590	0.2613	0.1359

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 21, 84      Time: 08:00      Total Operation Time: 116 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.7	47.8	34.6	29	26
Outlet Temp. (deg. C)	112	76	61.7	47.8	34	29
Temp. Rise (deg. C)	23	14.3	13.9	13.2	5	3
Flashing Temp. (deg. C)	118.5	82	68.3	54.6	38.7	32.7
Heat Transfer Rate (KJ/S)	164.495	101.328	98.137	92.900	101.901	61.107
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	15.206	11.732	12.264	12.236	6.901	5.052
U (kW/sq.m/°C)	2.315	4.459	4.131	3.920	2.980	2.441
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1755	0.0282	0.0460	0.0590	0.1395	0.2137

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 21, 94      Time: 12:00      Total Operation Time: 120 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18800	18800
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	89	62.4	48.5	35.4	29.3	27
Outlet Temp. (deg. C)	112	76.3	62.4	48.5	35	29.3
Temp. Rise (deg. C)	23	13.9	13.9	13.1	5.7	2.3
Flashing Temp. (deg. C)	119	82.1	68.8	55.3	39.1	32.9
Heat Transfer rate (kJ/s)	164.495	98.507	98.154	92.211	118.063	47.612
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	15.804	11.368	12.042	12.200	6.541	4.656
U (kW/sq.m/K)	2.228	4.474	4.208	3.902	3.642	2.064
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1925	0.0275	0.0416	0.0602	0.0785	0.2885



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 21, 94      Time: 16:00      Total Operation Time: 124 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	61.8	48.1	35	29.5	26
Outlet Temp. (deg. C)	112	75.9	61.8	48.1	34	29.5
Temp. Rise (deg. C)	24	14.1	13.7	13.1	4.5	3.5
Flashing Temp. (deg. C)	119	82.2	68.5	55	39.3	33.1
Heat Transfer Rate (kJS)	171.620	99.911	96.730	92.203	91.715	71.294
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	16.128	12.000	12.304	12.310	7.321	5.153
U (kW/sq.m/K)	2.277	4.298	4.059	3.867	2.528	2.792
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1827	0.0366	0.0503	0.0625	0.1995	0.1621

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 21, 94      Time: 20:00      Total Operation Time: 128 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.7	47.8	34.6	29.3	26
Outlet Temp. (deg. C)	112	75.9	61.7	47.8	34	29.3
Temp. Rise (deg. C)	23	14.2	13.9	13.2	4.7	3.3
Flashing Temp. (deg. C)	118.5	81.8	68.1	54.7	39	32.8
Heat Transfer Rate (kJ/s)	164,495	100,618	98,137	92,900	95,789	67,219
Heat Transfer Area (sq.m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. K)	15,206	11,585	12,042	12,346	7,092	4,969
U (kW/sq.m/K)	2,315	4,484	4,207	3,885	2,725	2,730
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1755	0.0269	0.0416	0.0613	0.1708	0.1702

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 22, 94      Time: 00:00      Total Operation Time: 132 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.8	47.9	34.7	29.4	25.8
Outlet Temp. (deg. C)	112	76	61.8	47.9	33.8	29.4
Temp. Rise (deg. C)	23	14.2	13.9	13.2	4.4	3.6
Flashing Temp. (deg. C)	119	81.9	68.1	54.7	39	32.9
Heat Transfer Rate (kJ/s)	164.495	100.621	98.140	92.902	89.675	73.329
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	15.804	11.585	11.930	12.236	7.177	5.090
U (kW/sq.m/K)	2.228	4.484	4.247	3.920	2.521	2.907
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1925	0.0269	0.0394	0.0590	0.2005	0.1479

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 22, 94      Time: 04:00      Total Operation Time: 136 hr.

Evaporator Stages

Variables	Brine Heater					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.7	47.8	34.8	29.3	25.5
Outlet Temp. (deg. C)	112	75.7	61.7	47.8	33.5	29.3
Temp. Rise (deg. C)	23	14	13.9	13	4.2	3.8
Flashing Temp. (deg. C)	119.5	82.2	68.3	54.7	39	32.9
Heat Transfer Rate (KJ/S)	164,495	99,198	98,737	91,494	85,596	77,401
Heat Transfer Area (sq.m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. K)	16,396	12,189	12,264	12,273	7,402	5,274
U (kW/sq.m/K)	2,147	4,202	4,131	3,849	2,333	2,962
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2093	0.0419	0.0460	0.0638	0.2325	0.1416

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 22, 94      Time: 08:00      Total Operation Time: 140 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.7	47.8	34.6	29.3	26
Outlet Temp. (deg. C)	112	75.9	61.7	47.8	34	29.3
Temp. Rise (deg. C)	23	14.2	13.9	13.2	4.7	3.3
Flashing Temp. (deg. C)	120	82	68.4	54.6	38.9	32.8
Heat Transfer Rate (kJ/s)	164.495	100.618	98.137	92.900	95.789	67.219
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	16.980	11.810	12.376	12.236	6.989	4.969
U (kW/sq. m/°C)	2.073	4.398	4.094	3.920	2.766	2.730
Clean-U Value (kW/sq. m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.2259	0.0313	0.0482	0.0590	0.1655	0.1702

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: November 22, 84      Time: 12:00      Total Operation Time: 144 Hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	62.1	48.3	35.3	29.6	27
Outlet Temp. (deg. C)	112	76.1	62.1	48.3	35	29.6
Temp. Rise (deg. C)	23	14	13.8	13	5.4	2.6
Flashing Temp. (deg. C)	119.5	81.9	68.1	55	39.3	33.2
Heat Transfer Rate (kJ/S)	164,495	99,209	97,442	91,504	110,066	52,965
Heat Transfer Area (sq.m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. K)	16,396	11,402	11,559	12,054	6,638	4,783
U (kW/sq.m/°C)	2,147	4,492	4,352	3,919	3,346	2,235
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2093	0.0265	0.0337	0.0591	0.1028	0.2514

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 22, 94      Time: 16:00      Total Operation Time: 148 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.8	48.2	35.2	29.3	26
Outlet Temp. (deg. C)	112	75.9	61.8	48.2	34	29.3
Temp. Rise (deg. C)	23	14.1	13.6	13	4.7	3.3
Flashing Temp. (deg. C)	119.5	81.6	68.5	55	39.4	33.3
Heat Transfer Rate (kJ/s)	164.495	99.911	96.025	91.502	95.789	67.219
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.396	11.323	12.269	12.164	7.506	5.486
U (kW/sq. m/K)	2.147	4.555	4.041	3.884	2.575	2.473
Clean-U Value (kW/sq. m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.2093	0.0235	0.0514	0.0614	0.1923	0.2083

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 23, 94      Time: 00:00      Total Operation Time: 156 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	61.9	48.1	34.9	29.7	25.5
Outlet Temp. (deg. C)	112	76.1	61.9	48.1	34	29.7
Temp. Rise (deg. C)	23	14.2	13.8	13.2	4.3	4.2
Flashing Temp. (deg. C)	120	81.4	68.3	54.9	39.2	33.2
Heat Transfer Rate (KJ/S)	164.495	100.623	97.437	92.906	87.640	85.551
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.980	10.900	12.006	12.236	7.135	5.327
U (kW/sq.m/K)	2.073	4.766	4.190	3.920	2.479	3.241
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2259	0.0138	0.0426	0.0590	0.2074	0.1125



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 23, 94      Time: 04:00      Total Operation Time: 160 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	62	48.2	35.1	29.5	25
Outlet Temp. (deg. C)	112	76.2	62	48.2	34	29.5
Temp. Rise (deg. C)	23	14.2	13.8	13.1	4.5	4.5
Flashing Temp. (deg. C)	120	81.6	68.5	55.2	39.3	33.4
Heat Transfer Rate (KJ/S)	164.495	100.626	97.440	92.205	91.715	91.657
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.980	11.015	12.118	12.419	7.321	5.865
U (kW/sq.m/K)	2.073	4.716	4.151	3.833	2.528	3.154
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2259	0.0160	0.0448	0.0648	0.1995	0.1210

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 23, 94      Time: 06:00      Total Operation Time: 164 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.888	3.966	3.964
Inlet Temp. (deg. C)	89	62	48.1	35	29.6	26
Outlet Temp. (deg. C)	112	76.2	62	48.1	34.5	29.6
Temp. Rise (deg. C)	23	14.2	13.9	13.1	4.9	3.6
Flashing Temp. (deg. C)	120	80.8	68.2	54.9	39.2	33.3
Heat Transfer Rate (kJ/s)	164.495	100.626	98.145	92.203	99.871	73.331
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.980	10.087	11.818	12.200	6.861	5.288
U (kW/sq.m/K)	2.073	5.150	4.287	3.902	2.937	2.793
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2259	-0.0019	0.0372	0.0602	0.1444	0.1619

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 23, 94

Time: 12:00

Total Operation Time: 168 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.899	3.967	3.964
Inlet Temp. (deg. C)	89	62.4	48.7	35.9	30.2	27
Outlet Temp. (deg. C)	112	76.5	62.4	48.7	35.5	30.2
Temp. Rise (deg. C)	23	14.1	13.7	12.8	5.3	3.2
Flashing Temp. (deg. C)	120.5	93	81.4	55.6	39.9	33.8
Heat Transfer Rate (kJ/s)	164.495	99.927	96.744	90.107	108.037	65.190
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	17.558	10.404	11.748	12.201	6.704	5.032
U (kW/sq.m/K)	2.005	4.958	4.251	3.813	3.252	2.614
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2423	0.0056	0.0391	0.0662	0.1115	0.1864

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 25, 94      Time: 16:00      Total Operation Time: 172 Hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	88.5	62.2	48.4	35.5	30	27
Outlet Temp. (deg. C)	112	76.4	62.2	48.4	35	30
Temp. Rise (deg. C)	23.5	14.2	13.8	12.9	5	3
Flashing Temp. (deg. C)	120.5	81.5	68.5	55.4	39.7	33.6
Heat Transfer Rate (kJ/s)	168.058	100.632	97.445	90.804	101.916	61.115
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	17.727	10.670	11.895	12.347	6.901	4.949
U (kW/sq.m/°C)	2.029	4.869	4.229	3.797	2.980	2.492
Clean-U value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2364	0.0093	0.0404	0.0673	0.1395	0.2052

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 23, 94      Time: 20:00      Total Operation Time: 176 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/°C)	3.940	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	89	62	48.2	36.2	29.9	26
Outlet Temp. (deg. C)	112	76.3	62	48.2	34	29.9
Temp. Rise (deg. C)	23	14.3	13.8	12	4.1	3.9
Flashing Temp. (deg. C)	121	81.5	68.4	55.3	39.6	33.5
Heat Transfer Rate (kJ/s)	164,495	101,336	97,440	84,473	82,661	78,585
Heat Transfer Area (sq.m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. C)	18,131	10,819	12,006	12,126	7,463	5,314
U (kW/sq.m/°C)	1,942	4,836	4,190	3,596	2,235	2,984
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2586	0.0107	0.0426	0.0820	0.2513	0.1390

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 24, 94      Time: 00:00      Total Operation Time: 180 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	62.1	48.2	35.2	29.9	26
Outlet Temp. (deg. C)	112	76.3	62.1	48.2	34	29.9
Temp. Rise (deg. C)	23	14.2	13.9	13	4.1	3.9
Flashing Temp. (deg. C)	121	81.5	68.5	55.3	39.5	33.5
Heat Transfer Rate (KJ/S)	164.495	100.629	96.147	91.502	83.565	79.444
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.131	10.785	12.042	12.492	7.361	5.314
U (kW/sq.m/K)	1.942	4.817	4.208	3.781	2.291	3.017
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2586	0.0115	0.0416	0.0684	0.2404	0.1354

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 24, 84      Time: 04:00      Total Operation Time: 184 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/°C)	3.939	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	62	48.1	35	29.7	26
Outlet Temp. (deg. C)	112	76.3	62	48.1	34	29.7
Temp. Rise (deg. C)	24	14.3	13.9	13.1	4.3	3.7
Flashing Temp. (deg. C)	121	81.8	68.8	55.2	39.4	33.3
Heat Transfer Rate (KJ/S)	171.620	101.336	98.145	92.203	86.692	74.554
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	18.472	11.164	12.486	12.529	7.341	5.234
U (kW/sq.m/°C)	1.989	4.686	4.058	3.799	2.383	2.874
Clean-U value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2465	0.0173	0.0504	0.0671	0.2236	0.1518

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 24, 94      Time: 06:00      Total Operation Time: 166 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/°C)	3.961	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	89	62.1	48.2	35.1	29.6	26
Outlet Temp. (deg. C)	112	76.2	62.1	48.2	34.5	29.6
Temp. Rise (deg. C)	23	14.1	13.9	13.1	4.9	3.6
Flashing Temp. (deg. C)	121	81.8	68.8	55.3	39.5	33.3
Heat Transfer Rate (kJ/s)	164.495	99.919	98.147	92.205	96.792	72.538
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	18.131	11.210	12.376	12.529	7.173	5.298
U (kW/sq.m/°C)	1.942	4.602	4.094	3.799	2.779	2.763
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2586	0.0212	0.0482	0.0671	0.1637	0.1658



**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8 Date: November 24, 94 Time: 12:00 Total Operation Time: 192 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	89	62.4	48.6	35.7	29.8	26.5
Outlet Temp. (deg. C)	112	76.5	62.4	48.6	35	29.8
Temp. Rise (deg. C)	23	14.1	13.8	12.9	5.2	3.3
Flashing Temp. (deg. C)	121	81.3	68.7	55.6	39.8	33.5
Heat Transfer Rate (kJ/s)	164.495	99.927	97.449	90.808	105.991	67.223
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	18.131	10.288	11.895	12.347	7.085	5.176
U (kW/sq.m/°C)	1.942	5.014	4.230	3.797	3.019	2.621
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2586	0.0033	0.0404	0.0673	0.1352	0.1855

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 24, 94      Time: 16:00      Total Operation Time: 196 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	62.1	48.3	35.4	29.7	27
Outlet Temp. (deg. C)	112	76.2	62.1	48.3	35	29.7
Temp. Rise (deg. C)	24	14.1	13.8	12.9	5.3	2.7
Flashing Temp. (deg. C)	121	81.7	68.6	55.4	39.6	33.5
Heat Transfer Rate (kJ/s)	171.620	99.919	97.442	90.801	108.029	55.002
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.472	11.096	12.118	12.456	6.915	5.030
U (kW/sq.m/K)	1.989	4.649	4.151	3.763	3.153	2.207
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2465	0.0190	0.0448	0.0696	0.1211	0.2571

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 24, 94      Time: 20:00      Total operation Time: 200 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.939	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	76	61.7	47.9	34.8	29.4	26.5
Outlet Temp. (deg. C)	88	76	61.7	47.9	34.5	29.4
Temp. Rise (deg. C)	12	14.3	13.8	13.1	5.1	2.9
Flashing Temp. (deg. C)	93.5	81.6	68.4	55.1	39.3	33.1
Heat Transfer Rate (kJ/s)	171.620	101.328	97.433	92.199	103.946	59.073
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.611	11.278	12.340	12.638	7.045	5.011
U (kW/sq.m/K)	1.873	4.638	4.076	3.766	2.977	2.379
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2775	0.0195	0.0492	0.0694	0.1398	0.2243

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 25, 94

Time: 00:00

Total Operation Time: 204 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	61.9	48.1	34.9	29.7	26
Outlet Temp. (deg. C)	112	76.1	61.9	48.1	34	29.7
Temp. Rise (deg. C)	24	14.2	13.8	13.2	4.3	3.7
Flashing Temp. (deg. C)	121.5	81.7	68.6	55.2	39.4	33.4
Heat Transfer Rate (KJ/S)	171.620	100.623	97.437	92.906	87.640	75.368
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.044	11.244	12.340	12.565	7.341	5.338
U (kW/sq.m/K)	1.929	4.620	4.076	3.817	2.409	2.849
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2621	0.0204	0.0492	0.0659	0.2190	0.1549

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3

Date: November 25, 94

Time: 04:00

Total Operation Time: 208 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/K)	3.960	3.925	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	61.9	48	34.8	29.6	26
Outlet Temp. (deg. C)	112	76.2	61.9	48	34	29.6
Temp. Rise (deg. C)	24	14.3	13.9	13.2	4.4	3.6
Flashing Temp. (deg. C)	121.5	81.6	68.6	55.1	39.3	33.3
Heat Transfer Rate (K/S)	171.620	101.353	98.142	92.904	88.708	72.558
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.044	11.049	12.376	12.565	7.280	5.298
U (KW/sq.m/K)	1.929	4.735	4.094	3.817	2.459	2.763
Clean-U Value (KW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2621	0.0151	0.0482	0.0659	0.2106	0.1658

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: November 25, 94      Time: 06:00      Total Operation Time: 212 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.939	3.925	3.911	3.898	3.966	3.964
Inlet Temp. (deg. C)	88.5	62	48	35	29.5	26.5
Outlet Temp. (deg. C)	112	76	62	48	34.5	29.5
Temp. Rise (deg. C)	23.5	14	14	13	5	3
Flashing Temp. (deg. C)	121.5	81	68.3	55.2	39.4	33.2
Heat Transfer Rate (kJ/s)	168.058	99.206	98.850	91.498	101.909	61.111
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.872	10.487	11.965	12.602	7.109	5.052
U (kW/sq.m/K)	1.906	4.884	4.265	3.748	2.893	2.441
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2683	0.0087	0.0384	0.0707	0.1496	0.2136

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 25, 94      Time: 12:00      Total operation Time: 216 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	88.5	62.2	48.4	35.5	29.8	27
Outlet Temp. (deg. C)	112	76.2	62.2	48.4	35	29.8
Temp. Rise (deg. C)	23.5	14	13.8	12.9	5.2	2.8
Flashing Temp. (deg. C)	121.5	80.8	68.2	55.4	39.6	33.5
Heat Transfer rate (kJ/s)	168.058	99.212	97.445	90.804	105.991	57.040
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.872	10.021	11.559	12.347	6.875	4.969
U (kW/sq.m/K)	1.906	5.111	4.352	3.797	3.111	2.316
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2683	-0.0004	0.0337	0.0673	0.1254	0.2356

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 25, 94

Time: 18:00

Total Operation Time: 220 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.925	3.911	3.899	3.966	3.964
Inlet Temp. (deg. C)	88.5	62.4	48.6	35.7	30	27
Outlet Temp. (deg. C)	112	76.5	62.4	48.6	35	30
Temp. Rise (deg. C)	23.5	14.1	13.8	12.9	5	3
Flashing Temp. (deg. C)	121.5	81.6	68.8	55.7	39.9	33.7
Heat Transfer Rate (kJ/s)	168.058	99.927	97.449	90.808	101.916	61.115
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.872	10.636	12.006	12.456	7.109	5.052
U (kW/sq.m/K)	1.906	4.850	4.190	3.764	2.893	2.441
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2683	0.0101	0.0426	0.0696	0.1496	0.2136



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 25, 94      Time: 20:00      Total Operation Time: 224 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.924	3.910	3.898	3.966	3.964
Inlet Temp. (deg. C)	88	61.4	47.7	34.6	29.3	26.5
Outlet Temp. (deg. C)	112	75.5	61.4	47.7	33	29.3
Temp. Rise (deg. C)	24	14.1	13.7	13.1	3.7	2.8
Flashing Temp. (deg. C)	121.5	80.8	68	55	39.1	33
Heat Transfer Rate (kJ/s)	171.620	99.900	96.721	92.195	75.403	57.036
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.044	10.866	12.193	12.747	7.804	4.969
U (kW/sq.m/K)	1.929	4.746	4.095	3.734	1.950	2.316
Clear-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2621	0.0146	0.0481	0.0717	0.3168	0.2357

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 26, 94      Time: 00:00      Total Operation Time: 228 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.5	61	47.2	34	28.8	25
Outlet Temp. (deg. C)	112	75.2	61	47.2	32	28.8
Temp. Rise (deg. C)	23.5	14.2	13.8	13.2	3.2	3.8
Flashing Temp. (deg. C)	122	81.4	68.4	54.7	38.7	32.7
Heat Transfer Rate (KJ/S)	168.058	100.599	97.416	92.887	65.207	77.396
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.438	11.923	13.111	13.002	8.196	5.586
U (kW/sq.m/K)	1.850	4.356	3.836	3.688	1.605	2.796
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2840	0.0335	0.0646	0.0751	0.4268	0.1616

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 26, 94      Time: 04:00      Total Operation Time: 232 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	88	60.8	47.2	34	28.8	24.5
Outlet Temp. (deg. C)	112	75.1	60.8	47.2	32	28.8
Temp. Rise (deg. C)	24	14.3	13.6	13.2	3.2	4.3
Flashing Temp. (deg. C)	123	81.3	68.5	54.4	38.3	32.1
Heat Transfer Rate (kJ/s)	171.620	101.304	96.002	92.887	65.207	87.576
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	20.735	11.958	13.366	12.675	7.791	5.154
U (kW/sq.m/K)	1.771	4.374	3.708	3.783	1.689	3.429
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3081	0.0326	0.0736	0.0682	0.3960	0.0956

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 26, 94      Time: 08:00      Total Operation Time: 236 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.897	3.965	3.965
Inlet Temp. (deg. C)	88	60.8	46.7	33.3	28	25
Outlet Temp. (deg. C)	112	75	60.8	46.7	32	28
Temp. Rise (deg. C)	24	14.2	14.1	13.4	4	3
Flashing Temp. (deg. C)	123.8	80.4	68.1	54	37.9	31.8
Heat Transfer Rate (KJ/S)	171.620	100.594	99.525	94.282	81.504	61.098
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.625	11.015	13.110	12.857	7.728	5.155
U (kW/sq.m/K)	1.699	4.715	3.919	3.786	2.128	2.392
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3323	0.0160	0.0591	0.0681	0.2738	0.2221

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 26, 94      Time: 12:00      Total Operation Time: 240 hr.

Variables	Brine Heater			Evaporator Stages		
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.2	60.9	46.9	33.6	27.9	24
Outlet Temp. (deg. C)	112	75.1	60.9	46.9	32	27.9
Temp. Rise (deg. C)	23.8	14.2	14	13.3	4.1	3.9
Flashing Temp. (deg. C)	123	81.8	68.4	54.7	38.3	31.9
Heat Transfer Rate (kJ/s)	170.195	100.596	98.823	93.584	83.541	79.422
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	20.665	12.482	13.293	13.365	8.179	5.731
U (kW/sq.m/K)	1.763	4.161	3.838	3.615	2.061	2.797
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3109	0.0443	0.0645	0.0805	0.2891	0.1615

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 26, 94      Time: 16:00      Total Operation Time: 244 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.938	3.923	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88	60.6	46.6	33.2	27.7	23
Outlet Temp. (deg. C)	112	74.9	60.6	46.6	31	27.7
Temp. Rise (deg. C)	24	14.3	14	13.4	3.3	4.7
Flashing Temp. (deg. C)	124	81.8	68.1	54.5	38.1	31.7
Heat Transfer Rate (kJ/s)	171.620	101.298	98.816	94.280	67.234	95.706
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	21.846	12.740	13.293	13.510	8.645	6.049
U (kW/sq.m/°C)	1.681	4.426	3.838	3.603	1.569	3.193
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3383	0.0475	0.0645	0.0815	0.4411	0.1171

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Total Operation Time: 248 hr.

Time: 20:00

Date: November 26, 94

Run No. 8

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.938	3.923	3.909	3.897	3.965	3.962
Inlet Temp. (deg. C)	88	60.6	46.4	33	27.3	23
Outlet Temp. (deg. C)	112	74.9	60.6	46.4	31	27.3
Temp. Rise (deg. C)	24	14.3	14.2	13.4	3.7	4.3
Flashing Temp. (deg. C)	124	81.4	68.2	54.4	37.7	31.3
Heat Transfer Rate (kJ/s)	171.620	101.298	100.225	94.276	75.382	87.559
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.846	12.294	13.476	13.619	8.415	5.991
U (kW/sq.m/K)	1.681	4.254	3.840	3.574	1.808	2.999
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3383	0.0390	0.0644	0.0637	0.3571	0.1373

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 27, 94      Time: 00:00      Total Operation Time: 252 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.3	45.9	32.3	26.7	23
Outlet Temp. (deg. C)	112	74.8	60.3	45.9	30	26.7
Temp. Rise (deg. C)	24	14.5	14.4	13.6	3.3	3.7
Flashing Temp. (deg. C)	124	81.3	68	53.9	37.1	30.7
Heat Transfer Rate (KJ/S)	171.620	102.709	101.627	95.670	67.225	75.338
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.846	12.364	13.658	13.692	8.645	5.649
U (kW/sq.m/K)	1.681	4.289	3.842	3.607	1.569	2.691
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3383	0.0371	0.0642	0.0811	0.4412	0.1755



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 27, 94      Time: 04:00      Total Operation Time: 256 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.3	45.9	32.3	26.7	23
Outlet Temp. (deg. C)	112	74.8	60.3	45.9	30	26.7
Temp. Rise (deg. C)	24	14.5	14.4	13.6	3.3	3.7
Flashing Temp. (deg. C)	124	81.3	68	53.9	37.1	30.7
Heat Transfer Rate (KJ/S)	171.620	102.709	101.627	95.670	67.225	75.338
Heat Transfer Area (Sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	21.846	12.364	13.658	13.692	8.645	5.649
U (kW/sq. m/°C)	1.681	4.289	3.842	3.607	1.569	2.691
Clean-U Value (kW/sq. m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/KW)	0.3383	0.0371	0.0642	0.0811	0.4412	0.1755

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 27, 94      Time: 08:00      Total Operation Time: 260 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.3	45.9	32.3	26.7	23
Outlet Temp. (deg. C)	112	74.8	60.3	45.9	30	26.7
Temp. Rise (deg. C)	24	14.5	14.4	13.6	3.3	3.7
Flashing Temp. (deg. C)	124	81.3	68	53.9	37.1	30.7
Heat Transfer Rate (KJ/S)	171.620	102.709	101.627	95.670	67.225	75.338
Heat Transfer Area (Sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.846	12.364	13.658	13.692	8.645	5.649
U (kW/sq.m/K)	1.681	4.289	3.842	3.607	1.569	2.691
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3383	0.0371	0.0642	0.0811	0.4412	0.1755

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 27, 94      Time: 12:00      Total Operation Time: 264 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.938	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	74.8	60.3	45.9	32.3	26.7	23
Outlet Temp. (deg. C)	88	74.8	60.3	45.9	30	26.7
Temp. Rise (deg. C)	13.2	14.5	14.4	13.6	3.3	3.7
Flashing Temp. (deg. C)	93	81.3	68	53.9	37.1	30.7
Heat Transfer Rate (kJ/s)	93.861	102.709	101.627	95.670	67.225	75.338
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.846	12.364	13.658	13.692	8.645	5.649
U (kW/sq.m/K)	1.681	4.289	3.842	3.607	1.569	2.691
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3383	0.0371	0.0642	0.0811	0.4412	0.1755

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: November 27, 94      Time: 16:00      Total Operation Time: 288 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.924	3.909	3.897	3.965	3.962
Inlet Temp. (deg. C)	88	60.8	46.5	33.1	27.1	23
Outlet Temp. (deg. C)	112	75.2	60.8	46.5	31.5	27.1
Temp. Rise (deg. C)	24	14.4	14.3	13.4	4.4	4.1
Flashing Temp. (deg. C)	124.5	82.3	68.3	54.2	37.9	31.2
Heat Transfer Rate (KJ/S)	171.620	102.013	100.934	94.278	89.645	83.485
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	22.397	12.997	13.402	13.293	8.409	5.915
U (kW/sq.m/K)	1.640	4.052	3.888	3.661	2.151	2.848
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3533	0.0507	0.0611	0.0770	0.2688	0.1550

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 27, 94      Time: 20:00      Total Operation Time: 272 Hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.1	45.7	32.2	26.6	22
Outlet Temp. (deg. C)	112	74.7	60.1	45.7	31	26.6
Temp. Rise (deg. C)	24	14.6	14.4	13.5	4.4	4.6
Flashing Temp. (deg. C)	125.5	81.6	67.7	53.6	36.9	30.6
Heat Transfer Rate (KJ/S)	171.620	103.414	101.622	94.964	89.639	93.657
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	23.491	12.846	13.548	13.547	7.897	6.009
U (kW/sq.m/K)	1.564	4.156	3.872	3.619	2.291	3.145
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3831	0.0445	0.0622	0.0802	0.2405	0.1219

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 28, 94      Time: 00:00      Total Operation Time: 276 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18000	18000
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.7	46.3	32.8	26.8	23
Outlet Temp. (deg. C)	112	75.1	60.7	46.3	31	26.8
Temp. Rise (deg. C)	24	14.4	14.4	13.5	4.2	3.8
Flashing Temp. (deg. C)	125.5	81.7	68.1	54	37.4	30.9
Heat Transfer Rate (kJ/s)	171.620	102.011	101.637	94.976	83.253	75.284
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	23.491	12.441	13.328	13.330	8.324	5.794
U (kW/sq.m/K)	1.564	4.235	3.937	3.678	2.018	2.622
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3831	0.0402	0.0579	0.0758	0.2994	0.1853

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: November 28, 94      Time: 04:00      Total Operation Time: 280 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.924	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.7	46.3	32.8	26.8	22
Outlet Temp. (deg. C)	112	75.2	60.7	46.3	31	26.8
Temp. Rise (deg. C)	24	14.5	14.4	13.5	4.2	4.8
Flashing Temp. (deg. C)	125	81.9	68.3	54.1	37.4	30.8
Heat Transfer Rate (kJ/s)	171.620	102.720	101.637	94.976	84.178	96.146
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	22.945	12.588	13.548	13.438	8.324	6.088
U (kW/sq.m/K)	1.601	4.213	3.873	3.649	2.041	3.187
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3683	0.0413	0.0621	0.0780	0.2940	0.1177

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 3

Date: November 28, 94

Time: 08:00

Total Operation Time: 284 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/K)	3.961	3.924	3.909	3.896	3.965	3.963
Inlet Temp. (deg. C)	89	60.7	46.2	32	28	24
Outlet Temp. (deg. C)	112	75.3	60.7	46.2	32.5	28
Temp. Rise (deg. C)	23	14.6	14.5	14.2	4.5	4
Flashing Temp. (deg. C)	115	81.3	67.1	53	36.8	30.4
Heat Transfer Rate (kJ/s)	164.495	103.430	102.341	99.891	90.704	80.579
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	10.651	11.836	12.252	12.593	6.284	4.078
U (kW/sq.m/K)	3.306	4.511	4.312	4.095	2.913	3.987
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0461	0.0256	0.0358	0.0481	0.1472	0.0547



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 28, 94      Time: 12:00      Total Operation Time: 268 hr.

Variables	Brine Heater			Evaporator Stages								
	#1	#2	#3	#4	#5	#6	#7	#8	#9			
Flowrate (kg/h)	6500	6500	6500	6500	6500	6500	6500	6500	6500	18200	18200	18200
Specific Heat (kJ/kg/K)	3.961	3.924	3.909	3.897	3.909	3.909	3.897	3.897	3.909	3.965	3.965	3.963
Inlet Temp. (deg. C)	89.5	60.9	46.6	33.2	46.6	46.6	33.2	33.2	46.6	27.2	27.2	24
Outlet Temp. (deg. C)	112	75.4	60.9	46.6	60.9	60.9	46.6	46.6	60.9	32.5	32.5	27.2
Temp. Rise (deg. C)	22.5	14.1	14.3	13.4	14.3	14.3	13.4	13.4	14.3	5.3	5.3	3.2
Flashing Temp. (deg. C)	115	80.9	66.9	53.2	66.9	66.9	53.2	53.2	66.9	37.2	37.2	30.9
Heat Transfer Rate (kJ/s)	160.932	102.726	100.937	94.280	100.937	100.937	94.280	94.280	100.937	106.239	106.239	64.107
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	1.937	1.937	1.937	1.937	1.937	4.9556	4.9556	4.9556
L.M.T.D. (deg. K)	10.514	11.232	11.732	12.087	11.732	11.732	12.087	12.087	11.732	7.020	7.020	5.135
U (kW/sq.m/K)	3.276	4.722	4.442	4.027	4.442	4.442	4.027	4.027	4.442	3.054	3.054	2.519
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0488	0.0157	0.0291	0.0522	0.0291	0.0291	0.0522	0.0522	0.0291	0.1314	0.1314	0.2009

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8

Date: November 28, 94

Time: 16:00

Total Operation Time: 282 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.923	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	60.5	46.4	33	27.4	24
Outlet Temp. (deg. C)	112	75	60.5	46.4	32	27.4
Temp. Rise (deg. C)	23	14.5	14.1	13.4	4.6	3.4
Flashing Temp. (deg. C)	116	81.1	67.2	53.1	37.3	31
Heat Transfer Rate (kJ/S)	164,495	102,715	99,518	94,276	93,725	69,238
Heat Transfer Area (sq.m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. K)	12,045	11,915	12,447	12,197	7,362	5,113
U (kW/sq.m/K)	2,923	4,451	4,128	3,990	2,569	2,733
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m.K/kW)	0.0857	0.0286	0.0462	0.0545	0.1932	0.1699

Brine Heater

Evaporator Stages

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 28, 94      Time: 20:00      Total Operation Time: 296 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (Kj/Kg/K)	3.961	3.923	3.909	3.896	3.965	3.963
Inlet Temp. (deg. C)	88.5	60.5	46.2	32.7	27.1	23.5
Outlet Temp. (deg. C)	112	75	60.5	46.2	31.8	27.1
Temp. Rise (deg. C)	23.5	14.5	14.3	13.5	4.7	3.6
Flashing Temp. (deg. C)	116	80.7	66.8	52.9	36.9	30.8
Heat Transfer Rate (KJ/S)	168.058	102.715	100.927	94.974	95.759	73.307
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.189	11.460	12.070	12.233	7.196	5.298
U (KW/Sq.m/K)	2.951	4.627	4.317	4.008	2.685	2.792
Clean-U Value (kW/Sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0825	0.0200	0.0356	0.0534	0.1763	0.1621

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 94      Time: 00:00      Total Operation Time: 300 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.923	3.909	3.896	3.965	3.963
Inlet Temp. (deg. C)	88.8	60.5	46	32.5	27.1	23.5
Outlet Temp. (deg. C)	112	75.1	60.5	46	31.5	27.1
Temp. Rise (deg. C)	23.2	14.6	14.5	13.5	4.4	3.6
Flashing Temp. (deg. C)	116	80.7	66.7	52.8	36.8	30.8
Heat Transfer Rate (kJ/s)	165.921	103.425	102.336	94.970	89.645	73.307
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	12.103	11.380	12.027	12.343	7.280	5.298
U (kW/sq.m/°C)	2.934	4.692	4.393	3.972	2.485	2.792
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0844	0.0171	0.0316	0.0557	0.2063	0.1621

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 94      Time: 04:00      Total Operation Time: 304 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.961	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	89	60.5	46.1	32.4	27	23
Outlet Temp. (deg. C)	112	75.1	60.5	46.1	31	27
Temp. Rise (deg. C)	23	14.6	14.4	13.7	4	4
Flashing Temp. (deg. C)	116	80.9	67	52.8	36.9	30.7
Heat Transfer Rate (kJ/s)	164.495	103.425	101.632	96.377	80.171	80.128
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.045	11.608	12.329	12.304	7.728	5.458
U (kW/sq.m/K)	2.923	4.600	4.256	4.044	2.093	2.963
Clear-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0857	0.0213	0.0389	0.0512	0.2816	0.1415

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 94      Time: 08:00      Total Operation Time: 306 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kgK)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	60.9	46.7	33.2	27.4	24
Outlet Temp. (deg. C)	112	75.4	60.9	46.7	32	27.4
Temp. Rise (deg. C)	23	14.5	14.2	13.5	4.6	3.4
Flashing Temp. (deg. C)	116	81.4	67.5	53.4	37.6	31.1
Heat Transfer Rate (kJ/s)	164.495	102.726	100.232	94.985	93.725	69.238
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.045	11.801	12.371	12.233	7.672	5.217
U (kW/sq.m/K)	2.923	4.494	4.183	4.009	2.465	2.678
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.0857	0.0264	0.0430	0.0534	0.2095	0.1773

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 84      Time: 12:00      Total Operation Time: 312 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89.5	61.3	47	33.8	27.7	24.5
Outlet Temp. (deg. C)	112	75.6	61.3	47	33	27.7
Temp. Rise (deg. C)	22.5	14.3	14.3	13.2	5.3	3.2
Flashing Temp. (deg. C)	117	81.5	67.5	53.7	37.7	31.4
Heat Transfer Rate (kJ/s)	160.932	101.317	100.947	92.883	107.998	65.168
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.198	11.619	11.958	12.126	7.020	5.135
U (kW/sq.m/K)	2.610	4.502	4.358	3.955	3.105	2.561
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1268	0.0261	0.0334	0.0568	0.1260	0.1944

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 94      Time: 16:00      Total Operation Time: 316 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	61.2	47.2	33.9	28.2	25
Outlet Temp. (deg. C)	112	75.7	61.2	47.2	33	28.2
Temp. Rise (deg. C)	23	14.5	14	13.3	4.8	3.2
Flashing Temp. (deg. C)	116.5	81.9	67.8	54	38.2	31.9
Heat Transfer Rate (kJ/s)	164.495	102.734	98.830	93.590	97.813	65.173
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.706	12.027	12.300	12.272	7.340	5.135
U (kW/sq.m/K)	2.771	4.410	4.148	3.937	2.689	2.561
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1045	0.0307	0.0450	0.0579	0.1758	0.1944



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 29, 94      Time: 20:00      Total Operation Time: 520 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	60.9	46.8	33.5	28	24.5
Outlet Temp. (deg. C)	112	75.3	60.9	46.8	32.8	28
Temp. Rise (deg. C)	23	14.4	14.1	13.3	4.8	3.5
Flashing Temp. (deg. C)	117	81.5	67.3	53.6	37.8	31.7
Heat Transfer Rate (KJ/S)	164.495	102.016	99.528	93.582	97.810	71.279
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.351	11.993	12.112	12.272	7.133	5.257
U (kW/sq.m/K)	2.637	4.392	4.242	3.937	2.767	2.736
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1228	0.0316	0.0396	0.0579	0.1653	0.1694

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 30, 94      Time: 00:00      Total Operation Time: 324 hr.

Variables	Brine Heater			Evaporator Stages						
	#1	#2	#3	#4	#5	#6	#7	#8	#9	
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500	18500	18500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.909	3.897	3.965	3.965	3.965	3.965	3.965	3.965
Inlet Temp. (deg. C)	89	61	46.8	33.3	27.9	27.9	27.9	27.9	27.9	27.9
Outlet Temp. (deg. C)	112	75.4	61	46.8	32	32	32	32	32	32
Temp. Rise (deg. C)	23	14.4	14.2	13.5	4.1	4.1	4.1	4.1	4.1	4.1
Flashing Temp. (deg. C)	118.5	81.3	67.1	53.5	37.7	37.7	37.7	37.7	37.7	37.7
Heat Transfer Rate (kJ/s)	164.495	102.019	100.235	94.987	83.541	83.541	83.541	83.541	83.541	83.541
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556	4.9556	4.9556	4.9556	4.9556
L.M.T.D. (deg. C)	15.206	11.654	11.810	12.233	7.566	7.566	7.566	7.566	7.566	7.566
U (kW/sq.m/°C)	2.315	4.519	4.382	4.009	2.228	2.228	2.228	2.228	2.228	2.228
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
f (sq.m k/kW)	0.1755	0.0252	0.0322	0.0534	0.2527	0.2527	0.2527	0.2527	0.2527	0.2527

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: November 30, 94

Time: 04:00

Total Operation Time: 328 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.5	60.9	46.7	33.1	27.8	24
Outlet Temp. (deg. C)	112	75.4	60.9	46.7	32	27.8
Temp. Rise (deg. C)	23.5	14.5	14.2	13.6	4.2	3.8
Flashing Temp. (deg. C)	116.5	81.2	67	53.4	37.6	31.5
Heat Transfer Rate (kJ/s)	168.058	102.726	100.232	95.697	85.578	77.385
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.855	11.574	11.810	12.269	7.505	5.378
U (kW/sq.m/°C)	2.798	4.582	4.381	4.026	2.301	2.904
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1010	0.0222	0.0322	0.0523	0.2385	0.1483

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8

Date: November 30, 94

Time: 08:00

Total Operation Time: 332 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/°C)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	61.1	46.7	33.1	27.7	24
Outlet Temp. (deg. C)	112	75.5	61.1	46.7	32	27.7
Temp. Rise (deg. C)	23	14.4	14.4	13.6	4.3	3.7
Flashing Temp. (deg. C)	117	81	67.5	53.4	37.6	31.3
Heat Transfer Rate (KJ/S)	164.495	102.022	101.646	95.687	87.615	75.348
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. °C)	13.351	11.198	12.217	12.269	7.547	5.234
U (KW/sq.m/°C)	2.637	4.704	4.295	4.026	2.343	2.905
Clean-U Value (KW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1228	0.0165	0.0367	0.0523	0.2308	0.1481

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 30, 94      Time: 12:00      Total Operation Time: 336 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.963
Inlet Temp. (deg. C)	89	61.5	47.5	34.3	28.2	26
Outlet Temp. (deg. C)	112	75.9	61.5	47.5	34	28.2
Temp. Rise (deg. C)	23	14.4	14	13.2	5.8	2.2
Flashing Temp. (deg. C)	118	81.6	67.7	54.2	38.3	32
Heat Transfer Rate (kJ/s)	164.495	102.032	98.837	92.893	118.199	44.809
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.598	11.426	11.853	12.126	6.792	4.817
U (kW/sq.m/K)	2.412	4.610	4.305	3.955	3.512	1.877
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1582	0.0208	0.0362	0.0568	0.0887	0.3366

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 30, 94      Time: 16:00      Total Operation Time: 340 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.961	3.924	3.910	3.898	3.966	3.963
Inlet Temp. (deg. C)	89	61.6	47.5	34.4	28.2	25
Outlet Temp. (deg. C)	112	75.9	61.6	47.5	34	28.2
Temp. Rise (deg. C)	23	14.3	14.1	13.1	5.8	3.2
Flashing Temp. (deg. C)	117	82	67.9	54.2	38.5	32
Heat Transfer Rate (K/S)	164.495	101.325	99.545	92.191	118.199	65.173
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.351	11.845	12.000	12.090	7.004	5.238
U (kW/sq.m/K)	2.637	4.416	4.283	3.937	3.405	2.511
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1228	0.0304	0.0374	0.0579	0.0976	0.2022

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: November 30, 94      Time: 20:00      Total Operation Time: 344 Hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18400	18400
Specific Heat (kJ/kg/K)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	61	46.8	33.5	27.9	25
Outlet Temp. (deg. C)	112	75.5	61	46.8	33	27.9
Temp. Rise (deg. C)	23	14.5	14.2	13.3	5.1	2.9
Flashing Temp. (deg. C)	118	81.3	67.1	53.6	37.8	31.7
Heat Transfer Rate (KJS)	164.495	102.729	100.235	93.582	103.362	58.742
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.598	11.574	11.810	12.272	7.045	5.114
U (kW/sq. m/K)	2.412	4.582	4.382	3.937	2.961	2.318
Clean-U Value (kW/sq. m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.1582	0.0222	0.0322	0.0579	0.1417	0.2353

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 01, 94      Time: 00:00      Total Operation Time: 348 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.910	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	61	46.9	35.5	27.8	24.5
Outlet Temp. (deg. C)	112	75.5	61	46.9	32.5	27.8
Temp. Rise (deg. C)	23	14.5	14.1	13.4	4.7	3.3
Flashing Temp. (deg. C)	118	81.7	67.5	53.7	37.9	31.7
Heat Transfer Rate (KJS)	164,495	102,729	99,530	94,286	95,769	67,205
Heat Transfer Area (sq. m)	4,6723	1,937	1,937	1,937	4,9556	4,9556
L.M.T.D. (deg. C)	14,598	12,027	12,224	12,308	7,506	5,382
U (kW/sq. m/°C)	2,412	4,410	4,204	3,955	2,575	2,520
Clean-U Value (kW/sq. m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.1582	0.0307	0.0418	0.0568	0.1923	0.2008



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 01, 94      Time: 04:00      Total Operation Time: 352 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.939	3.923	3.909	3.887	3.965	3.962
Inlet Temp. (deg. C)	88.5	60.5	46.4	32.9	27.5	23
Outlet Temp. (deg. C)	112	74.9	60.5	46.4	31	27.5
Temp. Rise (deg. C)	23.5	14.4	14.1	13.5	3.5	4.5
Flashing Temp. (deg. C)	118	81	66.9	53.3	37.5	31.3
Heat Transfer Rate (kJ/s)	168.058	102.005	99.518	94.978	71.308	91.633
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.755	11.880	12.112	12.454	8.125	5.760
U (kW/sq.m/K)	2.438	4.433	4.242	3.937	1.771	3.210
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1538	0.0295	0.0397	0.0579	0.3686	0.1154

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 01, 94

Time: 08:00

Total Operation Time: 336 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.5	60.7	46.6	33	27.5	23.5
Outlet Temp. (deg. C)	112	75.2	60.7	46.6	32	27.5
Temp. Rise (deg. C)	23.5	14.5	14.1	13.6	4.5	4
Flashing Temp. (deg. C)	118	81.1	67.2	53.4	37.4	31.3
Heat Transfer Rate (kJ/s)	168.058	102.720	99.523	95.685	91.688	81.454
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.755	11.688	12.224	12.379	7.424	5.562
U (kW/sq.m/°C)	2.438	4.537	4.203	3.990	2.492	2.955
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1538	0.0243	0.0418	0.0545	0.2052	0.1423

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 01, 94      Time: 12:00      Total Operation Time: 360 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.961	3.924	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	89	60.9	46.9	33.6	27.7	24
Outlet Temp. (deg. C)	112	75.4	60.9	46.9	32	27.7
Temp. Rise (deg. C)	23	14.5	14	13.3	4.3	3.7
Flashing Temp. (deg. C)	118.2	81.7	67.5	53.9	38	31.6
Heat Transfer Rate (KJ/S)	164.495	102.726	98.823	93.584	87.615	75.348
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.842	12.140	12.300	12.492	7.957	5.546
U (kW/sq.m/K)	2.372	4.369	4.148	3.868	2.222	2.742
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1652	0.0328	0.0450	0.0625	0.2540	0.1687

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3      Date: December 01, 94      Time: 16:00      Total Operation Time: 364 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18400	18400
Specific Heat (kJ/kg/K)	3.939	3.923	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88.5	60.5	46.5	33	27.6	23.5
Outlet Temp. (deg. C)	112	75	60.5	46.5	31.5	27.6
Temp. Rise (deg. C)	23.5	14.5	14	13.5	3.9	4.1
Flashing Temp. (deg. C)	119	81.4	67.3	53.5	37.8	31.5
Heat Transfer Rate (kJ/s)	168.058	102.715	98.813	94.980	79.032	83.039
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	15.967	12.252	12.522	12.564	8.094	5.707
U (kW/sq. m/K)	2.253	4.328	4.074	3.903	1.970	2.936
Clean-U Value (kW/sq. m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/kW)	0.1875	0.0350	0.0494	0.0601	0.3114	0.1445

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 01, 94      Time: 20:00      Total Operation Time: 368 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.897	3.965	3.963
Inlet Temp. (deg. C)	88	60.4	46.3	33	27.3	23.5
Outlet Temp. (deg. C)	112	74.9	60.4	46.3	31.5	27.3
Temp. Rise (deg. C)	24	14.5	14.1	13.3	4.2	3.8
Flashing Temp. (deg. C)	118.5	81.7	67.2	53.4	37.6	31.3
Heat Transfer Rate (KJ/S)	171.620	102.712	99.515	93.571	84.184	76.125
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	15.525	12.699	12.558	12.601	8.017	5.690
U (kW/sq.m/K)	2.366	4.175	4.091	3.833	2.119	2.700
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1662	0.0434	0.0483	0.0648	0.2759	0.1743

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 02, 94      Time: 00:00      Total Operation Time: 372 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/Kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.2	46	32.5	26.9	23
Outlet Temp. (deg. C)	112	74.8	60.2	46	31	26.9
Temp. Rise (deg. C)	24	14.6	14.2	13.5	4.1	3.9
Flashing Temp. (deg. C)	119	81.2	67.1	53.2	37.2	30.9
Heat Transfer Rate (KJ/S)	171.620	103.416	100.215	94.970	83.529	79.412
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.128	12.287	12.704	12.783	8.077	5.731
U (KW/sq.m/K)	2.277	4.345	4.072	3.835	2.087	2.796
clean-U value (KW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1827	0.0341	0.0495	0.0647	0.2831	0.1615

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 02, 94      Time: 04:00      Total Operation Time: 376 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.2	45.7	32.1	26.6	22
Outlet Temp. (deg. C)	112	74.6	60.2	45.7	31	26.6
Temp. Rise (deg. C)	24	14.4	14.5	13.6	4.4	4.6
Flashing Temp. (deg. C)	119.5	80.7	66.8	52.8	36.8	30.5
Heat Transfer Rate (KJ/S)	171.620	101.997	102.329	95.666	89.639	93.657
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.724	11.880	12.476	12.710	7.794	5.904
U (KW/sq.m/K)	2.196	4.432	4.234	3.886	2.321	3.201
Clean-U Value (kw/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1989	0.0295	0.0401	0.0613	0.2348	0.1163

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 02, 94      Time: 08:00      Total Operation Time: 380 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.908	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60	45.7	32	26.4	22
Outlet Temp. (deg. C)	112	74.5	60	45.7	30	26.4
Temp. Rise (deg. C)	24	14.5	14.3	13.7	3.6	4.4
Flashing Temp. (deg. C)	120	81.3	67.1	53	36.8	30.4
Heat Transfer Rate (kJ/s)	171.620	102.701	100.915	96.368	72.146	88.131
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	17.312	12.699	12.961	12.966	8.473	5.930
U (kW/sq.m/K)	2.122	4.175	4.020	3.837	1.718	2.999
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2149	0.0434	0.0527	0.0645	0.3859	0.1374



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 02, 94      Time: 12:00      Total Operation Time: 364 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/°C)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.2	45.9	32.3	26.6	22.5
Outlet Temp. (deg. C)	112	74.7	60.2	45.9	30.5	26.6
Temp. Rise (deg. C)	24	14.5	14.3	13.6	3.9	4.1
Flashing Temp. (deg. C)	119.5	81.2	67.1	53.2	37.1	30.7
Heat Transfer Rate (kJ/s)	171.620	102.707	100.920	95.670	78.162	82.126
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	16.724	12.364	12.740	12.929	8.400	5.915
U (kW/sq.m/°C)	2.196	4.288	4.090	3.820	1.878	2.802
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1989	0.0371	0.0484	0.0657	0.3365	0.1608

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 02, 94      Time: 16:00      Total Operation Time: 368 hr.

Variables	Brine Heater			Evaporator Stages					
	#1	#2	#3	#4	#5	#6	#7	#8	
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200	18200	18200	
Specific Heat (KJ/Kg/K)	3.960	3.923	3.909	3.896	3.964	3.962	3.962	3.962	
Inlet Temp. (deg. C)	88	60.2	45.9	32.2	26.6	22	22	22	
Outlet Temp. (deg. C)	112	74.8	60.2	45.9	30.5	26.6	26.6	26.6	
Temp. Rise (deg. C)	24	14.6	14.3	13.7	3.9	4.6	4.6	4.6	
Flashing Temp. (deg. C)	120	81.6	67.3	53.2	37.1	30.7	30.7	30.7	
Heat Transfer Rate (KJ/S)	171.620	103.416	100.920	96.373	78.162	92.139	92.139	92.139	
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556	4.9556	4.9556	
L.M.T.D. (deg. K)	17.312	12.735	12.961	12.966	8.400	6.114	6.114	6.114	
U (kW/sq.m/K)	2.122	4.192	4.020	3.837	1.878	3.041	3.041	3.041	
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
f (sq.m K/kW)	0.2149	0.0424	0.0527	0.0645	0.3365	0.1328	0.1328	0.1328	

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 02, 94

Time: 20:00

Total Operation Time: 392 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/m)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.5	46.1	32.4	26.6	22
Outlet Temp. (deg. C)	112	75.1	60.5	46.1	30.5	26.6
Temp. Rise (deg. C)	24	14.6	14.4	13.7	3.9	4.6
Flashing Temp. (deg. C)	119.5	81.7	67.7	53.4	37.2	30.6
Heat Transfer Rate (kJ/s)	171.620	103.425	101.632	96.377	78.162	92.139
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	16.724	12.511	13.107	12.966	8.501	6.009
U (kW/sq.m/K)	2.196	4.268	4.003	3.838	1.855	3.084
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.1989	0.0382	0.0537	0.0645	0.3429	0.1271

Brine Heater

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 05, 94      Time: 00:00      Total Operation Time: 396 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.5	46.2	32.6	26.6	22
Outlet Temp. (deg. C)	112	74.9	60.5	46.2	31	26.6
Temp. Rise (deg. C)	24	14.4	14.3	13.6	4.4	4.6
Flashing Temp. (deg. C)	121	81.5	67.5	53.5	37.2	30.7
Heat Transfer Rate (kJ/s)	171.620	102.005	100.927	95.677	88.185	92.139
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.472	12.441	12.851	12.929	8.204	6.114
U (kW/sq.m/K)	1.989	4.233	4.055	3.820	2.169	3.041
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2465	0.0402	0.0505	0.0657	0.2650	0.1328

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 03, 94      Time: 04:00      Total Operation Time: 400 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/hr)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.4	45.8	32.1	26.4	22
Outlet Temp. (deg. C)	112	75	60.4	45.8	31	26.4
Temp. Rise (deg. C)	24	14.6	14.6	13.7	4.6	4.4
Flashing Temp. (deg. C)	121	81.6	67.6	53.2	36.9	30.5
Heat Transfer Rate (k/S)	171.620	103.422	103.038	96.370	93.712	89.584
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.472	12.511	13.179	13.075	7.980	6.035
U (kW/sq. m/K)	1.989	4.268	4.036	3.805	2.370	2.995
Clean-U Value (kW/sq. m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq. m K/KW)	0.2465	0.0382	0.0517	0.0667	0.2259	0.1378

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: December 03, 94      Time: 06:00      Total Operation Time: 404 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.3	45.8	32	26.3	23
Outlet Temp. (deg. C)	112	74.8	60.3	45.8	31	26.3
Temp. Rise (deg. C)	24	14.5	14.5	13.8	4.7	3.3
Flashing Temp. (deg. C)	121	81.2	67.2	53.1	36.8	30.4
Heat Transfer Rate (kJ/s)	171.620	102.709	102.331	97.073	95.749	67.192
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	18.472	12.252	12.811	13.002	7.919	5.589
U (kW/sq.m/K)	1.989	4.328	4.124	3.854	2.440	2.426
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2465	0.0350	0.0464	0.0634	0.2138	0.2161

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 05, 94

Time: 12:00

Total Operation Time: 408 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.924	3.909	3.896	3.965	3.962
Inlet Temp. (deg. C)	88	60.8	46.3	32.8	26.7	23
Outlet Temp. (deg. C)	112	75.2	60.8	46.3	31.5	26.7
Temp. Rise (deg. C)	24	14.4	14.5	13.5	4.8	3.7
Flashing Temp. (deg. C)	122	81.7	67.4	53.5	37.3	30.8
Heat Transfer Rate (kJ/s)	171.620	102.013	102.344	94.976	97.792	75.338
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	19.611	12.329	12.476	12.783	7.960	5.753
U (kW/sq.m/K)	1.873	4.272	4.235	3.836	2.479	2.643
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2775	0.0380	0.0401	0.0646	0.2073	0.1823

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 03, 94      Time: 16:00      Total Operation Time: 412 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.924	3.909	3.897	3.965	3.962
Inlet Temp. (deg. C)	88	61.1	46.6	33.2	26.9	23.5
Outlet Temp. (deg. C)	112	75.4	61.1	46.6	32	26.9
Temp. Rise (deg. C)	24	14.3	14.5	13.4	5.1	3.4
Flashing Temp. (deg. C)	120	82.1	67.9	54	37.7	31
Heat Transfer Rate (kJ/S)	171.620	101.312	102.351	94.280	103.909	69.233
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	17.312	12.517	12.699	12.966	7.980	5.630
U (kW/sq.m/K)	2.122	4.178	4.161	3.754	2.628	2.482
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2149	0.0432	0.0443	0.0703	0.1845	0.2069



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 03, 94      Time: 20:00      Total Operation Time: 416 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.4	46.1	32.5	26.7	23
Outlet Temp. (deg. C)	112	74.9	60.4	46.1	30.5	26.7
Temp. Rise (deg. C)	24	14.5	14.3	13.6	3.8	3.7
Flashing Temp. (deg. C)	120	81.1	67.6	53.5	37.2	30.8
Heat Transfer Rate (kJ/s)	171.620	102.712	100.925	95.674	76.158	74.117
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	17.512	12.027	13.072	13.039	8.458	5.753
U (kW/sq.m/K)	2.122	4.409	3.986	3.788	1.817	2.600
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kw)	0.2149	0.0307	0.0548	0.0679	0.3543	0.1886

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8

Date: December 04, 94

Time: 00:00

Total Operation Time: 420 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.1	45.8	32.1	26.5	22.5
Outlet Temp. (deg. C)	112	74.6	60.1	45.8	30	26.5
Temp. Rise (deg. C)	24	14.5	14.3	13.7	3.5	4
Flashing Temp. (deg. C)	123	81.6	67.5	53.4	37.1	30.7
Heat Transfer Rate (KJ/S)	171.620	102.704	100.917	96.370	70.142	80.123
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	20.735	12.922	13.292	13.294	8.733	5.979
U (kW/sq.m/K)	1.771	4.103	3.920	3.743	1.621	2.704
Clean-U value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3081	0.0476	0.0590	0.0711	0.4209	0.1737

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 04, 94      Time: 04:00      Total Operation Time: 424 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/°C)	3.960	3.923	3.909	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.1	45.7	31.9	26.3	22.5
Outlet Temp. (deg. C)	112	74.6	60.1	45.7	30	26.3
Temp. Rise (deg. C)	24	14.5	14.4	13.8	3.7	3.8
Flashing Temp. (deg. C)	124	82.1	67.9	53.4	37	30.6
Heat Transfer Rate (KJ/S)	171.620	102.704	101.622	97.071	74.149	76.115
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	21.846	13.474	13.767	13.439	8.720	6.001
U (kW/sq.m/°C)	1.681	3.935	3.811	3.729	1.716	2.560
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3383	0.0580	0.0663	0.0721	0.3867	0.1946

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 04, 94      Time: 08:00      Total Operation Time: 428 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.960	3.923	3.908	3.896	3.964	3.962
Inlet Temp. (deg. C)	88	60.1	45.5	31.6	26	21
Outlet Temp. (deg. C)	112	74.7	60.1	45.5	29.5	26
Temp. Rise (deg. C)	24	14.6	14.6	13.9	3.5	5
Flashing Temp. (deg. C)	123.5	81.4	67.4	52.9	36.4	30
Heat Transfer Rate (kJ/s)	171.620	103.414	103.031	97.769	70.137	100.140
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.292	12.623	13.289	13.148	8.531	6.166
U (kW/sq.m/K)	1.725	4.229	4.002	3.839	1.659	3.277
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3233	0.0404	0.0538	0.0644	0.4067	0.1090

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 04, 94      Time: 12:00      Total Operation Time: 432 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/K)	3.960	3.923	3.908	3.896	3.964	3.962
Inlet Temp. (deg. C)	87.5	59.9	45.5	31.8	25.9	21
Outlet Temp. (deg. C)	112	74.4	59.9	45.5	29.5	25.9
Temp. Rise (deg. C)	24.5	14.5	14.4	13.7	3.6	4.9
Flashing Temp. (deg. C)	123.5	81.9	67.6	53.3	36.8	30.2
Heat Transfer Rate (KJ/S)	175.182	102.699	101.617	96.364	72.537	98.676
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.469	13.474	13.658	13.512	8.980	6.442
U (kW/sq.m/K)	1.746	3.935	3.841	3.682	1.630	3.091
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kw)	0.3162	0.0581	0.0643	0.0755	0.4174	0.1275

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 04, 94      Time: 16:00      Total Operation Time: 436 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/°C)	3.960	3.923	3.908	3.895	3.964	3.961
Inlet Temp. (deg. C)	88	59.7	45.1	31.3	25.6	21
Outlet Temp. (deg. C)	112	74.3	59.7	45.1	29	25.6
Temp. Rise (deg. C)	24	14.6	14.6	13.8	3.4	4.6
Flashing Temp. (deg. C)	123	81.1	67.3	52.9	36.3	29.8
Heat Transfer Rate (kJ/S)	171.620	103.403	103.021	97.058	69.252	93.645
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. C)	20.735	12.735	13.620	13.548	8.892	6.219
U (kW/sq.m/°C)	1.771	4.192	3.905	3.698	1.572	3.039
Clean-U Value (kW/sq.m/°C)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3081	0.0425	0.0600	0.0743	0.4402	0.1330

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 04, 94      Time: 20:00      Total Operation Time: 440 hr.

Variables	Evaporator Stages					
	#1	#2	#3	#4	#5	#6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.922	3.908	3.895	3.963	3.961
Inlet Temp. (deg. C)	87	59.3	44.6	30.7	24.9	20
Outlet Temp. (deg. C)	112	74	59.3	44.6	28	24.9
Temp. Rise (deg. C)	25	14.7	14.7	13.9	3.1	4.9
Flashing Temp. (deg. C)	123.5	81.2	66.2	52.1	35.6	29.2
Heat Transfer Rate (kJ/s)	178.743	104.101	103.715	97.750	63.135	99.742
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	21.646	13.215	12.881	13.257	9.062	6.442
U (kW/sq.m/K)	1.767	4.067	4.157	3.807	1.406	3.124
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.3094	0.0498	0.0445	0.0666	0.5152	0.1240

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 05, 94

Time: 00:00

Total Operation Time: 444 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18200	18200
Specific Heat (kJ/kg/K)	3.958	3.922	3.908	3.895	3.963	3.961
Inlet Temp. (deg. C)	84	59.4	44.5	30.5	24.5	20
Outlet Temp. (deg. C)	112	74.1	59.4	44.5	28	24.5
Temp. Rise (deg. C)	28	14.7	14.9	14	3.5	4.5
Flashing Temp. (deg. C)	124	92.3	81.3	67	52.5	28.8
Heat Transfer Rate (kJ/s)	200.097	104.104	105.126	98.450	70.123	90.112
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	23.256	13.215	13.728	13.859	9.139	6.284
U (kW/sq.m/K)	1.841	2.880	3.953	3.673	1.548	2.894
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2866	0.0498	0.0569	0.0762	0.4497	0.1495



# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 05, 94      Time: 04:00      Total Operation Time: 448 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.958	3.922	3.907	3.894	3.963	3.961
Inlet Temp. (deg. C)	84	59.1	44.2	30.1	24.2	19
Outlet Temp. (deg. C)	112	73.9	59.1	44.2	28	24.2
Temp. Rise (deg. C)	28	14.8	14.9	14.1	3.8	5.2
Flashing Temp. (deg. C)	124.5	81.3	67	52.2	35.1	28.5
Heat Transfer Rate (KJ/S)	200.097	104.805	105.118	99.145	77.387	105.838
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	23.818	13.472	14.058	13.876	8.865	6.560
U (kW/sq.m/K)	1.798	4.016	3.860	3.689	1.762	3.256
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.2997	0.0529	0.0630	0.0750	0.3716	0.1111

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 05, 94      Time: 08:00      Total Operation Time: 452 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (KJ/Kg/K)	3.937	3.922	3.907	3.894	3.963	3.961
Inlet Temp. (deg. C)	86.5	59	44	29.9	23.9	20
Outlet Temp. (deg. C)	112	73.7	59	44	28	23.9
Temp. Rise (deg. C)	25.5	14.7	15	14.1	4.1	3.9
Flashing Temp. (deg. C)	124.2	81	66.7	52.1	35	28.3
Heat Transfer Rate (KJ/S)	182.303	104.093	105.820	99.141	83.495	79.382
Heat Transfer Area (sq. m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	22.602	13.325	13.874	13.985	8.893	6.145
U (KW/sq.m/K)	1.726	4.033	3.938	3.660	1.895	2.607
Clean-U Value (KW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.3229	0.0519	0.0579	0.0772	0.3317	0.1875

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 05, 94      Time: 12:00      Total Operation Time: 456 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.922	3.907	3.894	3.963	3.961
Inlet Temp. (deg. C)	86.5	59	44	29.9	23.9	20
Outlet Temp. (deg. C)	112	73.7	59	44	28	23.9
Temp. Rise (deg. C)	25.5	14.7	15	14.1	4.1	3.9
Flashing Temp. (deg. C)	124.2	81	66.7	52.1	35	28.3
Heat Transfer Rate (KJ/S)	182.303	104.093	105.820	99.141	85.495	79.382
Heat Transfer Area (sq,m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	22.602	13.325	13.874	13.985	8.893	6.145
U (kW/sq,m/K)	1.726	4.033	3.938	3.660	1.895	2.607
Clean-U Value (kW/sq,m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq,m K/kW)	0.3229	0.0519	0.0579	0.0772	0.3317	0.1875

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 05, 94

Time: 16:00

Total Operation Time: 460 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/K)	3.959	3.922	3.907	3.894	3.963	3.961
Inlet Temp. (deg. C)	86.3	58.6	43.7	30	23.5	19.2
Outlet Temp. (deg. C)	112	73.5	58.6	43.7	29	23.5
Temp. Rise (deg. C)	25.7	14.9	14.9	13.7	5.5	4.3
Flashing Temp. (deg. C)	122.3	80.9	66.8	52.5	35	28.4
Heat Transfer Rate (kJ/S)	183.727	105.501	105.106	96.326	110.799	86.571
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	20.537	13.507	14.386	14.594	8.454	6.826
U (kW/sq.m/K)	1.915	4.032	3.772	3.408	2.645	2.559
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/KW)	0.2659	0.0519	0.0690	0.0974	0.1820	0.1946

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8

Date: December 05, 94

Time: 20:00

Total Operation Time: 464 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.921	3.907	3.894	3.962	3.960
Inlet Temp. (deg. C)	88	58.3	43.4	29.4	23.5	19
Outlet Temp. (deg. C)	112	73.4	58.3	43.4	27	23.5
Temp. Rise (deg. C)	24	15.1	14.9	14	3.5	4.5
Flashing Temp. (deg. C)	116	80.1	65.3	51.1	33.9	27.6
Heat Transfer Rate (kJ/s)	171.620	106.911	105.098	98.426	71.270	91.586
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.334	12.799	13.064	13.512	8.531	6.075
U (kW/sq.m/K)	2.978	4.312	4.153	3.761	1.686	3.042
Clear-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0794	0.0358	0.0447	0.0698	0.3971	0.1326

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 06, 94      Time: 00:00      Total Operation Time: 488 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.921	3.906	3.893	3.962	3.960
Inlet Temp. (deg. C)	87	57.9	42.9	28.8	23.1	19
Outlet Temp. (deg. C)	112	72.9	57.9	42.9	27	23.1
Temp. Rise (deg. C)	25	15	15	14.1	3.9	4.1
Flashing Temp. (deg. C)	115.8	79.3	65	50.3	33.4	27.3
Heat Transfer Rate (KJ/S)	178.743	106.191	105.792	99.117	79.413	83.443
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.343	12.427	13.210	13.220	8.196	6.019
U (kW/sq.m/K)	3.099	4.412	4.134	3.871	1.955	2.797
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0662	0.0306	0.0458	0.0623	0.3154	0.1614

# CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 8      Date: December 06, 94      Time: 04:00      Total Operation Time: 472 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.937	3.921	3.906	3.893	3.962	3.960
Inlet Temp. (deg. C)	73.2	58.1	43.1	28.8	22.9	18.5
Outlet Temp. (deg. C)	87	73.2	58.1	43.1	27	22.9
Temp. Rise (deg. C)	13.8	15.1	15	14.3	4.1	4.4
Flashing Temp. (deg. C)	90.4	79.4	65.2	50.5	33.4	27.2
Heat Transfer Rate (kJ/s)	178.743	106.906	105.797	100.526	83.484	89.545
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.620	12.235	13.210	13.292	8.282	6.244
U (kW/sq.m/K)	3.031	4.511	4.135	3.904	2.034	2.894
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0735	0.0256	0.0458	0.0600	0.2955	0.1495

**CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR**

Run No. 8      Date: December 06, 94      Time: 04:00      Total Operation Time: 472 hr.

Variables	Evaporator Stages					
	# 1	# 2	# 3	# 4	# 5	# 6
Flowrate (kg/h)	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.960	3.921	3.906	3.893	3.962	3.960
Inlet Temp. (deg. C)	87	58.1	43.1	28.8	22.9	18.5
Outlet Temp. (deg. C)	112	73.2	58.1	43.1	27	22.9
Temp. Rise (deg. C)	25	15.1	15	14.3	4.1	4.4
Flashing Temp. (deg. C)	116	79.4	65.2	50.5	33.4	27.2
Heat Transfer rate (kJ/s)	178.743	106.906	105.797	100.526	83.484	89.545
Heat Transfer Area (sq.m)	4.6723	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.620	12.235	13.210	13.292	8.282	6.244
U (kW/sq.m/K)	3.031	4.511	4.135	3.904	2.034	2.894
Clean-U Value (kW/sq.m/K)	3.9	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0735	0.0256	0.0458	0.0600	0.2955	0.1495