Appendix 5.3.3-3

Calculation of Overall Heat Transfer Coefficient(U) and Fouling Factor(f) in Run3

OPERATION CONDITIONS
FOR
RUN 3

1. Operation Period	25th July to 13th Aug.
2. Operation Time	456 h
3. Scale Control Method	PPN(M) Dosing
4. Operation Mode	Recirculation
5. Ball Cleaning	Once per 8 hours
6. Top Brine Temperature	112℃
7. Flow Rate	
-Make Up Seawater	3.6 m^3/h
-Recirculation	6.5 m^3/h
-Product Water	0.70 m^3/h
-Blow Brine	2.9 m^3/h
8. Chenical Consituents of Brine	
-pH at 25℃	8.43
-M-Alkalinity as $CaCO_3$	144 mg/L
-Chloride ion	25,600 mg/L
-Concentration factor as Cl^-	1.12
9. Dosing Rate of Chemicals	
-Scale Inhibior = PPN(M)	2 mg/L
-Acid = 98% H_2SO_4	--

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 25, 94** **Time: 20:00** **Total Operation Time: 8 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18100	18100
Specific Heat (kJ/kg/K)	3.989	3.970	3.956	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	92	79	66	53	42	34	32
Outlet Temp. (deg. C)	112	92	79	66	53	39	34
Temp. Rise (deg. C)	20	13	13	13	11	5	2
Flashing Temp. (deg. C)	115	94	80	69	60	43	41
Heat Transfer Rate (kJ/S)	142.955	92.468	92.144	91.850	77.512	99.773	39.888
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	9.819	6.452	4.926	7.766	11.647	6.166	7.958
U (kW/sq.m/K)	3.116	7.399	9.657	6.106	3.436	3.265	1.011
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0645	-0.0164	-0.0925	-0.0323	0.0950	0.1102	0.7926

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 00:00** **Total Operation Time: 12 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18000	18000
Specific Heat (kj/kg/K)	3.989	3.970	3.956	3.943	3.933	3.969	3.966
Inlet Temp. (deg. C)	92	79	66	53	41	33	32
Outlet Temp. (deg. C)	112	92	79	66	53	39	33
Temp. Rise (deg. C)	20	13	13	13	12	6	1
Flashing Temp. (deg. C)	114	94	82	70	59	43	40
Heat Transfer Rate (kJ/S)	142.955	92.468	92.144	91.850	84.549	119.057	19.832
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	6.452	7.766	8.985	10.923	6.548	7.489
U (kW/sq.m/K)	3.668	7.399	6.126	5.278	3.996	3.669	0.534
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0162	-0.0164	-0.0328	-0.0066	0.0542	0.0765	1.6752

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 04:00** **Total Operation Time: 16 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18000	18000
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	92	78	66	53	40	33	32
Outlet Temp. (deg. C)	112	92	78	66	53	39	33
Temp. Rise (deg. C)	20	14	12	13	13	6	1
Flashing Temp. (deg. C)	114	94	82	70	59	43	40
Heat Transfer Rate (kJ/S)	142.955	99.567	85.045	91.850	91.586	119.057	19.832
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	6.733	8.656	8.985	11.278	6.548	7.489
U (kW/sq.m/K)	3.668	7.635	5.072	5.278	4.192	3.669	0.534
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0162	-0.0205	0.0011	-0.0066	0.0424	0.0765	1.6752

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 08:00** **Total Operation Time: 20 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.970	3.956	3.943	3.933	3.969	3.966
Inlet Temp. (deg. C)	91.5	79	66	53	41	33	32
Outlet Temp. (deg. C)	112	91.5	79	66	53	39	33
Temp. Rise (deg. C)	20.5	12.5	13	13	12	6	1
Flashing Temp. (deg. C)	114	94	82	70	58	42	40
Heat Transfer Rate (kJ/S)	146.517	88.905	92.144	91.850	84.549	121.703	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.470	6.976	7.766	8.985	9.806	5.461	7.489
U (kW/sq.m/K)	3.702	6.579	6.126	5.278	4.451	4.497	0.546
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0137	0.0005	-0.0328	-0.0066	0.0286	0.0263	1.6345

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 12:00** **Total Operation Time: 24 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	91.5	78	65	53	41.5	34	33
Outlet Temp. (deg. C)	112	91.5	78	65	53	39.5	34
Temp. Rise (deg. C)	20.5	13.5	13	12	11.5	5.5	1
Flashing Temp. (deg. C)	115	97	86	72	60	43	41
Heat Transfer Rate (kJ/S)	146.517	96.004	92.121	84.775	81.031	112.180	20.386
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	9.959	10.890	13.470	12.018	11.833	5.823	7.489
U (kW/sq.m/K)	3.149	4.551	3.531	3.642	3.535	3.887	0.549
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0612	0.0682	0.0872	0.0785	0.0868	0.0612	1.6244

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 16:00** **Total Operation Time: 28 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18000	18000
Specific Heat (kj/kg/K)	3.989	3.969	3.956	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	92	78	66	53	42	34	33
Outlet Temp. (deg. C)	112	92	78	66	53	40	34
Temp. Rise (deg. C)	20	14	12	13	11	6	1
Flashing Temp. (deg. C)	114	96	86	72	60	44	41
Heat Transfer Rate (kj/S)	142.955	99.567	85.045	91.850	77.512	119.075	19.835
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	9.308	13.096	11.278	11.647	6.548	7.489
U (kW/sq.m/K)	3.668	5.522	3.353	4.205	3.436	3.670	0.534
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0162	0.0296	0.1022	0.0418	0.0950	0.0764	1.6749

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 26, 94** **Time: 20:00** **Total Operation Time: 32 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18000	18000
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.944	3.933	3.969	3.967
Inlet Temp. (deg. C)	92	78	66	54	41	34.5	33
Outlet Temp. (deg. C)	112	92	78	66	54	40	34.5
Temp. Rise (deg. C)	20	14	12	12	13	5.5	1.5
Flashing Temp. (deg. C)	114	96	86	71.5	59.5	43.5	40.5
Heat Transfer Rate (kJ/S)	141.847	98.795	84.386	84.137	90.895	109.157	29.754
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	9.308	13.096	10.368	10.717	5.823	6.722
U (kW/sq.m/K)	3.640	5.480	3.327	4.190	4.379	3.782	0.893
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0183	0.0310	0.1045	0.0426	0.0323	0.0683	0.9235

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 00:00** **Total Operation Time: 36 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18000	18000
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.944	3.933	3.969	3.967
Inlet Temp. (deg. C)	92	77	66	54	41	34	33
Outlet Temp. (deg. C)	112	92	77	66	54	40	34
Temp. Rise (deg. C)	20	15	11	12	13	6	1
Flashing Temp. (deg. C)	115	96	86	72	60	43	40
Heat Transfer Rate (kj/S)	141.847	105.837	77.344	84.137	90.895	119.075	19.835
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	9.819	9.627	13.776	10.923	11.278	5.461	6.487
U (kW/sq.m/K)	3.092	5.676	2.899	3.977	4.161	4.400	0.617
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0670	0.0247	0.1489	0.0554	0.0443	0.0312	1.4247

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 04:00** **Total Operation Time: 40 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18000	18000
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	92	77	66	53	40	34	32
Outlet Temp. (deg. C)	112	92	77	66	53	39	34
Temp. Rise (deg. C)	20	15	11	13	13	5	2
Flashing Temp. (deg. C)	114	96	86	71	60	43	40
Heat Transfer Rate (kJ/S)	141.847	105.837	77.344	91.138	90.876	99.222	39.668
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	9.627	13.776	10.149	12.383	6.166	6.952
U (kW/sq.m/K)	3.640	5.676	2.899	4.636	3.789	3.247	1.151
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0183	0.0247	0.1489	0.0196	0.0679	0.1119	0.6724

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 08:00** **Total Operation Time: 44 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.954	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	92	76.5	65	53	40	33.5	32
Outlet Temp. (deg. C)	112	92	76.5	65	53	39	33.5
Temp. Rise (deg. C)	20	15.5	11.5	12	13	5.5	1.5
Flashing Temp. (deg. C)	114	94	83	70	59	42.5	39.5
Heat Transfer Rate (kJ/S)	141.847	109.357	80.844	84.118	90.876	111.565	30.411
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	7.146	11.290	9.806	11.278	5.823	6.722
U (kW/sq.m/K)	3.640	7.901	3.697	4.429	4.160	3.866	0.913
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0183	-0.0249	0.0744	0.0297	0.0443	0.0626	0.8993

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 12:00** **Total Operation Time: 48 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	92	78	65	53	41	34	32
Outlet Temp. (deg. C)	112	92	78	65	53	39.5	34
Temp. Rise (deg. C)	20	14	13	12	12	5.5	2
Flashing Temp. (deg. C)	114	94	85	70	59.5	43.5	40
Heat Transfer Rate (kJ/S)	141.847	98.795	91.406	84.118	83.894	111.574	40.549
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	6.733	12.383	9.806	11.473	6.358	6.952
U (kW/sq.m/K)	3.640	7.576	3.811	4.429	3.775	3.541	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0183	-0.0195	0.0663	0.0297	0.0688	0.0863	0.6536

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 16:00** **Total Operation Time: 52 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18300	18300
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.933	3.969	3.966
Inlet Temp. (deg. C)	91.5	77	65	53	41	33	32
Outlet Temp. (deg. C)	112	91.5	77	65	53	39	33
Temp. Rise (deg. C)	20.5	14.5	12	12	12	6	1
Flashing Temp. (deg. C)	117	96	86	71	60	43	40
Heat Transfer Rate (kj/S)	147.653	103.900	85.683	85.432	85.205	121.041	20.163
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.583	10.067	14.163	10.923	12.018	6.548	7.489
U (kW/sq.m/K)	2.512	5.328	3.123	4.038	3.660	3.730	0.543
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1417	0.0362	0.1241	0.0516	0.0771	0.0720	1.6445

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 27, 94** **Time: 20:00** **Total Operation Time: 56 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18300	18300
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	52	41	33	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	33
Temp. Rise (deg. C)	21	14	12	13	11	6	1
Flashing Temp. (deg. C)	116	94	84	70	59	43	40
Heat Transfer Rate (kj/S)	151.243	100.310	85.683	92.541	78.096	121.041	20.163
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.018	10.149	11.647	6.548	7.489
U (kW/sq.m/K)	2.825	6.416	3.681	4.707	3.462	3.730	0.543
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0976	0.0043	0.0756	0.0164	0.0928	0.0720	1.6445

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 00:00** **Total Operation Time: 60 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6480	6480	6480	6480	6480	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.933	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	53	41	33	32
Outlet Temp. (deg. C)	112	91	77	65	53	39	33
Temp. Rise (deg. C)	21	14	12	12	12	6	1
Flashing Temp. (deg. C)	116	94	84	70	59	43	40
Heat Transfer Rate (kJ/S)	150.777	100.002	85.419	85.169	84.943	120.380	20.053
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.018	9.806	10.923	6.548	7.489
U (kW/sq.m/K)	2.816	6.397	3.669	4.484	4.015	3.710	0.540
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0987	0.0048	0.0764	0.0269	0.0530	0.0735	1.6546

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 04:00** **Total Operation Time: 64 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	32.5	31.5
Outlet Temp. (deg. C)	112	91	77	64	52	38	32.5
Temp. Rise (deg. C)	21	14	13	12	12	5.5	1
Flashing Temp. (deg. C)	116	94	84	70	58	42	39
Heat Transfer Rate (kJ/S)	148.916	98.767	91.383	84.098	83.876	110.335	20.051
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.383	10.923	10.923	6.358	6.988
U (kW/sq.m/K)	2.781	6.318	3.810	3.975	3.964	3.502	0.579
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	0.0068	0.0664	0.0555	0.0562	0.0895	1.5310

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 08:00** **Total Operation Time: 68 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18400	18400
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	78	65	52	40.5	33	32
Outlet Temp. (deg. C)	112	91	78	65	52	39	33
Temp. Rise (deg. C)	21	13	13	13	11.5	6	1
Flashing Temp. (deg. C)	115	93.5	84	69.5	58	42	39
Heat Transfer Rate (kj/S)	149.381	92.012	91.692	91.402	80.637	121.703	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	10.099	7.125	11.278	9.572	10.743	5.461	6.487
U (kW/sq.m/K)	3.166	6.667	4.197	4.930	3.875	4.497	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0595	-0.0015	0.0422	0.0068	0.0620	0.0263	1.3897

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 12:00** **Total Operation Time: 72 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6000	6000	6000	6000	6000	18400	18400
Specific Heat (kJ/kg/K)	3.988	3.967	3.953	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	90	76	63.5	51.5	40	33	32
Outlet Temp. (deg. C)	112	90	76	63.5	51.5	39	33
Temp. Rise (deg. C)	22	14	12.5	12	11.5	6	1
Flashing Temp. (deg. C)	113	94	84	69	58	42	39.5
Heat Transfer Rate (kJ/S)	146.234	92.569	82.361	78.833	75.354	121.703	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	7.016	9.308	13.284	10.368	11.290	5.461	6.988
U (kW/sq.m/K)	4.461	5.134	3.201	3.926	3.446	4.497	0.585
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	-0.0322	0.0433	0.1163	0.0587	0.0941	0.0263	1.5121

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 16:00** **Total Operation Time: 76 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6000	6000	6000	6000	6000	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64.5	52	40	33	31.5
Outlet Temp. (deg. C)	112	91	77	64.5	52	38	33
Temp. Rise (deg. C)	21	14	12.5	12.5	12	5	1.5
Flashing Temp. (deg. C)	116	95	85	69	58	41	39
Heat Transfer Rate (kJ/S)	139.609	92.594	82.382	82.132	78.634	101.962	30.574
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	9.308	13.284	9.405	10.923	5.098	6.722
U (kW/sq.m/K)	2.608	5.136	3.202	4.509	3.717	4.036	0.918
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1271	0.0432	0.1163	0.0257	0.0730	0.0517	0.8935

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 28, 94** **Time: 20:00** **Total Operation Time: 80 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6000	6000	6000	6000	6000	18500	18500
Specific Heat (kj/kg/K)	3.989	3.970	3.957	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	80	66	53	40	33	31
Outlet Temp. (deg. C)	112	91	80	66	53	38	33
Temp. Rise (deg. C)	21	11	14	13	13	5	2
Flashing Temp. (deg. C)	116	95	85	70	58	42	39.5
Heat Transfer Rate (kj/S)	139.609	72.783	92.321	85.442	85.196	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.322	10.487	8.985	10.149	6.166	7.455
U (kW/sq.m/K)	2.608	4.515	4.545	4.910	4.334	3.337	1.103
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1271	0.0700	0.0239	0.0076	0.0347	0.1036	0.7103

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 00:00** **Total Operation Time: 84 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6200	6200	6200	6200	6200	18000	18000
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12	5	2
Flashing Temp. (deg. C)	116	93	82	68	57	42	39.5
Heat Transfer Rate (kJ/S)	144.262	88.859	88.550	88.270	81.255	99.206	39.662
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	6.452	8.985	7.766	9.806	6.166	7.455
U (kW/sq.m/K)	2.694	7.110	5.088	5.868	4.278	3.247	1.074
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1147	-0.0109	0.0005	-0.0257	0.0377	0.1119	0.7354

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 04:00** **Total Operation Time: 88 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6200	6200	6200	6200	6200	18000	18000
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	64.5	52	39.5	32	31.5
Outlet Temp. (deg. C)	112	91	77.5	64.5	52	37	32
Temp. Rise (deg. C)	21	13.5	13	12.5	12.5	5	0.5
Flashing Temp. (deg. C)	116	92	83	68	58	41.5	38.5
Heat Transfer Rate (kJ/S)	144.262	92.270	88.539	84.870	84.636	99.191	9.915
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	5.048	10.717	8.225	11.101	6.692	6.747
U (kW/sq.m/K)	2.694	9.436	4.265	5.327	3.936	2.991	0.297
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1147	-0.0455	0.0384	-0.0084	0.0580	0.1382	3.1761

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 08:00** **Total Operation Time: 92 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6200	6200	6200	6200	6200	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65.5	52	40	33	32
Outlet Temp. (deg. C)	112	91	78	65.5	52	38	33
Temp. Rise (deg. C)	21	13	12.5	13.5	12	5	1
Flashing Temp. (deg. C)	117	93	83.5	69	58	42	39
Heat Transfer Rate (kJ/S)	144.262	88.859	85.150	91.670	81.255	101.411	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	6.452	10.543	8.542	10.923	6.166	6.487
U (kW/sq.m/K)	2.424	7.110	4.170	5.540	3.840	3.319	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1561	-0.0109	0.0438	-0.0156	0.0643	0.1052	1.3897

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 12:00** **Total Operation Time: 96 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	90.5	77	64	52	40.5	33	32
Outlet Temp. (deg. C)	112	90.5	77	64	52	39	33
Temp. Rise (deg. C)	21.5	13.5	13	12	11.5	6	1
Flashing Temp. (deg. C)	116	96	86	70	59	43	40
Heat Transfer Rate (kJ/S)	154.832	96.721	92.811	85.412	81.642	122.364	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.607	10.890	14.544	10.923	11.833	6.548	7.489
U (kW/sq.m/K)	2.855	4.585	3.294	4.037	3.562	3.771	0.549
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0938	0.0666	0.1075	0.0516	0.0847	0.0691	1.6246

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 16:00** **Total Operation Time: 100 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64.5	52	41	33	31.5
Outlet Temp. (deg. C)	112	91	77	64.5	52	39	33
Temp. Rise (deg. C)	21	14	12.5	12.5	11	6	1.5
Flashing Temp. (deg. C)	117	96	86	70	59	43	40
Heat Transfer Rate (kJ/S)	151.243	100.310	89.247	88.976	78.096	122.364	30.574
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	10.487	14.354	10.543	11.647	6.548	7.726
U (kW/sq.m/K)	2.541	4.938	3.210	4.357	3.462	3.771	0.799
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1371	0.0510	0.1155	0.0334	0.0928	0.0691	1.0562

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 29, 94** **Time: 20:00** **Total Operation Time: 104 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	41	32.5	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	32.5
Temp. Rise (deg. C)	21	13	13	13	11	5.5	1.5
Flashing Temp. (deg. C)	116	96	85	70	59	42	39
Heat Transfer Rate (kj/S)	151.243	93.158	92.835	92.541	78.096	112.154	30.572
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.149	12.383	10.149	11.647	6.358	7.224
U (kW/sq.m/K)	2.825	4.739	3.870	4.707	3.462	3.559	0.854
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0976	0.0595	0.0623	0.0164	0.0928	0.0849	0.9749

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 30, 94** **Time: 00:00** **Total Operation Time: 108 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.943	3.933	3.968	3.966
Inlet Temp. (deg. C)	91	79	66	53	41	32.5	31
Outlet Temp. (deg. C)	112	91	79	66	53	38	32.5
Temp. Rise (deg. C)	21	12	13	13	12	5.5	1.5
Flashing Temp. (deg. C)	117	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	148.916	84.681	91.430	91.138	83.894	110.335	30.076
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.456	10.149	7.766	9.806	6.358	7.224
U (kW/sq.m/K)	2.502	5.863	4.651	6.059	4.417	3.502	0.840
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1432	0.0190	0.0189	(0.0310	0.0303	0.0895	0.9942

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 30, 94** **Time: 04:00** **Total Operation Time: 112 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18100	18100
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.933	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52.5	42	32	30.5
Outlet Temp. (deg. C)	112	91	78	65	52.5	38	32
Temp. Rise (deg. C)	21	13	13	12.5	10.5	6	1.5
Flashing Temp. (deg. C)	116	92	83	68	57	42	38
Heat Transfer Rate (kJ/S)	148.916	91.725	91.406	87.618	73.411	119.700	29.908
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	4.926	10.149	7.612	8.721	6.548	6.722
U (kW/sq.m/K)	2.781	9.613	4.650	5.943	4.346	3.689	0.898
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	-0.0475	0.0190	-0.0278	0.0340	0.0750	0.9177

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 30, 94** **Time: 08:00** **Total Operation Time: 116 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	1
Flashing Temp. (deg. C)	116	93	84	69	58	42	39
Heat Transfer Rate (kJ/S)	148.916	98.767	91.383	84.098	83.876	101.962	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	6.733	12.383	9.806	10.923	6.166	6.487
U (kW/sq.m/K)	2.781	7.574	3.810	4.428	3.964	3.337	0.634
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	-0.0195	0.0664	0.0298	0.0562	0.1036	1.3811

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 30, 94** **Time: 12:00** **Total Operation Time: 120 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	91	78	65	53	41	34	32
Outlet Temp. (deg. C)	112	91	78	65	53	39	34
Temp. Rise (deg. C)	21	13	13	12	12	5	2
Flashing Temp. (deg. C)	116	94	84	70	59	43	40
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	84.775	84.549	101.978	40.770
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	11.278	9.806	10.923	6.166	6.952
U (kW/sq.m/K)	2.803	6.145	4.217	4.463	3.996	3.338	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0112	0.0411	0.0280	0.0542	0.1035	0.6490

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 5 **Date: July 30, 94** **Time: 16:00** **Total Operation Time: 124 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18100	18100
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	52	40	33	31.5
Outlet Temp. (deg. C)	112	91	77	65	52	39	33
Temp. Rise (deg. C)	21	14	12	13	12	6	1.5
Flashing Temp. (deg. C)	117	95	86	70	59	43	39
Heat Transfer Rate (kJ/S)	150.079	99.539	85.024	91.829	84.532	119.718	29.913
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	9.308	14.163	10.149	12.018	6.548	6.722
U (kW/sq.m/K)	2.522	5.521	3.099	4.671	3.631	3.689	0.898
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	0.0296	0.1266	0.0180	0.0793	0.0750	0.9176

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 30, 94** **Time: 20:00** **Total Operation Time: 128 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18100	18100
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	79	66	53	40	33	31.5
Outlet Temp. (deg. C)	112	91	79	66	53	39	33
Temp. Rise (deg. C)	21	12	13	13	13	6	1.5
Flashing Temp. (deg. C)	117	94	84.5	69	58	42	39
Heat Transfer Rate (kJ/S)	150.079	85.343	92.144	91.850	91.586	119.718	29.913
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.456	10.717	7.766	10.149	5.461	6.722
U (kW/sq.m/K)	2.522	5.909	4.439	6.106	4.659	4.423	0.898
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	0.0177	0.0292	-0.0323	0.0186	0.0300	0.9176

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 00:00** **Total Operation Time: 132 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12	5	2
Flashing Temp. (deg. C)	116	94	84	69	58	42	39
Heat Transfer Rate (kj/S)	150.079	92.442	92.121	91.829	84.532	100.860	40.323
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	11.278	8.985	10.923	6.166	6.952
U (kW/sq.m/K)	2.803	6.145	4.217	5.277	3.995	3.301	1.170
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0112	0.0411	-0.0066	0.0542	0.1069	0.6583

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 04:00** **Total Operation Time: 136 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	32	31
Outlet Temp. (deg. C)	112	91	78	65	52	37.5	32
Temp. Rise (deg. C)	21	13	13	13	12.5	5.5	1
Flashing Temp. (deg. C)	116	93	82	67	57	41	38
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	91.829	88.049	111.539	20.270
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	6.452	8.985	6.452	9.978	5.823	6.487
U (kW/sq.m/K)	2.803	7.397	5.293	7.348	4.556	3.865	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	-0.0163	-0.0072	-0.0600	0.0234	0.0627	1.3899

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 08:00** **Total Operation Time: 140 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	78	65	53	40.5	33.5	32
Outlet Temp. (deg. C)	112	91	78	65	53	39	33.5
Temp. Rise (deg. C)	21	13	13	12	12.5	5.5	1.5
Flashing Temp. (deg. C)	117	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	151.243	93.158	92.835	85.432	88.750	110.959	30.245
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.766	11.278	8.656	9.978	5.281	6.220
U (kW/sq.m/K)	2.541	6.193	4.250	5.095	4.592	4.240	0.981
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1371	0.0100	0.0392	0.0002	0.0217	0.0398	0.8230

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 12:00** **Total Operation Time: 144 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18400	18400
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.933	3.969	3.967
Inlet Temp. (deg. C)	91	78	65	53	41	34	32
Outlet Temp. (deg. C)	112	91	78	65	53	39	34
Temp. Rise (deg. C)	21	13	13	12	12	5	2
Flashing Temp. (deg. C)	118	96	86	70	59	43	40
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	84.775	84.549	101.427	40.549
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.962	10.149	13.470	9.806	10.923	6.166	6.952
U (kW/sq.m/K)	2.301	4.702	3.531	4.463	3.996	3.319	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1783	0.0611	0.0872	0.0280	0.0542	0.1052	0.6536

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 16:00** **Total Operation Time: 148 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	65	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	52	38.5	33
Temp. Rise (deg. C)	21	14	12	13	12	5.5	1
Flashing Temp. (deg. C)	116.5	96	86	70	59	43	39.5
Heat Transfer Rate (kJ/S)	150.079	99.539	85.024	91.829	84.532	112.163	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	10.487	14.163	10.149	12.018	6.888	6.988
U (kW/sq.m/K)	2.653	4.900	3.099	4.671	3.631	3.286	0.589
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0526	0.1266	0.0180	0.0793	0.1082	1.5029

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: July 31, 94** **Time: 20:00** **Total Operation Time: 152 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18400	18400
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	33	31.5
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12.5	5	1.5
Flashing Temp. (deg. C)	117	96	86	70.5	58.5	42	39
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	91.829	88.049	101.411	30.409
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	10.149	13.470	10.717	11.654	6.166	6.722
U (kW/sq.m/K)	2.522	4.702	3.531	4.424	3.901	3.319	0.913
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	0.0611	0.0872	0.0300	0.0603	0.1052	0.8994

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 01, 94** **Time: 00:00** **Total Operation Time: 156 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18600	18600
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	32	31
Outlet Temp. (deg. C)	112	91	78	65	52	37.5	32
Temp. Rise (deg. C)	21	13	13	13	12	5.5	1
Flashing Temp. (deg. C)	116	94	83	68	57.5	41	38
Heat Transfer Rate (kj/S)	150.079	92.442	92.121	91.829	84.532	112.752	20.490
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	10.149	7.766	10.368	5.823	6.487
U (kW/sq.m/K)	2.803	6.145	4.686	6.105	4.209	3.907	0.637
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0112	0.0173	-0.0323	0.0415	0.0599	1.3728

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 01, 94** **Time: 04:00** **Total Operation Time: 160 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18600	18600
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	32	31
Outlet Temp. (deg. C)	112	91	78	65	52	37	32
Temp. Rise (deg. C)	21	13	13	13	12.5	5	1
Flashing Temp. (deg. C)	116	93	82	67.5	57	41	38
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	91.829	88.049	102.498	20.490
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	6.452	8.985	7.125	9.978	6.166	6.487
U (kW/sq.m/K)	2.803	7.397	5.293	6.654	4.556	3.355	0.637
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	-0.0163	-0.0072	-0.0458	0.0234	0.1020	1.3728

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 01, 94** **Time: 08:00** **Total Operation Time: 164 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18000	18000
Specific Heat (kj/kg/K)	3.989	3.969	3.956	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	78	66	53	40	33	32
Outlet Temp. (deg. C)	112	91	78	66	53	39	33
Temp. Rise (deg. C)	21	13	12	13	13	6	1
Flashing Temp. (deg. C)	117	93	84	69	58	42	39
Heat Transfer Rate (kj/S)	150.079	92.442	85.045	91.850	91.586	119.057	19.832
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	6.452	10.923	7.766	10.149	5.461	6.487
U (kW/sq.m/K)	2.522	7.397	4.020	6.106	4.659	4.399	0.617
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	-0.0163	0.0527	-0.0323	0.0186	0.0312	1.4249

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 01, 94** **Time: 12:00** **Total Operation Time: 168 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	17900	17900
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	52.5	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	52.5	39	33
Temp. Rise (deg. C)	21	14	12	12.5	12.5	6	1
Flashing Temp. (deg. C)	116	96	86	70	59	43	40
Heat Transfer Rate (kJ/S)	149.381	99.076	84.628	87.891	87.649	118.395	19.722
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.487	14.163	9.978	11.654	6.548	7.489
U (kW/sq.m/K)	2.790	4.877	3.085	4.548	3.883	3.649	0.531
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1020	0.0535	0.1281	0.0238	0.0615	0.0780	1.6857

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 01, 94** **Time: 16:00** **Total Operation Time: 172 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	33
Temp. Rise (deg. C)	21	14	12	13	12	6	1
Flashing Temp. (deg. C)	116	96	86	70	59	43	39
Heat Transfer Rate (kj/S)	149.381	99.076	84.628	91.402	84.138	122.364	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.487	14.163	10.149	12.018	6.548	6.487
U (kW/sq.m/K)	2.790	4.877	3.085	4.650	3.614	3.771	0.634
Clean-U Value (kW/sq.m/K)	3.7	6.3	4.9	5.3	5.3	5.3	5.3
f (sq.m K/kW)	0.0881	0.0463	0.1201	0.0264	0.0880	0.0765	1.3885

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 5 **Date: August 01, 94** **Time: 20:00** **Total Operation Time: 176 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	33	32
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12	5	1
Flashing Temp. (deg. C)	116	96	86	70.5	59	42.5	39
Heat Transfer Rate (kj/S)	149.381	92.012	91.692	91.402	84.138	101.962	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.149	13.470	10.717	12.018	6.692	6.487
U (kW/sq.m/K)	2.790	4.681	3.514	4.403	3.614	3.075	0.634
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1020	0.0621	0.0885	0.0310	0.0806	0.1291	1.3811

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 00:00** **Total Operation Time: 180 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kj/kg/K)	3.989	3.969	3.956	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78.5	65.5	52	39.5	32.5	31.5
Outlet Temp. (deg. C)	112	91	78.5	65.5	52	38	32.5
Temp. Rise (deg. C)	21	12.5	13	13.5	12.5	5.5	1
Flashing Temp. (deg. C)	116.5	94	83	69	58.5	42	38
Heat Transfer Rate (kJ/S)	149.381	88.479	91.704	94.923	87.640	113.973	20.712
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	7.612	9.572	8.542	11.654	6.358	5.986
U (kW/sq.m/K)	2.641	6.001	4.946	5.737	3.883	3.617	0.698
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0151	0.0061	-0.0218	0.0615	0.0804	1.2361

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 04:00** **Total Operation Time: 184 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18600	18600
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	32	31.5
Outlet Temp. (deg. C)	112	91	78	65	52	38	32
Temp. Rise (deg. C)	21	13	13	13	12.5	6	0.5
Flashing Temp. (deg. C)	117	92.5	83	68	57	42	38
Heat Transfer Rate (kj/S)	149.381	92.012	91.692	91.402	87.640	123.007	10.246
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	5.730	10.149	7.766	9.978	6.548	6.247
U (kW/sq.m/K)	2.510	8.290	4.664	6.076	4.535	3.791	0.331
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	-0.0309	0.0183	-0.0315	0.0245	0.0677	2.8253

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 08:00** **Total Operation Time: 188 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18400	18400
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	65	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	52	38	33
Temp. Rise (deg. C)	21	14	12	13	12	5	1
Flashing Temp. (deg. C)	117	93	84	69	58	42	39
Heat Transfer Rate (kj/S)	151.243	100.310	85.683	92.541	85.187	101.411	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	6.733	12.018	8.985	10.923	6.166	6.487
U (kW/sq.m/K)	2.541	7.692	3.681	5.317	4.026	3.319	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1371	-0.0215	0.0756	-0.0080	0.0523	0.1052	1.3897

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 12:00** **Total Operation Time: 192 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	1
Flashing Temp. (deg. C)	117	94	85	70	59	43	39
Heat Transfer Rate (kj/S)	150.079	99.539	92.097	84.755	84.532	101.962	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	8.071	13.470	10.923	12.018	7.213	6.487
U (kW/sq.m/K)	2.522	6.367	3.530	4.006	3.631	2.852	0.634
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	0.0055	0.0872	0.0536	0.0793	0.1545	1.3811

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 16:00** **Total Operation Time: 196 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6430	6430	6430	6430	6430	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	39	33
Temp. Rise (deg. C)	21	14	13	12	12	6	1
Flashing Temp. (deg. C)	117	94	86	70	59	43	39
Heat Transfer Rate (kJ/S)	149.614	99.230	91.812	84.492	84.270	121.703	20.273
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	8.071	14.544	10.923	12.018	6.548	6.487
U (kW/sq.m/K)	2.514	6.347	3.259	3.993	3.620	3.750	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1414	0.0060	0.1108	0.0543	0.0802	0.0706	1.3897

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 02, 94** **Time: 20:00** **Total Operation Time: 200 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	39	33
Temp. Rise (deg. C)	21	14	13	12	12	6	1
Flashing Temp. (deg. C)	117	94	86	70	59	43	40
Heat Transfer Rate (kj/S)	149.381	99.076	91.669	84.361	84.138	122.364	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	8.071	14.544	10.923	12.018	6.548	7.489
U (kW/sq.m/K)	2.510	6.337	3.254	3.987	3.614	3.771	0.549
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0063	0.1112	0.0547	0.0806	0.0691	1.6246

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 03, 94** **Time: 00:00** **Total Operation Time: 204 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6430	6430	6430	6430	6430	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	32.5	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	32.5
Temp. Rise (deg. C)	21	13	13	13	12.5	5.5	1.5
Flashing Temp. (deg. C)	117	94	83	68	57.5	41	38
Heat Transfer Rate (kJ/S)	149.614	92.155	91.835	91.544	87.776	112.154	30.572
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.766	10.149	7.766	10.543	5.281	6.220
U (kW/sq.m/K)	2.514	6.126	4.672	6.086	4.298	4.285	0.992
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1414	0.0117	0.0180	-0.0318	0.0366	0.0373	0.8122

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 03, 94** **Time: 04:00** **Total Operation Time: 208 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18600	18600
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.942	3.931	3.968	3.966
Inlet Temp. (deg. C)	90.5	77	65	51.5	39	32	31
Outlet Temp. (deg. C)	112	90.5	77	65	51.5	37	32
Temp. Rise (deg. C)	21.5	13.5	12	13.5	12.5	5	1
Flashing Temp. (deg. C)	117	92	82	68	57	41	38
Heat Transfer Rate (kj/S)	152.926	95.531	84.628	94.912	87.631	102.498	20.490
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.892	5.863	9.806	7.919	10.543	6.166	6.487
U (kW/sq.m/K)	2.539	8.412	4.456	6.188	4.291	3.355	0.637
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1375	-0.0326	0.0284	-0.0345	0.0370	0.1020	1.3728

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 03, 94** **Time: 08:00** **Total Operation Time: 212 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18400	18400
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.931	3.968	3.966
Inlet Temp. (deg. C)	90.5	77	64	52	39	32	31
Outlet Temp. (deg. C)	112	90.5	77	64	52	38	32
Temp. Rise (deg. C)	21.5	13.5	13	12	13	6	1
Flashing Temp. (deg. C)	118	93	84	69	58	42	38
Heat Transfer Rate (kj/S)	154.832	96.721	92.811	85.412	92.276	121.684	20.270
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.122	7.273	12.383	9.806	11.278	6.548	6.487
U (kW/sq.m/K)	2.347	6.866	3.869	4.497	4.224	3.750	0.631
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1697	-0.0059	0.0624	0.0263	0.0407	0.0706	1.3899

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 03, 94** **Time: 16:00** **Total Operation Time: 220 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	90.5	77	64	52.5	40	33	31
Outlet Temp. (deg. C)	112	90.5	77	64	52.5	38	33
Temp. Rise (deg. C)	21.5	13.5	13	11.5	12.5	5	2
Flashing Temp. (deg. C)	118.5	95	85	69	58	42	39
Heat Transfer Rate (kj/S)	152.450	95.233	91.383	80.599	87.376	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.722	9.738	13.470	9.632	10.543	6.166	6.952
U (kW/sq.m/K)	2.216	5.049	3.502	4.320	4.279	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1948	0.0466	0.0894	0.0354	0.0376	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 03, 94** **Time: 20:00** **Total Operation Time: 224 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	65	53	40	33	31
Outlet Temp. (deg. C)	112	91	77.5	65	53	38	33
Temp. Rise (deg. C)	21	13.5	12.5	12	13	5	2
Flashing Temp. (deg. C)	118.5	96	86	70	58	42	38.5
Heat Transfer Rate (kj/S)	150.079	95.991	88.572	84.775	91.586	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.559	10.318	13.820	9.806	10.149	6.166	6.448
U (kW/sq.m/K)	2.206	4.803	3.309	4.463	4.659	3.337	1.276
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1969	0.0567	0.1062	0.0280	0.0186	0.1036	0.5878

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 04, 94** **Time: 00:00** **Total Operation Time: 228 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6440	6440	6440	6440	6440	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52.5	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	52.5	38	33
Temp. Rise (deg. C)	21	13	13	12.5	12.5	5	2
Flashing Temp. (deg. C)	118	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	149.847	92.299	91.978	88.165	87.922	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.962	7.766	11.278	8.821	10.543	6.166	6.952
U (kW/sq.m/K)	2.297	6.136	4.210	5.160	4.305	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1789	0.0115	0.0414	-0.0023	0.0362	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 04, 94** **Time: 04:00** **Total Operation Time: 232 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52.5	40	32.5	31
Outlet Temp. (deg. C)	112	91	78	65	52.5	38	32.5
Temp. Rise (deg. C)	21	13	13	12.5	12.5	5.5	1.5
Flashing Temp. (deg. C)	117	94	84	69	58	41.5	39
Heat Transfer Rate (kJ/S)	149.381	92.012	91.692	87.891	87.649	112.154	30.572
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.766	11.278	8.821	10.543	5.823	7.224
U (kW/sq.m/K)	2.510	6.117	4.197	5.144	4.292	3.886	0.854
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0120	0.0422	-0.0017	0.0369	0.0612	0.9749

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 04, 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	6500	18400	18400
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	32.5	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	32.5
Temp. Rise (deg. C)	21	14	13	12	12	5.5	1.5
Flashing Temp. (deg. C)	116	94	85	70	58.5	42	39.5
Heat Transfer Rate (kJ/S)	151.243	100.310	92.811	85.412	85.187	111.548	30.406
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	13.470	10.923	11.473	6.358	7.726
U (kW/sq.m/K)	2.825	6.416	3.557	4.037	3.833	3.540	0.794
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0976	0.0043	0.0851	0.0516	0.0648	0.0864	1.0631

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 04, 94** **Time: 16:00** **Total Operation Time: 244 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64.5	52.5	40	33	31
Outlet Temp. (deg. C)	112	91	77	64.5	52.5	38	33
Temp. Rise (deg. C)	21	14	12.5	12	12.5	5	2
Flashing Temp. (deg. C)	116	95	84	70	58.5	42.5	40
Heat Transfer Rate (kj/S)	150.079	99.539	88.561	84.765	88.058	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	9.308	12.201	10.368	11.101	6.692	7.958
U (kW/sq.m/K)	2.803	5.521	3.747	4.221	4.095	3.075	1.034
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0296	0.0708	0.0408	0.0481	0.1291	0.7714

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 04, 94** **Time: 20:00** **Total Operation Time: 248 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	39.5	33	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12.5	5	2
Flashing Temp. (deg. C)	116	96	85	71	59	42	39
Heat Transfer Rate (kj/S)	150.079	92.442	92.121	91.829	88.049	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.149	12.383	11.278	12.201	6.166	6.952
U (kW/sq.m/K)	2.803	4.702	3.841	4.204	3.726	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0611	0.0643	0.0418	0.0723	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 00:00** **Total Operation Time: 252 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18600	18600
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52.5	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	52.5	38	33
Temp. Rise (deg. C)	21	13	13	12.5	12.5	5	2
Flashing Temp. (deg. C)	117	94	84	70	59	42	39
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	88.302	88.058	102.513	40.984
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.766	11.278	9.978	11.654	6.166	6.952
U (kW/sq.m/K)	2.522	6.145	4.217	4.569	3.901	3.355	1.190
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1401	0.0112	0.0411	0.0228	0.0603	0.1020	0.6445

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 04:00** **Total Operation Time: 256 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6440	6440	6440	6440	6440	18500	18500
Specific Heat (kj/kg/K)	3.989	3.969	3.956	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	79	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	79	65	52	38	33
Temp. Rise (deg. C)	21	12	14	13	12	5	2
Flashing Temp. (deg. C)	117	94	84	69.5	58	42	39
Heat Transfer Rate (kJ/S)	149.847	85.211	99.066	91.686	84.401	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	7.456	10.487	9.572	10.923	6.166	6.952
U (kW/sq.m/K)	2.518	5.900	4.877	4.945	3.989	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1408	0.0180	0.0090	0.0061	0.0546	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 08:00** **Total Operation Time: 260 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18600	18600
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	77.5	65	52	38	33
Temp. Rise (deg. C)	21	13.5	12.5	13	12	5	2
Flashing Temp. (deg. C)	116.5	94	84.5	69.5	58	41.5	39
Heat Transfer Rate (kJ/S)	151.243	96.735	89.258	92.541	85.187	102.513	40.984
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	7.919	12.201	9.572	10.923	5.635	6.952
U (kW/sq.m/K)	2.674	6.306	3.777	4.991	4.026	3.671	1.190
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1176	0.0071	0.0687	0.0043	0.0523	0.0763	0.6445

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 12:00** **Total Operation Time: 264 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18600	18600
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	51.5	40	32.5	31
Outlet Temp. (deg. C)	112	91	77	64	51.5	38	32.5
Temp. Rise (deg. C)	21	14	13	12.5	11.5	5.5	1.5
Flashing Temp. (deg. C)	116	94	84.5	69.5	58	42	39
Heat Transfer Rate (kJ/S)	151.243	100.310	92.811	88.966	81.633	112.760	30.737
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.929	10.543	11.290	6.358	7.224
U (kW/sq.m/K)	2.825	6.416	3.706	4.356	3.733	3.579	0.859
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0976	0.0043	0.0737	0.0335	0.0718	0.0834	0.9686

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 16:00** **Total Operation Time: 268 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	32.5	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	32.5
Temp. Rise (deg. C)	21	14	13	12	12	5.5	0.5
Flashing Temp. (deg. C)	116	96	86	70	59	42	39.5
Heat Transfer Rate (kj/S)	148.916	98.767	91.383	84.098	83.876	112.154	10.191
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.487	14.544	10.923	12.018	6.358	7.247
U (kW/sq.m/K)	2.781	4.862	3.244	3.975	3.603	3.559	0.284
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	0.0542	0.1122	0.0555	0.0815	0.0849	3.3279

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 05, 94** **Time: 20:00** **Total Operation Time: 272 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	65	52	40	32.5	32
Outlet Temp. (deg. C)	112	91	77.5	65	52	38	32.5
Temp. Rise (deg. C)	21	13.5	12.5	13	12	5.5	0.5
Flashing Temp. (deg. C)	116	96	86	70	58.5	42	39
Heat Transfer Rate (kJ/S)	148.916	95.246	87.885	91.117	83.876	112.154	10.191
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.318	13.820	10.149	11.473	6.358	6.747
U (kW/sq.m/K)	2.781	4.765	3.283	4.635	3.774	3.559	0.305
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	0.0583	0.1085	0.0197	0.0689	0.0849	3.0847

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 00:00** **Total Operation Time: 276 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	32	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	32
Temp. Rise (deg. C)	21	13	13	13	12	6	1
Flashing Temp. (deg. C)	116	94	84	70	58	42	39
Heat Transfer Rate (kJ/S)	148.916	91.725	91.406	91.117	83.876	122.345	20.380
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	11.278	10.149	10.923	6.548	7.489
U (kW/sq.m/K)	2.781	6.098	4.184	4.635	3.964	3.770	0.549
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	0.0125	0.0429	0.0197	0.0562	0.0692	1.6249

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 04:00** **Total Operation Time: 280 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18600	18600
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	32	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	32
Temp. Rise (deg. C)	21	13	13	13	12	6	1
Flashing Temp. (deg. C)	116	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	148.916	91.725	91.406	91.117	83.876	123.007	20.490
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	11.278	8.985	10.923	6.548	7.489
U (kW/sq.m/K)	2.781	6.098	4.184	5.236	3.964	3.791	0.552
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1031	0.0125	0.0429	-0.0051	0.0562	0.0677	1.6151

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 08:00** **Total Operation Time: 284 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	116.5	94.5	85	69.5	58	42	39
Heat Transfer Rate (kJ/S)	150.079	99.539	92.097	84.755	84.532	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.699	13.470	10.368	10.923	6.166	6.952
U (kW/sq.m/K)	2.653	5.908	3.530	4.220	3.995	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0178	0.0872	0.0409	0.0542	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 12:00** **Total Operation Time: 288 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18300	18300
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	78	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	78	64	52	39	33
Temp. Rise (deg. C)	21	13	14	12	12	6	1
Flashing Temp. (deg. C)	117	95.5	85	70	59	43	40
Heat Transfer Rate (kJ/S)	148.916	91.725	98.425	84.098	83.876	121.041	20.163
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	9.572	12.743	10.923	12.018	6.548	7.489
U (kW/sq.m/K)	2.502	4.947	3.987	3.975	3.603	3.730	0.543
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1432	0.0506	0.0547	0.0555	0.0815	0.0720	1.6445

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 16:00** **Total Operation Time: 292 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18300	18300
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77.5	65	52	40.5	33	31.5
Outlet Temp. (deg. C)	112	91	77.5	65	52	39	33
Temp. Rise (deg. C)	21	13.5	12.5	13	11.5	6	1.5
Flashing Temp. (deg. C)	116.5	95.5	86	70.5	59	43	39.5
Heat Transfer Rate (kJ/S)	151.243	96.735	89.258	92.541	81.642	121.041	30.243
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.738	13.820	10.717	11.833	6.548	7.224
U (kW/sq.m/K)	2.674	5.128	3.334	4.458	3.562	3.730	0.845
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1176	0.0435	0.1038	0.0282	0.0847	0.0720	0.9876

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 06, 94** **Time: 20:00** **Total Operation Time: 296 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18300	18300
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	52	38	33
Temp. Rise (deg. C)	21	13	13	13	12	5	2
Flashing Temp. (deg. C)	116.5	96	85	70	58.5	42	39
Heat Transfer Rate (kj/S)	151.243	93.158	92.835	92.541	85.187	100.860	40.323
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	10.149	12.383	10.149	11.473	6.166	6.952
U (kW/sq.m/K)	2.674	4.739	3.870	4.707	3.833	3.301	1.170
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1176	0.0595	0.0623	0.0164	0.0648	0.1069	0.6583

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 00:00** **Total Operation Time: 300 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	65	53	40	33	31
Outlet Temp. (deg. C)	112	91	78	65	53	38	33
Temp. Rise (deg. C)	21	13	13	12	13	5	2
Flashing Temp. (deg. C)	116	96	84	69	58	42	39
Heat Transfer Rate (kJ/S)	150.079	92.442	92.121	84.775	91.586	101.411	40.543
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.149	11.278	8.656	10.149	6.166	6.952
U (kW/sq.m/K)	2.803	4.702	4.217	5.056	4.659	3.319	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0611	0.0411	0.0017	0.0186	0.1052	0.6537

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 04:00** **Total Operation Time: 304 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	64.5	53	40	33	31
Outlet Temp. (deg. C)	112	91	77.5	64.5	53	38	33
Temp. Rise (deg. C)	21	13.5	13	11.5	13	5	2
Flashing Temp. (deg. C)	116	96	84.5	69	58	42	39
Heat Transfer Rate (kJ/S)	150.079	95.991	92.109	81.238	91.586	101.962	40.764
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.318	12.383	9.066	10.149	6.166	6.952
U (kW/sq.m/K)	2.803	4.803	3.840	4.626	4.659	3.337	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0567	0.0643	0.0201	0.0186	0.1036	0.6491

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 08:00** **Total Operation Time: 308 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64.5	52	40	33	31.5
Outlet Temp. (deg. C)	112	91	77	64.5	52	38	33
Temp. Rise (deg. C)	21	14	12.5	12.5	12	5	1.5
Flashing Temp. (deg. C)	116	94	84	70	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	88.149	87.881	84.138	101.411	30.409
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.201	10.543	10.923	6.166	6.722
U (kW/sq.m/K)	2.790	6.337	3.730	4.303	3.977	3.319	0.913
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1020	0.0063	0.0720	0.0363	0.0554	0.1052	0.8994

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 12:00** **Total Operation Time: 312 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77	65	52	40	34	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	34
Temp. Rise (deg. C)	21	14	12	13	12	5	2
Flashing Temp. (deg. C)	116	94	84	70	59	43	40
Heat Transfer Rate (kJ/S)	149.381	99.076	84.628	91.402	84.138	101.427	40.549
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.018	10.149	12.018	6.166	6.952
U (kW/sq.m/K)	2.790	6.337	3.636	4.650	3.614	3.319	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1020	0.0063	0.0790	0.0190	0.0806	0.1052	0.6536

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 16:00** **Total Operation Time: 316 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77.5	64.5	52	40	33	31.5
Outlet Temp. (deg. C)	112	91	77.5	64.5	52	39	33
Temp. Rise (deg. C)	21	13.5	13	12.5	12	6	1.5
Flashing Temp. (deg. C)	116	95.5	86	70	59	43	39.5
Heat Transfer Rate (kJ/S)	151.243	96.735	92.823	88.976	85.187	121.703	30.409
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	9.738	14.009	10.543	12.018	6.548	7.224
U (kW/sq.m/K)	2.825	5.128	3.421	4.357	3.660	3.750	0.849
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0976	0.0435	0.0963	0.0334	0.0772	0.0706	0.9812

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 07, 94** **Time: 20:00** **Total Operation Time: 320 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6500	6500	6500	6500	6500	18400	18400
Specific Heat (kj/kg/K)	3.989	3.969	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	64	51.5	40	33	31
Outlet Temp. (deg. C)	112	91	77.5	64	51.5	38	33
Temp. Rise (deg. C)	21	13.5	13.5	12.5	11.5	5	2
Flashing Temp. (deg. C)	117	96.5	86	70	59	42	39
Heat Transfer Rate (kJ/S)	151.243	96.735	96.387	88.966	81.633	101.411	40.543
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	10.890	14.196	11.101	12.372	6.166	6.952
U (kW/sq.m/K)	2.541	4.586	3.505	4.137	3.406	3.319	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1371	0.0665	0.0892	0.0456	0.0975	0.1052	0.6537

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 00:00** **Total Operation Time: 324 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	78	66	52	40	33	31
Outlet Temp. (deg. C)	112	91	78	66	52	38	33
Temp. Rise (deg. C)	21	13	12	14	12	5	2
Flashing Temp. (deg. C)	116	94	84	68	58	42	38
Heat Transfer Rate (kJ/S)	150.079	92.442	85.045	98.904	84.532	100.860	40.323
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	7.766	10.923	6.733	10.923	6.166	5.944
U (kW/sq.m/K)	2.803	6.145	4.020	7.584	3.995	3.301	1.369
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0112	0.0527	-0.0642	0.0542	0.1069	0.5344

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 04:00** **Total Operation Time: 328 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	65	52	40	33	31
Outlet Temp. (deg. C)	112	91	77.5	65	52	38	33
Temp. Rise (deg. C)	21	13.5	12.5	13	12	5	2
Flashing Temp. (deg. C)	116.5	94	84	69	58	42	38
Heat Transfer Rate (kJ/S)	150.079	95.991	88.572	91.829	84.532	100.860	40.323
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	7.919	11.654	8.985	10.923	6.166	5.944
U (kW/sq.m/K)	2.653	6.258	3.924	5.277	3.995	3.301	1.369
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0083	0.0588	0.0066	0.0542	0.1069	0.5344

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 08:00** **Total Operation Time: 332 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	116.5	95	86	70	59	42	39
Heat Transfer Rate (Kj/S)	150.079	99.539	92.097	84.755	84.532	100.860	40.323
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.308	14.544	10.923	12.018	6.166	6.952
U (kW/sq.m/K)	2.653	5.521	3.269	4.006	3.631	3.301	1.170
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0296	0.1098	0.0536	0.0793	0.1069	0.6583

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 12:00** **Total Operation Time: 336 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77	65	52	40.5	34	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	34
Temp. Rise (deg. C)	21	14	12	13	11.5	5	2
Flashing Temp. (deg. C)	116	95	86	70	59	43	40
Heat Transfer Rate (kJ/S)	150.079	99.539	85.024	91.829	81.014	100.875	40.329
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	9.308	14.163	10.149	11.833	6.166	6.952
U (kW/sq.m/K)	2.803	5.521	3.099	4.671	3.535	3.301	1.171
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1003	0.0296	0.1266	0.0180	0.0868	0.1068	0.6582

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 16:00** **Total Operation Time: 340 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18400	18400
Specific Heat (kJ/kg/K)	3.989	3.969	3.956	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	78	66	53	40.5	34	32
Outlet Temp. (deg. C)	112	91	78	66	53	39	34
Temp. Rise (deg. C)	21	13	12	13	12.5	5	2
Flashing Temp. (deg. C)	116	96	86	71	59	42	40
Heat Transfer Rate (kJ/S)	149.381	92.012	84.650	91.423	87.658	101.427	40.549
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	10.149	13.096	10.149	11.101	5.098	6.952
U (kW/sq.m/K)	2.790	4.681	3.337	4.651	4.077	4.015	1.177
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1020	0.0621	0.1036	0.0189	0.0492	0.0530	0.6536

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 08, 94** **Time: 20:00** **Total Operation Time: 344 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6410	6410	6410	6410	6410	18200	18200
Specific Heat (kj/kg/K)	3.989	3.969	3.956	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	79	66	53	40	34	32
Outlet Temp. (deg. C)	112	91	79	66	53	39	34
Temp. Rise (deg. C)	21	12	13	13	13	5	2
Flashing Temp. (deg. C)	116.5	96	86	71	59	43	40
Heat Transfer Rate (kJ/S)	149.149	84.814	91.573	91.281	91.018	100.324	40.108
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.806	12.383	10.149	11.278	6.166	6.952
U (kW/sq.m/K)	2.637	4.465	3.818	4.643	4.166	3.283	1.164
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1228	0.0724	0.0659	0.0193	0.0439	0.1085	0.6629

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 00:00** **Total Operation Time: 348 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64.5	52	40.5	33	31.5
Outlet Temp. (deg. C)	112	91	77	64.5	52	39	33
Temp. Rise (deg. C)	21	14	12.5	12.5	11.5	6	1.5
Flashing Temp. (deg. C)	116.5	94	84	69.5	59	42.5	39
Heat Transfer Rate (kJ/S)	150.079	99.539	88.561	88.292	81.014	121.041	30.243
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.071	12.201	9.978	11.833	6.009	6.722
U (kW/sq.m/K)	2.653	6.367	3.747	4.568	3.535	4.065	0.908
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0055	0.0708	0.0228	0.0868	0.0499	0.9054

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 04:00** **Total Operation Time: 352 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	76.5	64	51.5	40	32.5	31
Outlet Temp. (deg. C)	112	91	76.5	64	51.5	39	32.5
Temp. Rise (deg. C)	21	14.5	12.5	12.5	11.5	6.5	1.5
Flashing Temp. (deg. C)	116.5	92	83	69	58	42	39
Heat Transfer Rate (kJ/S)	150.079	103.087	88.549	88.282	81.005	130.406	30.076
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	5.290	11.654	9.978	11.290	5.639	7.224
U (kW/sq.m/K)	2.653	10.060	3.923	4.568	3.704	4.667	0.840
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	-0.0521	0.0588	0.0228	0.0739	0.0182	0.9942

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 08:00** **Total Operation Time: 356 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18200	18200
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	1
Flashing Temp. (deg. C)	117	93	84	69	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	100.309	20.053
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	6.733	12.383	9.806	10.923	6.166	6.487
U (kW/sq.m/K)	2.510	7.597	3.822	4.442	3.977	3.283	0.624
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	-0.0199	0.0656	0.0291	0.0554	0.1085	1.4071

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 12:00** **Total Operation Time: 360 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	39	33
Temp. Rise (deg. C)	21	14	13	12	12	6	1
Flashing Temp. (deg. C)	117	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	122.364	20.383
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	8.071	12.383	9.806	10.923	5.461	6.487
U (kW/sq.m/K)	2.510	6.337	3.822	4.442	3.977	4.521	0.634
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0063	0.0656	0.0291	0.0554	0.0251	1.3811

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 16:00** **Total Operation Time: 384 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18300	18300
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	78	65	53	40.5	34	32.5
Outlet Temp. (deg. C)	112	91	78	65	53	39	34
Temp. Rise (deg. C)	21	13	13	12	12.5	5	1.5
Flashing Temp. (deg. C)	116.5	95	86	70	59	43	40
Heat Transfer Rate (kJ/S)	149.381	92.012	91.692	84.381	87.658	100.875	30.248
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.985	13.470	9.806	11.101	6.166	6.722
U (kW/sq.m/K)	2.641	5.287	3.514	4.443	4.077	3.301	0.908
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0376	0.0885	0.0290	0.0492	0.1068	0.9052

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 09, 94** **Time: 20:00** **Total Operation Time: 368 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77	65	52	40	34	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	34
Temp. Rise (deg. C)	21	14	12	13	12	5	2
Flashing Temp. (deg. C)	116.5	94	84	70	59	43	39
Heat Transfer Rate (kJ/S)	149.381	99.076	84.628	91.402	84.138	100.324	40.108
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.071	12.018	10.149	12.018	6.166	5.944
U (kW/sq.m/K)	2.641	6.337	3.636	4.650	3.614	3.283	1.362
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0063	0.0790	0.0190	0.0806	0.1085	0.5383

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 00:00** **Total Operation Time: 372 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64.5	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64.5	52	38	33
Temp. Rise (deg. C)	21	14	12.5	12.5	12	5	2
Flashing Temp. (deg. C)	116.5	93	84	69	58	42	39
Heat Transfer Rate (kJ/S)	150.079	99.539	88.561	88.292	84.532	100.309	40.103
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	6.733	12.201	9.405	10.923	6.166	6.952
U (kW/sq.m/K)	2.653	7.633	3.747	4.847	3.995	3.283	1.164
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	-0.0205	0.0708	0.0102	0.0542	0.1085	0.6630

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 04:00** **Total Operation Time: 376 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18200	18200
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	116.5	93	84	69	58	42	38.5
Heat Transfer Rate (kJ/S)	150.079	99.539	92.097	84.755	84.532	100.309	40.103
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	6.733	12.383	9.806	10.923	6.166	6.448
U (kW/sq.m/K)	2.653	7.633	3.840	4.462	3.995	3.283	1.255
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	-0.0205	0.0644	0.0280	0.0542	0.1085	0.6008

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 08:00** **Total Operation Time: 580 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77.5	65	52.5	40	33.5	31.5
Outlet Temp. (deg. C)	112	91	77.5	65	52.5	38	33.5
Temp. Rise (deg. C)	21	13.5	12.5	12.5	12.5	4.5	2
Flashing Temp. (deg. C)	116.5	94	85	70	59	43	39
Heat Transfer Rate (kJ/S)	150.079	95.991	88.572	88.302	88.058	91.770	40.767
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	7.919	12.744	9.978	11.654	7.011	6.448
U (kW/sq.m/K)	2.653	6.258	3.588	4.569	3.901	2.641	1.276
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0083	0.0826	0.0228	0.0603	0.1825	0.5878

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 12:00** **Total Operation Time: 384 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18200	18200
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77.5	65	52.5	40.5	34	32
Outlet Temp. (deg. C)	112	91	77.5	65	52.5	39	34
Temp. Rise (deg. C)	21	13.5	12.5	12.5	12	5	2
Flashing Temp. (deg. C)	116.5	94.5	85.5	70	59	43	39.5
Heat Transfer Rate (kJ/S)	150.079	95.991	88.572	88.302	84.541	100.324	40.108
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.542	13.284	9.978	11.473	6.166	6.448
U (kW/sq.m/K)	2.653	5.802	3.442	4.569	3.804	3.283	1.255
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1205	0.0209	0.0944	0.0228	0.0668	0.1085	0.6007

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 16:00** **Total Operation Time: 388 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77	64	52	40	34	32
Outlet Temp. (deg. C)	112	91	77	64	52	39	34
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	116.5	96	85	70	59	43	40
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	101.978	40.770
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	10.487	13.470	10.923	12.018	6.166	6.952
U (kW/sq.m/K)	2.641	4.877	3.513	3.987	3.614	3.338	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0535	0.0886	0.0547	0.0806	0.1035	0.6490

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 10, 94** **Time: 20:00** **Total Operation Time: 392 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18500	18500
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77	64	52	40	34	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	34
Temp. Rise (deg. C)	21	14	13	12	12	4	2
Flashing Temp. (deg. C)	117	97	86	70	59	42	40
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	81.576	40.770
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	11.628	14.544	10.923	12.018	5.771	6.952
U (kW/sq.m/K)	2.510	4.399	3.254	3.987	3.614	2.853	1.183
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0758	0.1112	0.0547	0.0806	0.1545	0.6490

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 11, 94** **Time: 00:00** **Total Operation Time: 396 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	39	33
Temp. Rise (deg. C)	21	14	13	12	12	6	1
Flashing Temp. (deg. C)	118	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	124.348	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	13.962	8.071	12.383	9.806	10.923	5.461	6.487
U (kW/sq.m/K)	2.290	6.337	3.822	4.442	3.977	4.594	0.644
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1803	0.0063	0.0656	0.0291	0.0554	0.0216	1.3559

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 11, 94** **Time: 04:00** **Total Operation Time: 400 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	117	95	85	69	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	103.616	41.425
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	9.308	13.470	9.806	10.923	6.166	6.952
U (kW/sq.m/K)	2.510	5.495	3.513	4.442	3.977	3.391	1.202
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0305	0.0886	0.0291	0.0554	0.0988	0.6356

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 11, 94** **Time: 08:00** **Total Operation Time: 404 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6410	6410	6410	6410	6410	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	31
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	2
Flashing Temp. (deg. C)	116.5	95.5	85.5	70	58	42	39
Heat Transfer Rate (kJ/S)	149.149	98.922	91.526	84.230	84.007	103.616	41.425
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.903	14.009	10.923	10.923	6.166	6.952
U (kW/sq.m/K)	2.637	5.157	3.373	3.981	3.971	3.391	1.202
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1228	0.0424	0.1004	0.0551	0.0558	0.0988	0.6356

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 11, 94** **Time: 12:00** **Total Operation Time: 408 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	64.5	53	40	33.5	31
Outlet Temp. (deg. C)	112	91	77	64.5	53	39	33.5
Temp. Rise (deg. C)	21	14	12.5	11.5	13	5.5	2.5
Flashing Temp. (deg. C)	116.5	95	86	70	58	42.5	39
Heat Transfer Rate (kj/S)	148.916	98.767	87.874	80.608	90.876	113.990	51.783
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.308	14.354	10.191	10.149	5.823	6.672
U (kW/sq.m/K)	2.633	5.478	3.160	4.084	4.623	3.950	1.566
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1234	0.0310	0.1203	0.0488	0.0202	0.0571	0.4424

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 11, 94** **Time: 16:00** **Total Operation Time: 412 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6400	6400	6400	6400	6400	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	53	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	53	39	33
Temp. Rise (deg. C)	21	14	12	12	13	6	1
Flashing Temp. (deg. C)	117	96	86	70	59	43	39
Heat Transfer Rate (kJ/S)	148.916	98.767	84.364	84.118	90.876	124.348	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	10.487	14.163	9.806	11.278	6.548	6.487
U (kW/sq.m/K)	2.502	4.862	3.075	4.429	4.160	3.832	0.644
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1432	0.0542	0.1291	0.0297	0.0443	0.0649	1.3559

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 5 **Date: August 11, 94** **Time: 20:00** **Total Operation Time: 416 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	53	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	53	39	33
Temp. Rise (deg. C)	21	14	12	12	13	6	1
Flashing Temp. (deg. C)	117	96	86	70	59	43	40
Heat Transfer Rate (kj/S)	149.381	99.076	84.628	84.381	91.160	124.348	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	10.487	14.163	9.806	11.278	6.548	7.489
U (kW/sq.m/K)	2.510	4.877	3.085	4.443	4.173	3.832	0.558
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0535	0.1281	0.0290	0.0436	0.0649	1.5956

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 00:00** **Total Operation Time: 420 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	1
Flashing Temp. (deg. C)	117	94	84	69	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	103.616	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.738	8.071	12.383	9.806	10.923	6.166	6.487
U (kW/sq.m/K)	2.510	6.337	3.822	4.442	3.977	3.391	0.644
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1420	0.0063	0.0656	0.0291	0.0554	0.0988	1.3559

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 04:00** **Total Operation Time: 424 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	91	77	64	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33
Temp. Rise (deg. C)	21	14	13	12	12	5	1
Flashing Temp. (deg. C)	116.5	94	84	69.5	58	42	39
Heat Transfer Rate (kJ/S)	149.381	99.076	91.669	84.361	84.138	103.616	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	8.071	12.383	10.368	10.923	6.166	6.487
U (kW/sq.m/K)	2.641	6.337	3.822	4.201	3.977	3.391	0.644
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0063	0.0656	0.0420	0.0554	0.0988	1.3559

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 08:00** **Total Operation Time: 428 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6410	6410	6410	6410	6410	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.967
Inlet Temp. (deg. C)	91	77	64	52	40	33.5	32
Outlet Temp. (deg. C)	112	91	77	64	52	38	33.5
Temp. Rise (deg. C)	21	14	13	12	12	4.5	1.5
Flashing Temp. (deg. C)	116	94	84.5	70	58	42.5	39
Heat Transfer Rate (kJ/S)	149.149	98.922	91.526	84.230	84.007	93.258	31.072
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.459	8.071	12.929	10.923	10.923	6.492	6.220
U (kW/sq.m/K)	2.786	6.328	3.655	3.981	3.971	2.899	1.008
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1026	0.0065	0.0775	0.0551	0.0558	0.1489	0.7959

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 12:00** **Total Operation Time: 432 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77.5	65	53	40.5	34	32
Outlet Temp. (deg. C)	112	91	77.5	65	53	38.5	34
Temp. Rise (deg. C)	21	13.5	12.5	12	12.5	4.5	2
Flashing Temp. (deg. C)	116.5	94	85	70	58	42.5	39
Heat Transfer Rate (kJ/S)	149.381	95.544	88.160	84.381	87.658	93.265	41.431
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	7.919	12.744	9.806	9.978	5.970	5.944
U (kW/sq.m/K)	2.641	6.229	3.571	4.443	4.535	3.152	1.407
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0090	0.0839	0.0290	0.0244	0.1211	0.5149

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 16:00** **Total Operation Time: 436 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.969	3.967
Inlet Temp. (deg. C)	91	77.5	65	52.5	40.5	34	32
Outlet Temp. (deg. C)	112	91	77.5	65	52.5	39	34
Temp. Rise (deg. C)	21	13.5	12.5	12.5	12	5	2
Flashing Temp. (deg. C)	116.5	96	86	70	59	43	40
Heat Transfer Rate (kJ/S)	149.381	95.544	88.160	87.891	84.147	103.632	41.431
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	10.318	13.820	9.978	11.473	6.166	6.952
U (kW/sq.m/K)	2.641	4.780	3.293	4.548	3.787	3.392	1.203
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1223	0.0577	0.1076	0.0238	0.0680	0.0988	0.6355

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 12, 94** **Time: 20:00** **Total Operation Time: 440 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6410	6410	6410	6410	6410	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.955	3.943	3.932	3.969	3.966
Inlet Temp. (deg. C)	91	77	65	52	40	33	32
Outlet Temp. (deg. C)	112	91	77	65	52	39	33
Temp. Rise (deg. C)	21	14	12	13	12	6	1
Flashing Temp. (deg. C)	116.5	95	86	70	59	43	40
Heat Transfer Rate (kj/S)	149.149	98.922	84.496	91.259	84.007	124.348	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.107	9.308	14.163	10.149	12.018	6.548	7.489
U (kW/sq.m/K)	2.637	5.487	3.080	4.642	3.609	3.832	0.558
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1228	0.0307	0.1286	0.0193	0.0810	0.0649	1.5956

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 13, 94** **Time: 00:00** **Total Operation Time: 444 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6410	6410	6410	6410	6410	18800	18800
Specific Heat (kj/kg/K)	3.989	3.969	3.955	3.943	3.932	3.968	3.966
Inlet Temp. (deg. C)	90.5	78	65	52	40	33	32
Outlet Temp. (deg. C)	112	90.5	78	65	52	38	33
Temp. Rise (deg. C)	21.5	12.5	13	13	12	5	1
Flashing Temp. (deg. C)	117	94	83	68	57	42	38
Heat Transfer Rate (kj/S)	152.688	88.329	91.549	91.259	84.007	103.616	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.892	8.225	10.149	7.766	9.806	6.166	5.485
U (kW/sq.m/K)	2.535	5.544	4.657	6.067	4.423	3.391	0.762
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1381	0.0288	0.0187	(0.0312	0.0300	0.0988	1.1161

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 13, 94** **Time: 04:00** **Total Operation Time: 448 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		#1	*#2*	*#3*	*#4*	*#5*	*#6*
Flowrate (kg/h)	6420	6420	6420	6420	6420	18800	18800
Specific Heat (kJ/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	90.5	77	64	52	39.5	33	32
Outlet Temp. (deg. C)	112	90.5	77	64	52	38	33
Temp. Rise (deg. C)	21.5	13.5	13	12	12.5	5	1
Flashing Temp. (deg. C)	117	93	83	68	58	42	38
Heat Transfer Rate (kJ/S)	152.926	95.531	91.669	84.361	87.640	103.616	20.714
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	12.892	7.273	11.278	8.656	11.101	6.166	5.485
U (kW/sq.m/K)	2.539	6.782	4.196	5.031	4.076	3.391	0.762
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.1375	-0.0041	0.0422	0.0027	0.0493	0.0988	1.1161

CALCULATIONS OF OVERALL HEAT TRANSFER COEFFICIENT AND FOULING FACTOR

Run No. 3 **Date: August 13, 94** **Time: 08:00** **Total Operation Time: 452 hr.**

Variables	*Brine Heater*	*Evaporator Stages*					
		# 1	*# 2*	*# 3*	*# 4*	*# 5*	*# 6*
Flowrate (kg/h)	6450	6450	6450	6450	6450	18800	18800
Specific Heat (kj/kg/K)	3.989	3.968	3.954	3.942	3.932	3.968	3.966
Inlet Temp. (deg. C)	90.5	77	64	52	40	33	31.5
Outlet Temp. (deg. C)	112	90.5	77	64	52	38.5	33
Temp. Rise (deg. C)	21.5	13.5	13	12	12	5.5	1.5
Flashing Temp. (deg. C)	116	94	85	70	58.5	43	38
Heat Transfer Rate (kJ/S)	153.641	95.977	92.097	84.755	84.532	113.982	31.070
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.607	8.542	13.470	10.923	11.473	6.888	5.717
U (kW/sq.m/K)	2.833	5.801	3.530	4.006	3.804	3.339	1.097
Clean-U Value (kW/sq.m/K)	3.9	6.6	5.1	5.1	5.1	5.1	5.1
f (sq.m K/kW)	0.0966	0.0209	0.0872	0.0536	0.0668	0.1034	0.7158