## Appendix 5.3.3-1

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

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Kun No.	ate: rep 3, 34		TIME: 03:00	2			
Variables	Brine Heater	<b>H</b>	Evapo # 2	Evaporator Stages	es	e D	9
Flourate (kg/h)	0009	0009 0	0009	0009	0009	18000	18000
Specific Heat (k1/kg/K)	3.97	n	3.931	3.919	3.903	3.955	3.951
Inlet Temp. (deg. C)	84	. •	58	42	27	18	18
Outlet Temp. (deg. C)	T	2 84	70	58	42	24	18
Temp. Rise (deg. C)	28	8 14	21	16	15	Y	0
Flashing Temp. (deg. C)	115	5 86	75	62	49	30	31
Heat Transfer Rate (ki/S)	185.687	92.0	78.620	104.507	97.575	118.650	0.000
Heat Transfer Area (Sg.m)	4.6723		1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	11.990		9.806	9.941	13.099	8.656	ERR
U (KW/sq.k/X)	3,315	7	4.139	5.427	3,846	2.766	ERR
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 07:00

Date: Feb 3, 94

			1. s				
	Brine Heater		Evapo	Evaporator Stages	ges		
Variables		<b>러</b>	۲۷ #	(r) <del>∏a</del> s	ਧ ++	ម	9
Flowrate (kg/h)	6500	6500	6500	6500	6500	1.8500	18500
Specific Heat (kj/kg/K)	3.979	3.948	3.931	3.919	3.905	3.956	3,951
Inlet Temp. (deg. C)	85	7.0	58	44	30	19.5	18
Outlet Temp: (deg. C)	112	85	7.0	58	44	26	19.5
Temp. Rise (deg. C)	27	1.5	12	14	14	6.5	1.5
Flashing Temp. (deq. C)	114	88	79	6.4	56	45	48
Heat Transfer Rate (kj/S)	193.	106.925	85.172	99.064	98.710	132.141	30.456
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deq. X)	10.097	8.372	14.163	11.628	18.107	22.091	29.244
U (KW/sq.m/K)	4.112	6.594	3.105	4.398	2.814	1.207	0.210
Clean-U Value (kW/sq.m/K)							
(M4/A # 20/ 4							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 20:00

Date: Feb 16, 94

(Kj/kg/K) eg. C) deg. C) g. C) (deg. C) (deg. C) Rate (Kj/S) Area (Sg.m) K)								
6000       6000       6000       6000       13500       13500       13500       13500       13500       13500       13500       13500       13500       13500       13500       1358       3.917       3.903       3.958       3.92       22       22       22       22       22       22       22       28       23       22       29       28       23 <td< th=""><th>Variables</th><th>Brine Heater</th><th><b>н</b></th><th>Evapos # 2</th><th>rator Stag</th><th>89 4</th><th>## 5</th><th>9</th></td<>	Variables	Brine Heater	<b>н</b>	Evapos # 2	rator Stag	89 4	## 5	9
3.971 3.944 3.931 3.917 3.903 3.958 3.  82	Flowrate (kg/h)	0009	0009	6000		6000	13500	13500
82 70 56 42 28 22 105 82 70 56 42 28 23 12 14 14 6 107 88 75 60 48 32 4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Specific Heat (kj/kg/K)	3.971	3.944	3.931	3.917	3.903	3.958	3.954
105 82 70 56 42 28 23 12 14 14 6 107 88 75 60 48 32 4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Inlet Temp. (deg. C)	82	70	56	42	28	22	a c
23 12 14 14 14 6 107 88 75 60 48 32 4.6722 78.880 91.723 91.397 91.070 89.055 59. 4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Outlet Temp. (deg. C)	105	82	70	56	42	7 6 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	22
152.222 78.880 91.723 91.397 91.070 89.055 59. 4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Temp. Rise (deq. C)		12	14	**	71	•	
152.222 78.880 91.723 91.397 91.070 89.055 59. 4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Flashing Temp. (deg. C)	107	88	75	09		) (2)	16 11 11
4.6723 1.937 1.937 1.937 4.9556 4.9 9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Heat Transfer Rate (kj/S	152	78.880	91.723	91.397	91.070		59 110
9.106 10.923 10.487 9.308 11.628 6.548 6. 3.578 3.728 4.515 5.069 4.043 2.744 1.	Heat Transfer Area (Sq.m		1.937	1.937	1.937	1.937		4.9556
3.578 3.728 4.515 5.069 4.043 2.744 1.	X	.6	10.923	10.487	9.308	11.628	6.548	6.805
MEMOCAMPAMAMACA、 建设物的设备的工作,并建设设置,可以可以通过设置,可以通过设置,可以通过建设设置,可以通过设计,可以通过设计,可以通过设计,可以通过设计,可以通过通过设计,可以通过通过	U (KW/sq.m/K)	en .	3.728	4.515	5.069	4.043	2-744	1.759
THE STATE OF THE S	Clean-U Value (kW/sq.m/K	X						1
	f (sq.m X/kW)	•						

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	Brine Heater		Evapor	Evaporator Stages	tes		
Variables		<b>+</b> 1	<b>*</b>	#	7 +	ى *	9 #
Flowrate (kg/h)	0009	0009	0009	0009	6000	(1)	135(
Specific Heat (k)/kg/K)	3.971	3.943	3.931	3.917	3.903	3.958	3.95
Inlet Temp. (deq. C)	T8	70	56	42	29	22	
Outlet Temp. (deg. C)	105	8	70	56	42	28	
Temp. Rise (deq. C)	24	11	74	14	13	9	
Flashing Temp. (deg. C)	107	88	75		49	32	
Heat Transfer Rate (ki/S)	3) 158.840	72.288	91.723	91.397	84.565	89.055	59.3
Heat Transfer Area (Sq.m)	•	1.937	1.937	1.937	1.937	4.9556	4.95
L.M.T.D. (deg. K)		11.647	10.487	10.487	12.383	6.548	7.8
U (XW/sq.m/K)	3.633	3.204	4.515	4.499	. 3.526	2.744	1.5
Clean-U Value (kW/sg.m/K)							
f (sq.m K/KW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 10:00

Date: Feb 3, 94

Run No.

	Brine !	Heater		Evapor	Evaporator Stages	es		•
Variables			<b>⊢</b>	۲۲ ۲۲	ო <del>**</del>	*	± 5	o !
D) Carrotto (No. No.	1	6500	6500	6500	6500	6500	17500	7
Shockfic Host (b) /kg/K)		3.979	3,938	3.919	3.904	3.898	3.952	3.951
Think Home (A) Agin)		76	T C	<b>₩</b>	•	38	18	18
CITTON TORES (C)		112	26	. 20	. A.	37	19	18
Hown Dies (ded C)	٠	36	18	15	9	ដ	<u>,                                    </u>	0
Flaching Town (deg C)		119	84	72	64	51	44	25
Host Grandfor Dato (V./S)		258 635	127.985	106.140	42.293	-7.038	19.211	000.0
Heat Transfer Area (SC.E)		4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
T. M. T. J. John K.)		19.832	15.272	20.598	23.874	13.494	25.497	ERR
U (KW/SQ.B/K)		2.791			Ö	-0.269	0.152	ERR
Clean-U Value (kW/sq.m/K)								
f (sq.m K/kW)								

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 16:00

Date: Feb 3, 94

	Brine Heater		Evapo	Evaporator Stades	res		-
Variables		러 ***	* 5 *	:co ++-	*	K)	9
Flowrate (kg/h)	5000	5000	5000	5000	5000	17500	17500
Specific Heat (ki/kg/K)	3.953	3,931	3.919	3.909	3.897	3.952	3.952
Inlet Temp. (deg. C)	69	58	48	36	26	19	18
Outlet Temp. (deg. C)	06	69	58	48	36	20	19
Temp. Rise (deq. C)	21	11	10	12	10	<b>н</b>	ત
Flashing Temp. (deg. C)		72	63	52	42	36	36
Heat Transfer Rate (ki/S)	115.	60.057	54.431	65.150	54.125	19.211	19.211
Heat Transfer Area (Sq.m)	·	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	23.987	7.141	9.102	8.656	10.195	16.495	17.495
U (KW/SQ.B/K)	1.029	4.342	3.087	3.886	2.741	0.235	0.222
Clean-U Value (kW/sq.m/K)					:		
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Pactor (f)

Time: 20:00

Date: Feb 3, 94

Run No.

Variables	ne Heater	<b>⊢</b>	Evapor	Evaporator Stages	6.8 4.	# <b>+</b>	9
Plourate (Pr/h)	5500	5500	5500	5500	5500	13500	13500
Specific Heat (ki/kg/K)	3,956	3.934	3.921	3.911	3.899	3.957	3.951
Inlet Tean (deg. C)			50	38	27	18	18
Outlet Temp. (deg. C)	92	72	09	20	38	27	18
Temp. Rise (ded. C)	20	17	10	12	11	6	0
Plaching Temp (deg. C)	105	72	64	54	44	<b>4</b> C	34
	120.878	72.123	59.904	71.702	65.525	133.549	0.000
Host Transfer Area (Sc. 8)	4.6723		1.937	1.937	1.937	4.9556	4.9556
TOTAL TRANSPORT (A. P. C.	. [	ERR	7.982	8.656	10.562	10.887	ERR
U (XW/80.11/K)	1.205	ERR	3.874	4.276	3.203	2.475	ERR
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Run No.	Date: Feb 3, 94	H	Time: 23:02	<b>7</b>			
Variables	Brine Heater	1	Evapor # 2	Evaporator Stages	6s # 4	in <del>=i</del>	9
Flourate (kg/h)	5500	5500	5500	5500	5500	14000	1400
Specific Heat (ki/kg/K)	3,958	3.934	3.921	3.909	3.898	3.954	3.95.
Inlet Temp. (deg. C)	72	09	48	37	26	18	
Outlet Temp. (deg. C)	<b>4</b> 00	72	09	48	37	22	H
Temp Rise (deg. C)	22	12	12	디	77	,♥	
Flashing Temp. (deg. C)	106	73		53	43	<b>4</b> C	
Heat Transfer Rate (Ki/S)	133.	72.123	71.885	65.693	65.508	61.507	15.36
Heat Transfer Area (Sd.m)		1.937	1.937	1.937	1.937	4.9556	4.955
L.M.T.D. (deg. K)		4.678	908.6	9.457	10.562	13.904	16.49
U (KW/SG.E/K)	1.348	7.959	3.785	3.586	3.202	0.893	0.18
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 08:00 Date: Peb 4, 94 Run No.

	Brine Heater		Evapor	Evaporator Stages	res		
Variables		<b>⊷</b>	7 ***	•	*	ن **	9
Flowrate (kg/h)	5600	5600	5600	5600	5600	11000	11000
Specific Heat (kj/kg/K)	3.956	3.934	3.923	3.913	3.901	3.954	3.951
Inlet Temp. (deg. C)	72	62	52	40	25	18	18
Outlet Temp. (deg. C)	92	72	62	52	10	22	18
Temp. Rise (deg. C)	20	70	10	12	15	4	0
Flashing Temp. (deg. C)	105	72	94	54	44	33	30
Heat Transfer Rate (kj/S)	123.076	61.196	61.024	73.043	91.023	48.327	0.000
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)	21.469	ERR	5.581	6.167	9.627	12.897	ERR
U (KW/sq.m/K)	1.227	ERR	5.645	6.115	4.881	0.756	ERR
Clean-U Value (KW/sq.m/K)		**	· .			-	
f (sq.m K/kw)							•

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Date: Feb 5, 94

Run No.

Time: 14:00

	Brine Heater		Evapor	Evaporator Stages	ges		
Variables		<b>⊢</b>	± 2	ິຕ <b>*</b> #≈	##	TCI	9
Flowrate (kg/h)	0009	6000	0009	0009	0009	18000	1800
Specific Heat (kj/kq/K)	3.965	3.938	3.925	3.913	3.899	3.954	3,95
Inlet Temp. (deq. C)	16	. 64	52	38	24	18	Ä
Outlet Temp. (deg. C)	100	16	64	52	38	23	ਜ
Temp. Rise (deg. C)	24	12	12	14	<b>₹</b> □	S	
Flashing Temp. (deg. C)	112	80	7.1	58	45	29	
Heat Transfer Rate (ki/S)	*	78.760	78.500	91,303	776.06	98.850	39.51
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.955
L.M.T.D. (deg. K)	21.846	8.656	12.018	11.628	12.743	8.249	11.97
U (KW/sq.m/K)		4.697	3.372	4.054	3.686	2.418	0.66
Clean-U Value (kW/sq.m/K)	**						
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 04:00

Date: Feb 6, 94

Run No.

	Brine Heater		Evapor	Evaporator Stages	Jes		
Variables		T #	<b>₹</b>	m ≄•	₹	#-	9
Flowrate (kg/h)	0009	0009	0009	0009	6000	14000	14000
Specific Heat (kj/kg/K)	3.979	3.947	3.932	3.919	3.905	3.952	3,951
Inlet Temp. (deg. C)	84	71	58	44	30	8	18
Outlet Temp. (deg. C)	112	84	7.1	58	44	19	130
Temp. Rise (deg. C)	28	13	13	14	14		C
Plashing Temp. (deg. C)	117	85	75	61	50	42	)   <b>4</b>
Heat Transfer Rate (kj/S)	185.687	85.518	85,193	91.443	91.117	15,369	000.0
Heat Transfer Area (Sg.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	14.838	4.926	8.985	8.071	11.628		KRR
U (KW/sq.m/K)	2.678	8.963	4.895	5.849	4.045	0.132	KRR
Clean-U Value (kW/sq.m/K)							<b>.</b>
f (sq.m K/kw)							-

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 04:00

Date: Feb 7, 94

Brine Heater	Brine Heater		Evapor	Evaporator Stages	53		
Variables			7	E #	3 3 3 <b>7</b>	2	9 +
Distribute (Pro./h)	6000	6000	0009	6000	9009	14000	14000
checific Heat (bi/kg/K)	3,965	3.938	3.925	3.914	3.901	3.955	3.951
Thiet Team (ded C)	76	64	53		27	18	16
Outlet Tean (deg ()	100	76	64	53	40	24	<b>8</b> 7
Temp Rise (dec. C)	24	12	H	13	EH	9	~
Flaching Team (deg C)	Land the second of the second	78	89	56	45	27	25
Host francfor Date (bi/S)		78.760	71.958	84.803	84.522	92.283	30.730
Hear iranster have (A) E)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
TWEN TO GOOD XI		6.167		7.766	10.149	5.461	7.958
U (KW/SQ.E/K)	1.245	6.594	4.464	5.638	4.300	3.410	0.779
Clean-U Value (KW/sq.m/K)							
f (sq.n K/kw)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 16:00

Date: Feb 8, 94

Run No.

	Brine Heater		Evapor	Evaporator Stages	les		
Variables		н **	72	C1	₹	iΩ ##e	9
Flowrate (kg/h)	0009	6000	6000	6000	0009	18500	18500
Specific Heat (kj/kg/K)	3.977	3.948	3.931	3.917	3.903	3.956	3.951
Inlet Temp. (deg. C)	85	69	56	42	28	18	17
Outlet Temp. (deg. C)	110	85	69	56	42	25	18
Temp. Rise (deg. C)	25	16	13	<b>1</b>	14	7	<b>H</b>
Flashing Temp. (deg. C)		91	80	63	50	29	27
Heat Transfer Rate (kj/S)	165.708	105.280	85.172	91.397	91.070	142.306	20.304
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)	7.673	12.314	16.663	12.743	13.839	6.920	9.491
U (XW/8q.m/X)	4.622	4.414	2.639	3.703	3.397	4.150	0.432
Clean-U Value (XW/sq.m/K)							
f (SQ. H K/KW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 04:00

Date: Feb 9, 94

	Brine Heater		Evapo	Evaporator Stages	sek		
Variables		: ; <b>;</b>	<b>#</b> 5	en ##≠	≠	ம #	9 #
Flowrate (kg/h)	0009	0009	0009	0009	0009	18000	18000
Specific Heat (ki/kq/K)	3.977	3.948	3.931	3.917	3.902	3.955	3.951
Inlet Temp. (deq. C)	85	70	56	41	28	18	17
Outlet Temp. (deg. C)	110	85	70	56	41	24	18
Temp. Rise (deg. C)	25	15	14	15	13	9	<u></u> Н
Flashing Temp. (deg. C)	112	8	73	58	45	27	25
Heat Transfer Rate (ki/S)	165.708	98.700	91.723	97.925	84.543	118.650	19.755
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)	9.605	ERR	8.071	7.009	8.985	5.461	7.489
U (KW/sq.m/K)	3.692	ERR	5-867	7.213	4.858	4.384	0.532
Clean-U Value (KW/sq.m/K)							
f (sq.m K/KW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 04:00

Feb 10, 94

Date:

Run No.

	Brine Heater		Evapor	Evaporator Stages	es		
Variables		۲ **	(7) '==	<b>м</b>	* 4	± 5	9 #
flowrate (kg/h)	0009	6000	0009	0009	0009	18500	18500
Specific Heat (Ki/kg/K)	3.977	3.947	3.934	3.913	3.904	3.954	3.951
Inlet Temp. (deg. C)	84	72	52	43	28	1.8	17
	110	84	72	52	£ <b>7</b>	23	18
Ö	26	12	20	S	15	2	7
Flashing Temp. (deg. C)	111	85	75	09	49	34	34
Heat Transfer Rate (ki/S)		78.940	131,133	58.695	97.600	101.596	20,304
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	7.889	4.678	9.819	11.940	11.974	13.344	16.495
J (KW/sq.m/K)	4.676	8.711	6.895	2.538	4.208	1.536	0.248
Clean-U Value (kW/sq.m/K)							*
f (sq.m K/kW)							

## Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 04:00

Date: Feb 11, 94

				· · · · · · · · · · · · · · · · · · ·			
	Brine Heater		Evapo	Evaporator Stages	ges	40 A	
Variables			<b>+</b> 5	m ₩	*		9
Flowrate (kg/h)	6200	6200	6200	6200	6200	18000	18000
Specific Heat (k)/kg/K)	3.979	3.949	3.934	3.919	3.905	3.954	3.951
Inlet Temp. (deg. C)	98	72	58	77	29	<b>18</b>	17
Outlet Temp. (deg. C)	110.2	98	72	58	44	23	8
Temp. Rise (deg. C)	24.2	14	14	14	ST	Ŋ	
Flashing Temp. (deg. C)		88	76	61	50	34	S.C.
Heat Transfer Rate (kj/S)	165.836	95.215	94.853	94.491	100.879	98.850	19.755
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	9.063	6.733	9.308	8.071	11.974	13.344	16.495
U (KW/sq.m/K)	<b>m</b>	7.301	5.261	6.044	4.350	1.495	0.242
Clean-U Value (kW/sq.m/K)							
f (sq.m.K/kw)							
						•	

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Run No.	Date:	Feb 12, 94		Time: 00:00	00:			
	Brine	Brine Heater		Evapo	Evaporator Stages	jes		
Variables			<b>-</b> -  <b>-</b> #=	7	€	<b>♂</b> #=	±4± LΩ	9
Flowrate (kg/h)		6200	6200	6200	6200	6200	18000	18000
Specific Heat (ki/kg/K)		3.965	3.94	3.927	3.912	3.901	3.886	3.879
Inlet Temp.: (deg. C)		86	72	58	44	30	18	17
Outlet Temp. (deg. C)		111	86	72	58	44	24	18
Temp. Rise (deq. C)		25	4	14	14	14	9	<b>ч</b>
Flashing Temp. (deg. C)		112	85	16	61	20	34	34
Heat Transfer Rate (ki/S)		170.715	94.998	94.684	94,323	94.057	116.580	19,395
Heat Transfer Area (Sq.m)		4.6723	•	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)		7.673	ERR	9.308	8.071	11.628	12.766	16.495
U (KW/sq.m/K)		4.762	ERR	5.252	6.033	4.176	1.843	0.237
f (sq.m K/kW)			. **					

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 16:00

Feb 12, 94

Date:

Run No.

	Brine Heater		Evapo	Evaporator Stages	jes		
Variables		ત <b>*</b> *	2 **	(°)	4	ហ *#=	9
Flowrate (kq/h)	0009	ı	0009	0009	0009	17000	17000
Specific Heat (kj/kg/K)	3.98	(7)	3.931	3.917	3.903	3.956	3.952
Inlet Temp. (deq. C)	84		56	42	28	20	18
Outlet Temp. (deg. C)	113		70	56	42	56	20
Temp. Rise (deq. C)	29	1.4	14	14	74	9	~
Flashing Temp. (deg. C)		٠	80	63	20	30	28
Heat Transfer Rate (kj/S)	192.367	92.097	91.723	91.397	91.070	112.087	37.324
Heat Transfer Area (Sq.m)		1.937	1.937	1,937	1.937	4.9556	4.9556
L.M.T.D. (deq. K)		11.628	15.991	12.743	13.839	6.548	8.963
U (KW/sq.n/K)	ERR	4.089	2.961	3.703	3.397	3.454	0.840
Clean-U Value (kW/sq.m/K)							. Te
f (sq.m K/kW)							

## Calculations of Overall Heat Transfer Coefficient (U) and Pouling Factor (f)

Time: 16:00

Date: Feb 13, 94

	Brine Heater		Evapo	Evaporator Stages	les		
		T #	\ <b>~</b>	<b>M</b>			9
Flowrate (kg/h)	0009	0009	0009	6000	6000	17000	17000
Specific Heat (ki/kg/K)	3.979	3.95	3.934	3.918	3.903	3.957	3.952
Inlet Temp. (deq. C)	2. <b>2.8</b> 1.1 1.5 1.7 1.3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	72	57	42	28	20	¥7
Outlet Temp. (deg. C)	112	87	72	57	42	27	2
Temp. Rise (deq. C)		15	15	15	14	<b>^</b>	
Flashing Temp. (deg. C)	714	92	80	64	52	32	28
Heat Transfer Rate (kj/S)	165.792	98.750	98.350	97.950	91.070	130.801	37.324
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deq. X)	9.605	10,820	14.204	13.099	15.991	7.996	8.963
U (KW/sq.m/K)		4.712	3.575	3.860	2.940	3.301	0.840
Clean-U Value (KW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 08:00 Feb 14, 94 Date: Run No.

	Brine Heater		Evapo	Evaporator Stages	ges		
Variables		러 ***	<b>C1</b>	<b>+</b> 3	₹	en <del>T</del>	9
Flowrate (kg/h)	0009	9009	0009	6000	0009	17000	17000
Specific Heat (kj/kg/K)	3.979	3.95	3.936	3.92	3.905	3.956	3.952
Inlet Temp. (deg. C)	87	74	59	44	28	20	18
Outlet Temp. (deg. C)	112	87	74	59	44	26	20
Temp. Rise (deg. C)	25	13	15	15	16	9	7
Flashing Temp. (deg. C)	115	16	78	63	50	30	28
Heat Transfer Rate (kj/S)	165.	85.583	98.400	98.000	104.133	112.087	37.324
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
L. M. T. D. (deg. K)	11.193	8.985	9.627	9.627	12.314	6.548	8.963
U (KW/sq.m/K)		4.918	5.277	5.255	4.366	3.454	0.840
Clean-U Value (kW/sg.m/K)		٠.					
f (sq.时 K/kw)			•				

## Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Date: Feb 15, 94 Run No.

Time: 4:00

	Brine Heater		Evapor	Evaporator Stages	les		1
Variables		ਜ ਜ	<b>‡</b> 5	е #	*	<del>*</del>	<b>+</b> 0
		0009	6000	6000	6000	17000	17000
riowrate (Kd/n)	2000				l (		0
Charleta Host (ki/kg/K)	1,971	3.94	3.929	3.915	3.901	3.955	3.931
יי ובי וופסר היים אוליים	1 0		74	<b>C</b>	26	8	18
[n]et Temp. (ded. C)	27	90	7	7	2	i .	(
0.4104 E021 / COC / COC	105	78	9	54	40	24	18
סחרדתר דמווה. (מעאר י	) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	) (	7 -	7.	<b>Y</b> L .	v	0
Temp. Rise (deg. C)	17	OT .	#	7	1	1	
C Local Canada Calacta	108	82	70	26	46	28	97
rabiting tempt (degr c)		CE 667	91 677	91,350	91,023	112.058	0.000
Hear Transfer Rate (x)/>)	7	٠				i i i	71100
Hoat Wranefer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.33/	4.4000	4.4000
mode transfer the community of the commu		7 002	E 233	6.733	11.628	6.548	ERR
L.M.T.D. (deg. N)	07/-17	7000		] 1 } (		( L	COC
U (KW/sq.m/K)	3.262	4.247	7.030	7.005	4.041	3.453	FICE
Clean-U Value (kW/sq.m/K)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 4:00

Date: Feb 16, 94

Run No.

Variables	Brine	Heater	T #	Evapo	Evaporator Stages	3es ‡ 4	ហ **•	9
Flowrate (kg/h)		6000	6000	2000	0000			
Specific Heat (ki/kg/K)		3,962	826	2 622	2000	- 6000 - 2001	13000	
Inlet Temp (deg C)			) V	1.76.	476 · C	700 ° C	3.956	3.952
Cutlet Home (Apa C)			1 0	יי היי	<b>3</b> (	~	20	18
ממנדים בי משונה (ממקי ני)		ע פ	9)	99	. 53	40	36	20
Temp. Kise (deg. C)		22	10	<b>CT</b>	113	13	y	•
Flashing Temp. (deg. C)		102	80	9	45	77	20	36
Heat Transfer Rate (kj/S)		145.273	65,633	85.085	84.803	84.522	85,712	28 542
Heat Transfer Area (Sq.m)		4.6723	1.937	1.937	1.937	֚֚֡֝֟֝֟֝֟֝ <del>֚</del>	4 9556	4 0 5 5 5
L.M.T.D. (deg. K)		11.753	7.982	ERR	4.926	8,985	5.461	6.952
U (KW/sq.m/K)		2.645	4.245	ERR	8.888		3.167	
Clean-U Value (KW/sq.m/K)							1	
f (sq.m K/kW)								

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Date: Feb 16, 94 Time: 08:10

			4				2
Variables	Brine Heater	T #	Evapo	Evaporator Stages 2 # 3 # 3	jes ≢ 4	S **	9
D. Currato (P.C.)	0088		0083	0088	0085	13000	70061
Specific Heat (ki/kg/K)	3.965	3.939	3.927	3.914	3.901	3,957	3.953
Inlet Temp. (deg. C)		99		0.5	28	22	H
Outlet Temp. (deg. C)	100	11	99	53	40	27	7
Temp. Rise (deq. C)	233	77	.13	23	12	9	
Flashing Temp. (deg. C)	104	84	73	59	11	31	7
Heat Transfer Rate (kj/S)	146.	69.808	82.249	81.977	75.419	85.735	28.54
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.955
L.M.T.D. (deq. K)	12.045	11.647	12.383	11.278	12.018	6.548	6.95
U (KW/sq.m/K)		3.094	3.429	3.753	3.240	2.642	0.829
Clean-U Value (KW/sq.m/K)							
f (sq.m K/kw)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor

NAME OF STREET OF STREET

Run No.

Time: 12:00

Date: Feb 16, 94

	Brine Heater		Evapo	Evaporator Stages	les		
Variables		<b>-</b> i	<b>*</b> 2	<b>.</b>	4 4		9 #
Flowrate (kg/h)	0009	9009	0009	6000	6000	13500	13500
Specific Heat (kj/kg/K)	3.971	3.943	3.93	3.916	3.902	3.958	3.954
Inlet Temp. (deg. C)	81	69	55	41	29	22	19
Outlet Temp. (deg. C)	105	81	69	55	41	28	22
Temp. Rise (deg. C)	24	12	14	14	12	9	C
Flashing Temp. (deg. C)	107	88	76	61	49	32	27
Heat Transfer Rate (kj/S)	158.840	78.860	91.700	91.373	78.040	89.055	44.483
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)	9.357	12.018	12.743	11.628	13.096	6.548	6.383
U (KW/sg.m/K)	3.633	3.388	3.715	4.057	3.076	2.744	1.406
Clean-U Value (KW/sq.m/K)							
f (sq.m K/kw)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 16:00

Feb 16, 94

Date:

Run No.

7.399 13500 4.9556 3.954 44.483 1.213 13500 3.958 89.055 4.9556 7.610 2.362 3.240 3.902 42 6000 84.543 13.470 1.937 Evaporator Stages 3.916 62 0009 4.057 91.373 1.937 11.628 3.93 56 69 85,150 1.937 14.544 3.022 81 78.860 13.096 0009 3.943 1.937 3.109 105 87 107 158.840 3.971 4.6723 0009 9.357 3.633 Brine Heater Clean-U Value (kW/sg.m/K) Heat Transfer Rate (kj/S) Specific Heat (kj/kg/K) Inlet Temp. (deg. C) Outlet Temp. (deg. C) (deg. Heat Transfer Area Temp. Rise (deg. C) L.M.T.D. (deg. K) Flashing Temp. Flowrate (kg/h) U (KW/SG.m/K) f (sq.m K/kW) Variables

Appendix 5.3.3-2

Calculation of Overall Heat Transfer Coefficient(U) and Fouling Factor(f) in Run 2

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 16:00

Date: July 10, 94

	The 1 to 1 t		6	- 1	1		
Variables	brine heater	т #	EVapo # 2	Evaporator stages  2 # 3 # # # # # # # # # # # # # # # # #	ges # 4	ιΩ <del>al</del> e	9
Flowrate (kg/h)	5900	5900	5900	5900	IO	19000	19000
Specific Heat (kj/kg/K)	3,965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	06	78	65	53	40	33	32
Outlet Temp. (deg. C)	111	06	78	65	53	38	33
Temp. Rise (deg. C)	21	12	13	12	13	ß	ч
Flashing Temp. (deg. C)	112	76	98	70	59	42	41
Heat Transfer Rate (kj/S)	136.462	77.644	83.752	77.113	83.220	102.811	20.552
Heat Transfer Area (Sq.m)	4.6723		1.937	1.937	1.937		4.9556
L.M.T.D. (deg. K)	6.794	12.018	13.470	•	11.278	6.166	8.490
U (KW/sq.m/K)	4.299	3.335	3.210	4.060	•	3,365	0.488
Clean-U Value (kW/sq.m/K)				٠	٠		
f (sq.m K/kW)						*	

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 20:00

Date: July 10, 94

	Brine Heater		Evapo	Evaporator Stages	res		
Variables		T #	± 5	CC =#=	* 4	ιΩ #=	9
Flowrate (kg/h)	2006	5900	5900	5900	5900	18800	18800
Specific Heat (kj/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	91		99	53	40	33	32
Outlet Temp. (deg. C)	112	91	79	99	23	38	33
Temp. Rise (deg. C)	21	12	13	13	13	ĸ	-
Flashing Temp. (deg. C)	114		84	69	58	<b>17</b>	40
Heat Transfer Rate (kj/S)	136.462	77.644	83.752	83,539	83.220	101.729	20.335
Heat Transfer Area (Sq.m)	4.6723	1.93	1.937	$\mathbf{c}$	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.598	9.80	10.149	7.766	10.149	5.098	$\infty$
U (KW/sq.m/K)	3.397	4.088	4.260	5.553	4.233	4.027	0.548
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)						1	2000 2000 2000 2000 2000 2000 2000 200

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f) 

Time: 00:00

Date: July 11, 94

	Brine Heater		Evano	Evaporator Stages	res		
Variables		-T #=	<b>*</b>	#÷	♥ #=	## (J)	9
Flowrate (kg/h)	0009	9009	0009	6009	0009	18500	18500
Specific Heat (kj/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	06	79	99	53	41	33	32
Outlet Temp. (deg. C)	112	90	79	99	53	38	33
Temp. Rise (deg. C)	22	11	13	13	12	Ŋ	-
Flashing Temp. (deg. C)	113	96	84	69	28	41	40
Heat Transfer Rate (kj/S)	145.383	72.380	85.172	84.955	78.120	100.106	20.011
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	10.562	10.149	7.766	9.806	5.098	7.489
U (KW/sq.m/K)	4.435	•	4.333	5.648	4.113	3.963	0.539
Clean-U Value (KW/sq.m/K)		·					
f (sq.m K/kW)							
				- ,	2		٠

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Run No.

Time: 04:00

Date: July 11, 94

and the state of t	Brine Heater		Evaporator	rator Stages	res		
Variables		#	#= 5		4	<b>#</b> =	9 *
Flowrate (kg/h)	5900	5900	5900	5900	5900	19500	19500
Specific Heat (kj/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	89	79.		52	40	32	31
Outlet Temp. (deg. C)	112	68	42	65	52		32
Temp. Rise (deg. C)	23	10	14	13	12	9	<b>н</b>
Flashing Temp. (deg. C)	113	96	84	99	58	41	40
Heat Transfer Rate (kj/S)	149.4	64.703	90.195	83.539	76.818	126.620	21.093
Heat Transfer Area (Sq.m)	4.	1.937	o.	.93	1.937		95
L.M.T.D. (deq. K)	7.2	11.270	10.487	7.766	10.923	5.461	8.490
U (kW/sq.m/K)	4.4	2.964	•		3.631	.67	0.501
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 08:00

Date: July 11, 94

Br	rine Heater		Evapo	Evaporator Stages	res		
Variables		# 1	± 5	₩=	#	<b>≠</b> =	<b>9</b>
Flowrate (kg/h)	0009	0009	6000	6000	0009	18600	18600
Specific Heat (kj/kg/K)	3,965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	06	80	29	54	42	33	32
Outlet Temp. (deg. C)	112	06	80	. 49	54	38	33
Temp. Rise (deg. C)	22	10	13	13	12	Ŋ	H
Flashing Temp. (deg. C)	114	95	84	70	9	42	38
Heat Transfer Rate (kj/S)	145.383	65.800	85.172	84.955	78.120	100.647	20.119
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)	8.853	9.102	8.985	7.766	10.923	6.166	5.485
U (KW/sq.m/K)	3.515	3.732	4.894	5.648	3.692	3.294	0.740
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)					1 4		

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 12:00

Date: July 11, 94

Variables	Brine Heater	٦ #	Evapol # 2	Evaporator Stages	ges # 4	:#±	9
			1	1			
Flowrate (kg/h)	0009	0009	0009	0009	0009	17500	17500
Specific Heat (ki/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	06	78	99	54	42	33	32
Outlet Temp. (deg. C)	111	06	78	99	54	38	33
Temp. Rise (deg. C)		12	12	12	12	ເດ	Н
Flashing Temp. (deg. C)	r	95	84	70	09	42	40
Heat Transfer Rate (k1/S)	138.	78.960	78.620	78.420	78.120	94.694	18.929
Heat Transfer Area (Sg.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
T.M.T.D. (deg. K)		9.806	10.923	8.656	10.923	991.9	7.489
U (KW/sq.m/K)	4.372	4.157	3.716	4.677	3.692	3.099	0.510
Clean-U Value (KW/sq.m/K)							originalista Silver Silver Silver
f (sq.m K/kW)						٠ <b>٠٠</b> نو	

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 16:00

Date: July 11, 94

	Brine Heater		TV2DO.	Francrator Stades	TOG		-
Variables	דוום וופסרפד	<b>-</b> #	## C2	# 3	4	າ <del>t</del> =	9
Flowrate (kg/h)	5800	5800	5800	5800	5800	17800	17800
Specific Heat (kj/kg/K)	3.953		3.928	Q	3.908	3.899	$\infty$
Inlet Temp. (deg. C)	88	72	62	52	42	33	32
Outlet Temp. (deg. C)	102		72	62	52	38	33
Temp. Rise (deq. C)	14	16	10	10	10	Ŋ	4
Flashing Temp. (deg. C)	110	92	79	19	57	48	39
Heat Transfer Rate (ki/S)	89.162	Н	63.284	63.123	62.962	6.39	19.254
Heat Transfer Area (Sq.m)	Ψ	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deq. K)	13,839	9.941	11.270	9.102	9.102	12.332	6.487
U (KW/sq.m/K)	-	5.277	2.899	3.580	3.571	1.577	0.599
Clean-U Value (KW/sq.m/K)				1 -			
f (sq.m K/kw)					v <sub>a</sub>		

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 20:00

Date: July 11, 94

B3	Brine Heater		Evaporator	rator Stages	jes		
		<b>⊣</b>	- - -		#	ις #	<b>9</b> #⊭
	5800	5800	5800	5800	5800	17600	17600
Specific Heat (ki/kg/K)	3.953	3.942	3.928	3.918	3.908	3.899	3.894
Inlet Temp. (deg. C)	80	70	19	52	41	33	32
Outlet Temp. (deg. C)	92	80	70	61	52	38	33
Temp. Rise (deq. C)	12	10	6	O	11	ß	ਜ ਹ
Flashing Temp. (deg. C)	110	82	78	64	56	41	38
Heat Transfer Rate (ki/S)	76.425	63.510	56.956	56.811	69.258	95.309	19.037
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)	23.491	5.581	11.940	6.492	8.322	5.098	5.485
U (KW/sq.m/K)	0.696	5.875	2.463	4.518	4.296	3.773	0.700
Clean-U Value (kW/sq.m/K)							
f (sq.m K/kW)							

Calculations of Overall Heat Tra	Transfer Co	efficient	(U) and	uling 	Factor (f)	ŧ	
Run No. Date:	July 12,	94	Time: 00:00	 			
Br Variables	Brine Heater	г #	Evaporator # 3	rator Stages # 3 #	ges #-	ro #	9
	5600	5600	5600	5600	5600	18000	18000
Specific Heat (k1/kg/K)	3.953	3.942	3.928	3.918	3.908	3.899	3.894
Inlet Temp. (deg. C)	92	67	58	49	40	32	31
Outlet Temp. (deg. C)	92	16	67	58	49	34	E
Temp. Rise (deg. C)		6	<u>ი</u>	<b>o</b>	<b>ნ</b>	(1)	-
Flashing Temp. (deg. C)		78	70	09	52	43	38
Heat Transfer Rate (ki/S)	98.386	55.188	54.992	54.852	54.712	38.990	19.47
Heat Transfer Area (Sq.m)	4.6723		1.937	1.937	1.937	4.9556	4.9556
$\mathbf{L}.\mathbf{M}.\mathbf{T}.\mathbf{D}.$ (deq. $\mathbf{K}$ )	5.15	•	•	5.279	6.492	6.967	6.487
U (KW/sq.m/K)	0.837	5.397	•	5.364	4.351	0.789	0.606
Clean-U Value (KW/sg.m/K)							
f (sq.m K/kw)			. :				

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 04:00

Date: July 12, 94

	Brine Heater			Evaporator Stages	yes		
Variables		# 1	# 5	# 3	<b>**</b>	# 22	9
Flowrate (kg/h)	5600	5600	5600	5600	5600	18000	18000
Specific Heat (kj/kg/K)	3.953	3.942	3.928	3.918	3.908	3.899	3.894
Inlet Temp. (deq. C)	75	29	58	49	40	32	31
Outlet Temp. (deg. C)	91	75	29	58	49	34	32
Temp. Rise (deq. C)	16	8	<b>o</b>	9	6	~	ਜ
Flashing Temp. (deg. C)	110	78	70	9	52	43	38
Heat Transfer Rate (kj/S)	98.386	49.056	54.992	54.852	54.712	38.990	19.470
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	.93	1.937	4.9556	4.9556
L.M.T.D. (deq. K)	26.190	6.157	6.492		6.492		6.487
U (KW/sq.m/K)	0.804	4.113	4.373	5.364	4.351	0.789	0.606
Clean-U Value (KW/sq.m/K)							39 + 65 + 74 + 74
f (sq.m K/kW)							

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 08:00

Date: July 12, 94

	Brine Heater		Fvano	Fyanorator Stades	700		
Variables		ਜ=	# #	# 3 F	4	ເດ #⊭	<b>9</b>
Flowrate (kg/h)	0009	0009	0009	0009	6000	18500	18500
Specific Heat (kj/kg/K)	3,965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deq. C)	06	78	67	54	42	33	32
Outlet Temp. (deg. C)	111	06	78	29	54	38	33
Temp. Rise (deg. C)	21	12	11	13	12	ß	H
Flashing Temp. (deg. C)	112	96	85	71	9	43	41
Heat Transfer Rate (kj/S)	138.775	78.960	72.068	84.955	78.120	100.106	20.011
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)		10.923	11.647	8.985	10.923	7.213	8.490
U (kW/sq.m/K)	4.372	3.732	3.195	4.882	3.692	2.800	0.476
Clean-U Value (kW/sq.m/K)	:	٠					
f (sq.m K/kW)		. :					

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Run No.	Date:	July 12, 94	94	Time: 12:00	00			
Variables	Brine Heater	Heater	#-	Evapo # 2	Evaporator Stages  2 # 3 #	ges. # 4	<b>₩</b>	<b>9</b>
Flowrate (kg/h)		6000	0009	0009	6000	0009	18000	1800(
Specific Heat (kj/kg/K)	•	3.965	3.948	3.931	3.921	3.906	3.896	3.89
Inlet Temp. (deg. C)		06	78	29	52	42	33	33
Outlet Temp. (deg. C)		110	06	78	29	55	38	e e
Temp. Rise (deq. C)		20	12	11	12	13	Ŋ	
Flashing Temp. (deg. C)		113	94	86	71	09	43	4
Heat Transfer Rate (kj/S)		132.167	78.960	72.068	78.420	84.630	97.400	19.47
Heat Transfer Area (Sq.m)		4.6723	1.937	1.937	1.937	1.937	4.9556	4.955
L.M.T.D. (deq. K)		9.819	8.656	12.717	8.656	10.149	7.213	9.49
U (kW/sq.m/K)		2.881	4.709	2.926	4.677	4.305	2.725	0.41
Clean-U Value (kW/sq.m/K)	_							
f (sq.m K/kw)		: 1						
					*			

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 16:00

Date: July 12, 94

	Brine Heater		Evaporator	ator Stages	es		
Variables		~ #	- - -	ec ##=	#	#÷	9
Flowrate (kg/h)	0009	6000	6000	0009	6000	18100	18100
Specific Heat (kj/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deq. C)	91	78	67	55	42	33	32
Outlet Temp. (deq. C)	110	16	78	67	55	38	33
Temp. Rise (deg. C)	19	13	11	12	13	O	<b>H</b>
Flashing Temp. (deg. C)	112	86	88	72	61	45	42
Heat Transfer Rate (kj/S)	125.558	85.540	72.068	78.420	84.630	97.941	19.578
Heat Transfer Area (Sq.m)	4.6723	1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deq. K)	8.080	12.383	14.826	9.806	11.278	9.276	9.491
U (KW/sq.m/K)	3.326	3.566	2.510	4.129	3.874	2.131	0.416
Clean-U Value (kW/sq.m/K)				. :			
f (sq.m K/kw)		 **.				V	

Calculations of Overall Heat Transfer Coefficient (U) and Fouling Factor (f)

Time: 20:00

Date: July 12, 94

	Brine Heater		Evapo	Evaporator Stages	yes	;	
Variables		т #-	<del>#</del>	<b>Ω</b>	# #	## CJ	9
Flowrate (kg/h)	0009	0009	0009	9009	6000	18000	18000
Specific Heat (ki/kg/K)	3.965	3.948	3.931	3.921	3.906	3.896	3.894
Inlet Temp. (deg. C)	06	78	67	54	41	33	32
Outlet Temp. (deg. C)	110	96	78	67	54	37	33
Temp. Rise (deg. C)	20	12	11	13	13	4	н
Flashing Temp. (deg. C)	112	96	86	72	9	44	<b>4</b> 1
Heat Transfer Rate (ki/S)	132.167	78.960	72.068	84.955	84.630	77.920	19.470
Heat Transfer Area (Sq.m)		1.937	1.937	1.937	1.937	4.9556	4.9556
L.M.T.D. (deg. K)	8.341	10.923	12.717	10.149	11.278	8.850	8.490
U (KW/sq.m/K)		3.732	2.926	4.322	3.874	1.777	0.463
Clean-U Value (kW/sq.m/K)							
+ (cr = K/VW)	,ª	-					